National VVF Project Nigeria

evaluation report XXX

2013

thirty years of obstetric trauma surgery 1984 thru 2013

state of the art surgery

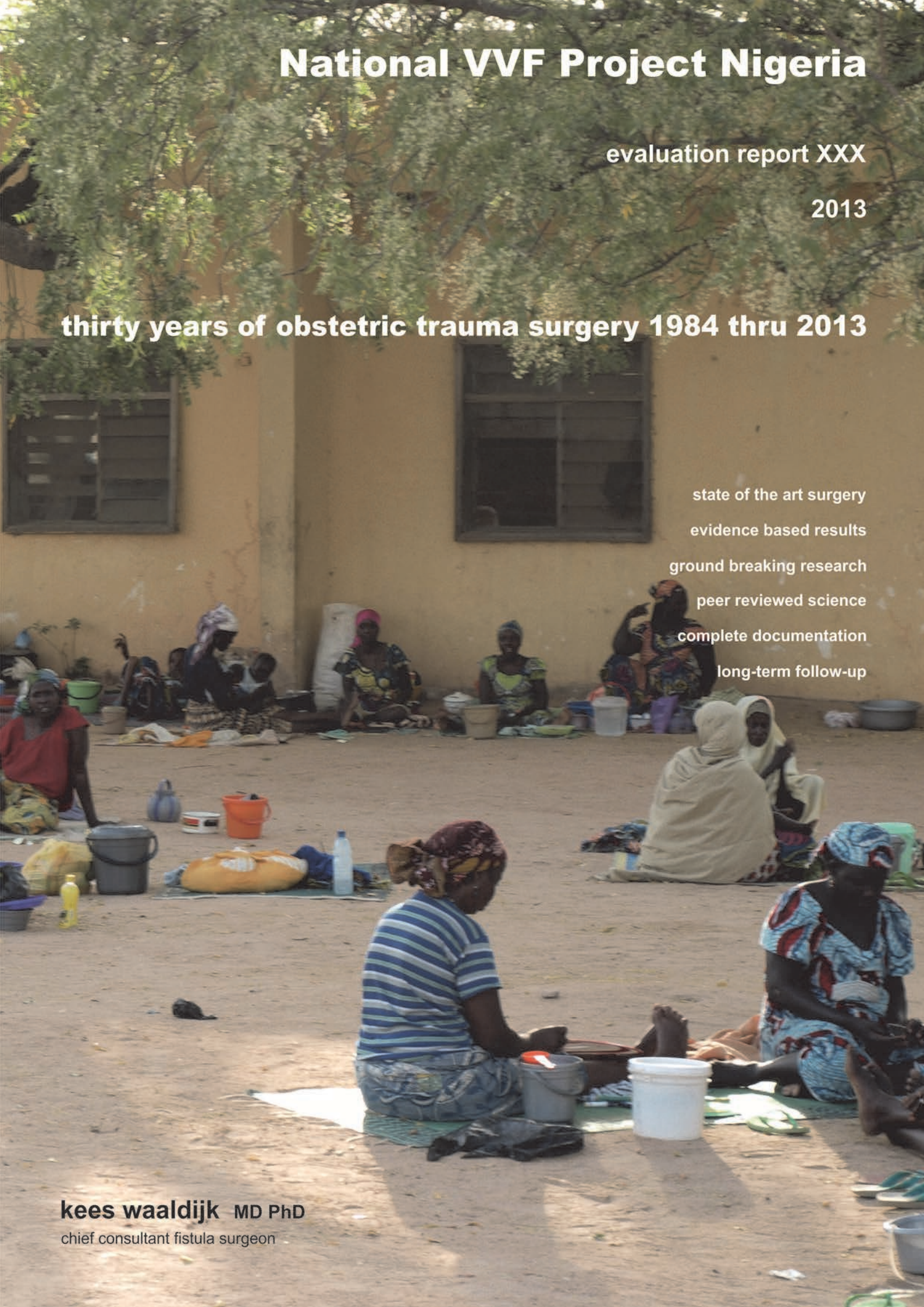
evidence based results

ground breaking research

peer reviewed science

complete documentation

long-term follow-up



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chief consultant fistula surgeon

sponsored and financed by

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babbar ruga national fistual teaching hospital
katsina
n i g e r i a

national vvf project nigeria

evaluation report XXX

2013

thirty years of obstetric trauma surgery 1984 thru 2013

the strength of the project is the rare complete documentation

nigeria

southeast national fistula hospital
abakaliki

special vvf center
birrnin kebbil

faridat yakubu vvf hospital
gusau

general hospitals
hadejia - jahun

laure fistula center
murtala muhammad specialist hospital
kano

babbar ruga national fistula teaching hospital
katsina

federal medical center
nguru

maryam abacha hospital
sokoto

kofan gayan hospital
zaria

kees waaldijk MD PhD

babbar ruga national fistula teaching hospital is the first and only hospital with a holistic approach to the obstetric trauma

almost 600 beds available in high-quality buildings

prevention

100 beds available
with separate delivery rooms and twin operating theater
for antenatal and obstetric care
for the general public
including emergency/elective cesarean section

obstetric trauma surgery with training

250 beds available
with two operating theaters
for pre-, intra- and post-operative care

hostel

150 beds available including
waiting hostel for previous repaired patients
for real elective cesarean section

post-repair elective cesarean section

flexible capacity

rehabilitation center

64 beds in a separate center
for 6-mth literacy and different vocational courses

table of contents

what is the mechanism

of the 2:1 male:female sex ratio
of the index infants in obstetric fistula

that male infants are roughly 10% heavier
than female infants
is no sufficient explanation

as is the fact that 104 male infants are born
against 100 female infants

this 2:1 ratio was found by the author in his
PhD study (University of Utrecht 1989)
about
the (surgical) management of bladder fistula
in 775 women in Northern Nigeria

this ratio was confirmed in many studies but
so far an acceptable explanation
has not yet been offered
in the last 25 years

foreword

documentation and reporting by professionals about their work are essential tools in assessing and evaluating theories, processes and projects

this report is no 30 in a series of consecutive annual reports since the author started his obstetric fistula work from scrap in 1983

it gives an impression of what has been done during the year 2013 in terms of (surgical) management of the obstetric trauma with evidence-based results, in terms of training, in terms of research etc

besides this, it gives the overall figures for the 30-year period 1983-2013

the enormous amount of patients treated we passed the 43,200 mark and the rare complete documentation of everything combined with excellent evidence-based results in long-term follow-up gives this project the authority to say sensible things about the obstetric trauma and its (surgical) management, teaching and training, setting up vvf-repair and vvf-training centers etc

the author is privileged to study the experiments of nature about the urine continence mechanism in the female as presented by the obstetric fistula

systematic clinical examination and research brought a wealth of insight into the pelvis anatomy, pelvis physiology, urine continence mechanism, stool continence mechanism and the pathophysiology of the obstetric trauma and pelvic organ prolapse

based upon this research a classification was developed with operation principles and techniques for each and every fistula type with prospective prediction of the results

the best contribution was the immediate management by catheter and/or early closure with prevention of the woman from becoming an outcast

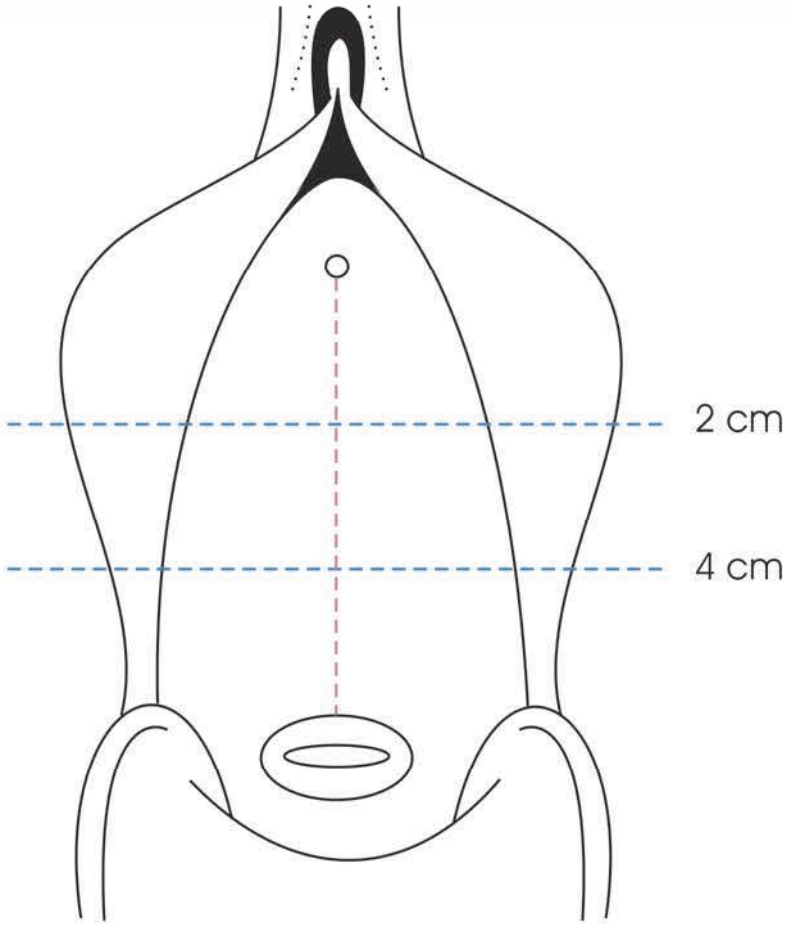
it is not easy to write these annual reports

however, the author would like to use the opportunity to publish some of his insights in the **functional pelvis anatomy** from the view of a reconstructive surgeon as based on his 24,000 documented and evidence-based surgical procedures in the obstetric trauma

the author

31st of december 2013

location of fistula



fistulas for beginner

executive summary

the security situation in northern Nigeria deteriorated which had a negative effect upon our functioning; the team could not visit nguru; and the training of international trainees came to a full stop

the team stopped visiting neighboring République du Niger also for security reasons

babbar ruga national fistula teaching hospital was officially handed over to the Federal Government in december 2013 according to the decision by the 54th national health council; this will guarantee **sustainability of the project**

the team visited ogoja vvf center in Crossriver State and found the same situation like all over in Nigeria

during the year a total of 2,154 VVF/RVF-repairs were performed in the project making **a grand total of 41,584 repairs**

if we add the 210 cs-operations in previous healed fistula patients performed in kofan gayan hospital zaria and another 1,445 conservative procedures (fully documented) then we come to

43,239 procedures in 30 year

or in order to show the progressive trend of the (surgical) management since the start:

10-yr period **1984-1993**:	an average of	**400 repairs a year**
10-yr period **1994-2003**:	an average of	**1,300 repairs a year**
10-yr period **2004-2013**:	an average of	**2,200 repairs a year**

during the year a total of 15 doctors and 15 nurses attended one of our training pro grams along the isofs guidelines of the global competency-based international manual making **a grand total of 848 trainees: 402 doctors, 375 nurses/ midwives and 71 other persons**

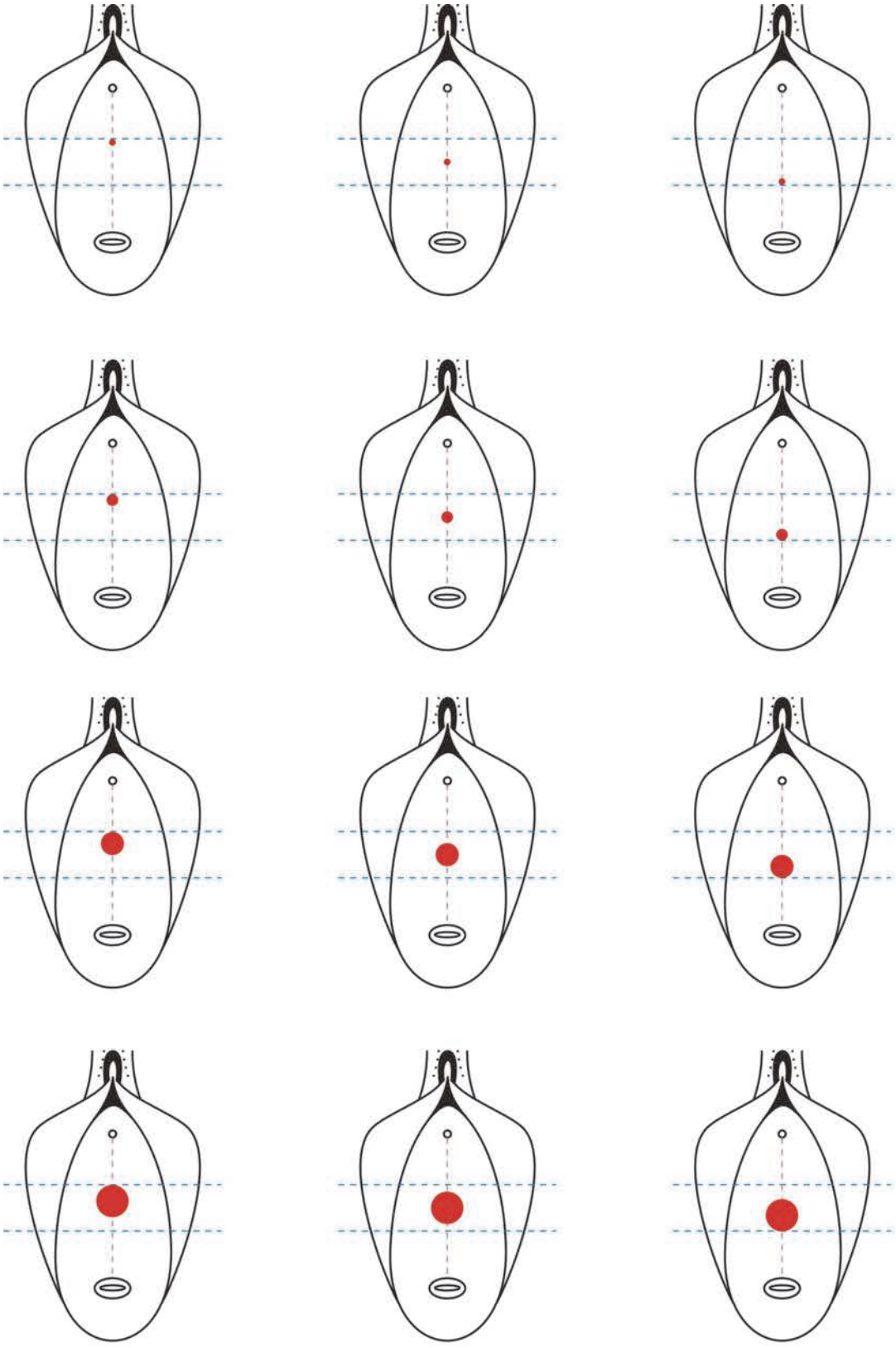
during the year 7 workshops were executed making **a grand total of 61 workshops**

the **strength of the program** is that everything is **evidence based in consecutive order (nobody/nothing left out)** by meticulous documentation, extensive database, prospective research, individual follow-up over years and consequent analysis of the results according to scientific parameters

the whole project is government owned; as such 95% is being financed by the respective state governments and by the federal government

however, this is not enough and we were happy with additional financial sponsoring by Fistula Foundation

it has to be stressed that these achievements are only due to **teamwork** and the **combined efforts** by all the doctors, nurses and other personnel in all the centers



fistulas for beginner

evaluation report XXX

introduction
the obstetric fistula is as old as mankind and constitutes a social disaster of the highest order; due to the continuous urine leakage with offensive smell these patients are ostracized from their own community if nothing is done and loose all dignity, as a woman and as a human being, with progressive downgrading medically, socially, emotionally and mentally
the variety of the complex trauma of the obstetric fistula is enormous: from a minute fistula with minimal tissue loss to a cloaca in an empty pelvis with extensive intravaginal lesions and (sub)total loss of all the intrapelvic tissues, extravaginal lesions, urine-induced lesions, neurologic lesions and systemic lesions
the only rehabilitation into society is by **successful closure** of the fistula; however, this is not simple considering the extent and the immense variety of the trauma
though prevention of the obstetric fistula is not possible for another century, **prevention of the social disaster** is very well feasible by the **immediate management** by catheter and/or early closure; **no need to become an outcast**
this VVF Project aims to have an impact by providing a VVF-repair service, by establishing VVF centers, by training all kinds of doctors, nurses and paramedical personnel and by providing training materials with the emphasis on keeping it simple, safe, effective, feasible, sustainable and payable under African conditions

philosophy of the project
to provide a professional service concentrating upon the immediate (surgical) management of the obstetric fistula patient
to bring the service towards the patients which means multiple “small” repair centers within their own community throughout Africa and not a single white elephant in the capital
to work for or in close collaboration with the government in order to have an impact upon the obstetric fistula as a major public health problem
to ensure optimal comprehensive care: repairs by the surgeon and rehabilitation if needed by the social workers in close cooperation and eventually prevention by setting up a network of functioning obstetric units
to concentrate on the repairable fistulas and especially on the immediate management as a priority considering the scarcity of human resources, finances and available infra structure
to make a clear statement during the whole management process about further surgical interventions; it does not make sense to operate forever on the incurable patients
to demarcate the responsibilities: once the surgeon has done his job <closure of the fistula to the best of his knowledge, conscience and expertise> in the end it is the patient herself who is responsible for her life; the surgeon is just the surgeon, nothing more; and the surgery alone consumes all his energy

long-term objectives
to establish a lasting VVF service with ultimately the total eradication of the obstetric fistula, first in Nigeria but later on also in the rest of Africa and the whole world
to keep the existing expertise available for present and future fistula surgeons

short-term objectives
to further upgrade the repair and training services in the existing centers and to start new centers; masterplan: to establish a VVF-repair center in each of the 36 states of Nigeria and to have a VVF-training center in each of the 6 geopolitical zones of Nigeria; with a population of at least 200 million people
to train doctors, nurses and other health personnel in the complicated (surgical) mana gement of the obstetric fistula
to produce training materials and surgical handbooks with in-depth description of anatomic tissue losses, classification of vvf and rvf, description of continence mechanisms, immediate management, step-by-step operation techniques of fistula and (postrepair) intrinsic/stress incontinence etc
to conduct clinical scientific research, to establish a comprehensive database and to prepare evidence-based scientific articles
to provide free services for the cured patients once they become pregnant again

achievements

sustainable holistic approach

from 2014 onwards we will concentrate upon a holistic approach in babbar ruga national fistula teaching hospital with almost 600 beds available on a large compund
prevention by providing antenatal and obstetric care to the general public including elective and emergency cesarean section: 100 beds available with separate delivery rooms and a twin operating theater
(surgical) management of the obstetric trauma including prolapse 250 beds with 2 additional operating theaters available for pre-, intra- and post-operative
training (facilities) for Nigerian and international trainees
patient hostel 150 beds available including waiting hostel for previous repaired fistula patients in need of post-repair **elective cesarean section**
facilities for accompanying family members
post-repair elective caesarean section flexible capacity within hostel
rehabilitation by 6-mth literacy and different vocational courses with 64 beds in a separate center

activities

surgery
over the year a total of 2,154 procedures were performed in the 12 different centers making a
grand total of 41,584 operations: 37,836 vvf-repairs and 3,748 rvf-repairs
if we add the 210 cs-operations in healed previous patients and another 1,445 conservative (fully documented) procedures we come to **43,239 procedures during 30 years**
to show the progressive trend we plot the 3 times 10-yr average from 1984 thru 2013
10-yr period **1984-1993:** an average of **400 repairs a year**
10-yr period **1994-2003:** an average of **1,300 repairs a year**
10-yr period **2004-2013:** an average of **2,200 repairs a year**
with an average of almost 1,450 repairs a year over the whole 30-yr period

postgraduate training
over the year a total of 15 doctors and 15 nurses were trained for different organizations
grand total of 848 persons: 402 doctors, 375 nurses and 71 other persons

workshops
the consultant surgeon + team participated in 7 workshops in ogoja (fistula foundation, fistula care), sokoto (fistula foundation, fistula care, unfpa), kebbi (fistula foundation, kebbi state), zaria (fistula foundation) and gusau (fistula foundation, fistula care) and katsina (federal ministry of health, fistula foundation) making
grand total of 61 workshops

rehabilitation
due to the sincere commitment and serious efforts by the First Lady of Katsina State with funding by MDG the separate 64-bed Katsina Rehabilitation Center is functioning very well by literacy classes and vocational training giving the patients a start in their new or old life

elective cs in cured patients
kofan gayan hospital in zaria is the only hospital in the world where systematically a real elective caesarean section (including 2-wk waiting home) is performed in the cured patients once they become pregnant again; so far over 200 cs with a live infant
we plan to provide the same service in babbar ruga hospital in 2014

research
this is a continuous process; the intention was, is and will be to make complicated things simple, safe, effective, feasible, sustainable and payable under African conditions sticking to reconstructive surgical principles
and we were able to develop **evidence-based solutions for each and every problem**
our best contribution is the **immediate management** by catheter and/or early closure preventing the woman from becoming an outcast
the scientific classification of vvf/rvf becomes ever-more valuable the longer we use it

database, documentation and science
a comprehensive database has been developed where the chief consultant has entered his personal obstetric fistula experience consecutively from the very first to the last patient with up to 250 parameters per patient
the chief consultant finished with updating his electronic operation reports by drawings and all postoperative check-ups/results
now all of it has to be **anonymized** in order to place everything on-line on the web for everybody to make his own analysis and conclusions; this is a long time-consuming process

state-of-the-art surgery
each fistula needs its own specific customized approach as based on a careful assessment of the qualitative and quantitative amount of tissue loss: a combination of science and art
based upon a scientific classification state-of-the-art operation principles and techniques have been developed for each type with **evidence-based prognosis** as to healing and continence
the same principles are being used in **genital prolapse** with excellent results

export of expertise to the developing and industrialized world
it is high time to export our evidence-based experience to the developing and industria lized world; however, it seems everybody wants to reinvent the existing wheel

funding
basically the project is funded by the Federal Government and by the individual State Governments but this is not sufficient
further direct financial support came from Fistula Foundation and
indirect support from usaid-fistula care, unfpa and family care educational
we are very impressed by the sincere commitment of the First Lady of Katsina State in doing her best to help the poor patients

strength of the project
its **rare meticulous evidence-based complete documentation** by individual electronic systematic examination and operation reports, electronic database with almost 4,000,000 entries, real prospective research, more than 150,000 digital and other photographs, some 50 hours of digital video-takes of operation techniques, long-term follow-up over years, real scientific classification and 30 annual reports etc etc **for the whole world to see**

conclusion
despite the security situation in northern Nigeria we were able to continue and consoli date our obstetric fistula work up to a high quality and high quantity standard
and, … we plan to extend our services to the cured patients once they become pregnant again by providing free antenatal care and free elective cesarean section

sustainability
since babbar ruga hospital is now **federal treatment/training institution**, this means that the sustainability of the project is guaranteed

prevention
why are the **vocal** major aid organizations, the governments and the general public **not** interested in establishing a **network of functioning obstetric units** ???

first set up the hard ware (building, equipment, consumables, water, electricity etc) and then configurate the necessary software

kees waaldijk MD PhD
chief consultant surgeon
31st of december 2013

fistula surgery 30-yr period: 1984-2013

	ebonyi		jigawa		kaduna		kano		katsina		kebbi		sokoto		zamfara		yobe		rép niger		
	vvf	rvf	vvf	rvf	vvf	rvf	vvf	rvf	vvf	rvf	vvf	rvf	vvf	rvf	vvf	rvf	vvf	rvf	vvf	rvf	**total**
1984	-		-		-		-		83	6	-		-		-		-		-		89
1985	-		-		-		-		196	20	-		-		-		-		-		216
1986	-		-		-		-		260	18	-		-		-		-		-		278
1987	-		-		-		-		318	7	-		-		-		-		-		325
1988	-		-		-		-		353	31	-		-		-		-		-		384
1989	-		-		-		-		464	21	-		-		-		-		-		485
1990	-		-		-		222	25	416	29	-		-		-		-		-		692
1991	-		-		-		248	17	195	4	-		-		-		-		-		464
1992	-		-		-		348	27	529	34	-		-		-		-		-		938
1993	-		-		-		416	35	488	62	-		-		-		-		-		1,001
1994	-		-		-		373	43	496	45	-		42	-	-		-		-		999
1995	-		-		-		373	51	537	51	-		161	11	-		-		-		1,184
1996	-		86	-	-		311	37	562	60	41	-	98	5	-		-		66	2	1,268
1997	-		211	4	-		295	38	513	55	107	2	181	14	-		-		33	2	1,455
1998	-		185	5	42	4	278	28	416	60	37	4	288	34	30	6	-		43	4	1,464
1999	-		30	3	37	3	280	36	441	62	80	5	238	12	64	3	-		49	2	1,345
2000	-		204	7	102	7	283	41	420	60	108	4	134	16	102	5	-		69	7	1,569
2001	-		320	27	80	1	415	41	515	55	98	4	157	9	65	5	-		74	5	1,871
2002	-		383	26	44	2	464	49	453	41	113	3	144	7	42	3	-		82	3	1,859
2003	48	5	245	15	39	1	376	52	475	51	96	4	151	7	35	4	-		56	3	1,663
2004	24	2	159	17	59	5	410	33	496	64	65	2	119	6	22	-	-		115	8	1,606
2005	12	-	117	9	31	4	507	39	525	47	208	5	303	22	145	3	-		79	6	2,062
2006	10	2	5	-	65	19	368	91	508	83	156	5	176	17	147	2	-		161	8	1,823
2007	11	1	61	3	114	4	510	97	602	117	170	6	90	5	166	2	-		150	5	2,114
2008	75	3	83	5	146	8	555	59	584	89	168	7	159	7	175	3	37	4	164	15	2,346
2009	180	14	225	7	80	5	538	195	390	198	172	5	90	5	65	1	23	6	175	12	2,386
2010	255	16	391	25	71	6	509	51	484	83	156	4	174	14	40	1	46	3	173	11	2,513
2011	299	25	375	18	104	14	533	54	527	65	99	5	165	6	15	1	17	1	168	11	2,502
2012	339	8	380	6	69	10	465	50	400	41	97	3	170	6	98	3	19	1	165	15	2,345
2013	378	27	235	16	108	12	481	52	511	46	43	2	161	8	64	3	7	1	-	-	2,154
total	**1631**	**103**	**3695**	**193**	**1191**	**104**	**9552**	**1241**	**13163**	**1605**	**2014**	**70**	**3193**	**211**	**1275**	**45**	**149**	**16**	**1822**	**119**	**41,392**

total VVF-repairs and related operations: **37,693** **+** in outreach workshops 143 **=** **37,836**
total RVF-repairs and related operations: **3,707** **+** in outreach workshops 41 **=** **3,748**
grand total **41,584**

final success rate (after one or more operations): > 97%
final severe **incontinence rate** after successful closure: 2-3%

operations chief consultant 30-yr period: 1984-2013

	vvf	rvf	total
nigeria			
ebonyi	111	28	139
jigawa	27	4	31
kaduna	787	153	940
kano	5,864	1,156	7,020
katsina	10,605	2,031	12,636
kebbi	229	33	262
ogoja	14	3	17
sokoto	1,359	232	1,591
yobe	120	17	137
zamfara	202	19	221
rép niger			
maradi	157	13	170
niamey	103	12	115
tahoua	15	3	18
zinder	274	27	301
ethiopia			
addis ababa	27	20	47
yirgalem	5		5
gondar	6	1	7
kenya			
machakos	13	2	15
tanzania			
dar es salaam	51	7	58
mwanza	14	2	16
burkina faso	18	3	21
pakistan	2		2
germany	1	4	5
holland	6	2	8
total	**20,010**	**3,772**	**23,782**

obstetric fistula training 1989-2013

in sharp contrast with many things, if one wants to learn the **science and noble art of obstetric fistula surgery** this cannot be done in the USA but one has to come to Africa where the action is together with the real expertise in the hands and minds of the few dedicated fistula surgeons

though the majority of the trainees come from nigeria and other parts of africa, we have them also from usa, europe, asia and australia; so from all the 5 continents; however, for the last 2 years we stopped training people from outside Nigeria for security reasons

however, the training poses an enormous stress upon the trainers and the staff

for guidelines, the isofs guidelines of the global competency-based training manual have been used during our intensive training sessions

a grand total of 848 doctors, nurses/midwives, other highly educated persons and paramedical staff were trained/attended one of our training programs:

a total of **402 doctors**

a total of **375 nurses/midwives**

a total of **4 other academic persons**

a total of **7 medical students**

a total of **20 paramedical persons**

a total of **40 social workers**

the main question is what exactly do we want: ??quality or quantity??

we are in a continuous process of updating our training materials in order to improve the theoretic knowledge of the trainees

we would like to concentrate upon training of trainers, consultants/specialists who have performed already some 400 repairs

learning a trick which is how we all start is not sufficient since it is solid understanding of the anatomy and physiology of the pelvis, pelvis floor, urine/stool (in)continence mechanism, and the principles of surgery, septic surgery and reconstructive surgery combined with compassion

babbar ruga national fistula teaching hospital was **accredited** by **isofs/figo** in 2012 as an international obstetric fistula training center

though we cooperate with many organizations, this does not give them the right to claim **our** training as their own

training curriculum for doctors

on

(surgical) management of vesicovaginal and rectovaginal fistulas

interview

- personal introduction
- professional evaluation of the trainee
- purpose of training
- terms of training
- **isofs-figo-rcog** training manual
- handing out teaching materials
- logbook

introduction

- definitions and terminology
- mechanism of action
- combination vvf/rvf
- medical consequences
- social consequences
- incidence
- prevalence
- public health problem
- history/literature review

anatomy of female pelvis

- bones
- pelvic floor anatomy
- arcus tendineus fasciae
- pubocervical fascia
- arcus tendineus of levator ani muscle
- levator ani muscle
    - pubococcygeus muscle; puborectalis muscle
    - iliococcygeus muscle
    - (ischio)coccygeus muscle
- internal obturator muscle
- piriformis muscle
- sacrotuberal ligaments
- sacrospinous ligaments
- sacrouterine ligaments
- greater sciatic foramen
- lesser sciatic foramen
- blood supply
- innervation

physiology of pelvis floor structures

as based on the functional anatomy
function of levator ani muscles
pelvis floor muscles exercises

urine continence mechanism in the female

whole urethra + bladder neck over 4-5 cm
anatomy of urethra
crucial role of pubocervical fascia as stabilizing factor

stool continence mechanism in the female

internal sphincter: anorectum 4-5 cm
external sphincter: sphincter ani
perineal body as stabilizing factor

causes of vvf/rvf

obstetric	pressure necrosis + (surgical) trauma during labor
traumatic	surgery or other
chemical	
infectious	
cancer	
radiation	
congenital	

complex trauma of the obstetric fistula

intravaginal lesions due to pressure necrosis
vulva lesions due to pressure necrosis
local extravaginal lesions due to immobilization or neurologic trauma
neurologic lesions due to intrapelvic compression
neurologic lesions due to eclampsia
systemic lesions due to enormous trauma of prolonged obstructed labor
systemic lesions due to blood loss
lesions due to continuous urine leakage
lesions due to restriction of oral fluid intake
sex/condition of infant born

classification

according to location	most important
according to size	additional

consequences of classification

operation technic principles
healing as to closure
healing as to continence

history taking

parity
how many alive
duration of leakage
onset of leakage
home/hospital delivery
sex/condition of infant
menstruation
social status
yankan gishiri
eclampsia

clinical examination

general health status: nutrition, anemia
vaginal examination **without** anesthesia
anal reflex
if negative check for saddle anesthesia
peroneal nerve trauma: grading of drop foot 0-5
accessibility
vagina stenosis
urine dermatitis
bedsores
atonic bladder
peliminary classification
can you handle it or not
if you are not sure, **refer patient to somebody more experienced**

surgical classification with regards to operation technic needed

based on anatomic/physiologic location
type I
type IIAa
type IIAb
type IIBa
type IIBb
type III

laboratory investigation

hemoglobin and serum creatinine, if possible

x-ray investigation

none

examination under anesthesia (eua) as separate procedure

utterly nonsense; only a **money maker** for people who cannot handle vvf

immediate management of fresh obstetric fistulas

- catheter
- debridement
- cleaning
- early closure
- hematinics
- high-protein diet
- immediate mobilization

preoperative preparation

- high-protein diet
- hematinics
- personal hygiene
- enema
- shaving

equipment/instruments/materials

- operating table
- normal vaginal instruments
- special instruments: sharply curved scissors, aneurysm needle
- polyglycolic acid
- nonabsorbable sutures
- needles

anesthesia

- spinal anesthesia
- long acting, bupivacaine 0.5%
- level of spinal tab: normal, low, high
- sitting position
- head flexed anteriorly/thorax always elevated
- major complications
- minor complications
- blood pressure before/during/after operation

position on operating table

- exaggerated lithotomy position
- **never** knee-elbow position
- leg holders and shoulder support

manpower

- surgeon
- instrumentating theater nurse
- **no** assistant(s): the vagina is a one-man place!
- assistants are restricting the surgeon in maneuvering his instruments

route of operation

exclusively the vagina

nb abdominal approach: skin, subcutis, fascia, muscles, fascia, peritoneum, abdomen, peritoneum, bladder and then one is in the vagina; so **why** do not start there immediately?? what a trauma/waste of energy!

accessibility

suturing labia minora to inner thighs
episiotomies if necessary
weighted AUVARD speculum
no retractors: one instrument inside the vagina is already a crowd! and more are hindering the surgeon in maneuvering his instruments

assessment on operating table under anesthesia

pelvis: pubic arch, AP diameter, generalized contraction etc
size of fistula in cm
location of fistula: midline, right, left
distance from external urethra opening to fistula in cm
distance from fistula to cervix/vagina vault in cm
circumferential defect: yes/no
scar tissue, texture, mobility
definite classification
make up your mind what to do exactly
make yourself comfortable/check everything before you start operating

operation technic

check for ureters
incision
sharp minimal dissection/mobilization
bladder/urethra closure: transverse/longitudinal
static bladder capacity
FOLEY catheter and fixation
urethra length
elevation of bladder neck
vagina wall adaptation
episiotomy closure
no routine vagina pack
check urine flow
check blood pressure
detailed operation report

postoperative care

check for vital signs for 4-6 hr
high (oral) fluid intake
feeding as soon as patient feels like it

if history of eclampsia 10 mg valium (diazepam) im on operation afternoon
regular check of catheter
immediate mobilization
urine output:colorless like clear water
no routine use of antibiotics
antibiotics only on indication: generalized sepsis, pneumonia
hematinics
personal hygiene + health education
careful remove of eventual pack day after operation

surgical aftercare

removal of episiotomy sutures after 7 days
indwelling catheter for at least 2 wk
if necessary (early closure) 4 wk resp. (atonic bladder) 6 wk
catheter removal in operation theater 2-4-6 wk later
high oral fluid intake and frequent passing of urine
removal of nonabsorbable vagina suture 1 wk after catheter removal
ask for leaking, incontinence and spontaneous miction
check for healing, elevation and stress/urge incontinence
bladder drill for incontinence

postoperative check-ups

regularly up to 6 mth
no sexual intercourse during this period
continue drinking and frequent passing of urine
ask for leaking, incontinence and spontaneous miction
check for healing, elevation and stress/urge incontinence
if in doubt, dye test
the dye no lie

patient counselling

to come back at subsequent pregnancies at 3 mth amenorrhea
to attend antenatal care regularly
fersolate and folic acid
to deliver in hospital by **elective** cesarean section
patient card with written instructions + operation report

documentation

extremely important for monitoring program
history
detailed operation report
check-ups
evaluation reports

prevention

no relation to tribe, religion, culture, early marriage or anything else, except for **early intervention by cesarean section (cs) within 3 hours**

only by establishing a **functioning network** of **125,000 obstetric units throughout Africa** where **emergency cesarean section** can be performed **within 3 hours** of **labor becoming obstructed**

detection of problem patients at **antenatal care** (pelvic assessment); then hospital delivery

identifying problems by **partogram**; then **early referral for cs**

the emphasis is placed on **how to manage vvf/rvf under african conditions**.

having finished this course the candidate must have ample understanding of the complex trauma of the obstetric fistula, the obstetric fistula as a major public health problem, as well as (s)he must be able to decide which fistulas (s)he can handle with confidence and which not

certificate only certificate of attendance will be issued

first edition december 1996

last edition december 2013

documentation 1984-2013

the strength of the project is the rare complete systematic meticulous documentation

introduction
documentation has been, is and will be the basis of auditing any action, process and project; the better and more complete the documentation the more sensible the con clusions; evidence-based medicine is not possible without proper in detail consecutive documentation
it means collecting data, putting them in the right order and then write everything down in a more or less logical and readable way
however, it is time consuming and takes self-discipline and stamina; as well one commits oneself for anybody to see and evaluate

documentation
the strength of the project is the complete systematic meticulous documentation by over 23,750 individual computerized comprehensive reports of history, findings, operation procedures, prediction of outcome as to healing and continence and evidence-based results of each patient (from the very first to the last in a consecutive way) combined with prospective studies; as well the findings are documented by schematic drawings and some 150,000 full-color slides and full-color digital photos and the different operation techniques by some 80-100 hours of full-color analogous/digital videotapes; from each report we make 2 hard copies
the documentation is time consuming and takes stamina but without documentation there is no feedback and no proof

evidence-based results
the patient gets her own card in a plastic map with date and operation report which she presents any time she comes for follow-up; at any postoperative follow-up, normally 5x from 2 wk up to 6 mth but even years later, the findings are written down on the hard copy and later entered into the computerized report which contains up to 250 different parameters
from time to time an analysis is made of the evidence-based results to draw sensible conclusions about the operation techniques and the project as a whole

transparency and patient empowering
the operation report is enclosed with the patient's papers inside a plastic file; so any time she presents herself to any health center; the health personnel can see exactly what has been done and take appropriate action
all the health documents belong to the patient since she is the owner and responsible for her own health

pt 1 katsina cath 1

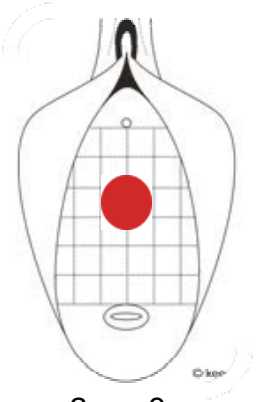
hskr (katsina) female 33 yr 18/08-85

diagnosis: PIX (4 alive), ± 3 cm 0 necrotic vesicovaginal fistula bladder neck, **leaking urine for 10 days** which started immediately following obstructed labor for 2 days, dead male infant, married 20 yr ago, still living with husband type **IIAa**
EUO/F 4 cm, F/C 5 cm

30/10-85 still leaking insp/ 0.3 cm 0 fistula FOLEY Ch 16

22.11.85 not leaking insp/ healed cath removed

23/11-85 not leaking at all, no incontinence, normal miction healed, no stress



3 cm 0

pt 591 katsina cath 591

haran (katsina) female 17 yr 17/11-97

diagnosis: PII (1 alive), necrotic ± 2 cm 0 urethrovesicovaginal fistula **IIAa** midline/R, **leaking urine for 30 days** which started immediately following obstructed last labor for 3 days, in hospital SB female, married 4 yr ago post(men arche 1 mth earlier), not living at husband, no menstruation, drop foot R (grade 2-3) and L (grade 3), no RVF, no yankan gishiri; normal pubic arch EUO/F 2 cm, F/C 5 cm 142.0 cm

17/11-97 FOLEY Ch 18; free urine flow, EUO/BW 10 cm, good elevation and EUO/B 2 cm
normal bladder capacity (longitudinal diameter 10-2 = 8 cm)
good position of UV-junction **against** middle third of symphysis

24.12.97 not leaking at all cath removed bladder drill
31.12.97 not leaking, no incontinence, normal miction
insp/ healed, good elevation, no stress incontinence
05.01.98 idem
13.04.98 not leaking at all, no incontinence, normal miction healed, no stress

second obstetric fistula completely ok until PVIII (5 alive) live female in hosp
23.11.09 0.2 cm 0 type IIAa foley ch 18 cath 1228
28.12.09 not leaking at all cath removed bladder drill
28.01.10 not leaking at all, no incontinence, normal miction healed, no sgtress

third obstetric fistula completely ok until PIX (6 alive) live male at home
22.10.11 operation: fascia repair + uvvf-repair vvf 8191
21.11.11 not leaking at all cath removed bladder drill
27.02.12 not leaking at all, no incontinence, normal miction
insp/ healed, good elevation, no stress incontinence
27.02.11 idem
07.05.11 not leaking at all, no incontinence, normal miction healed, no stress

2 cm 0

pt 1228 katsina cath 1228

second obstetric fistula cath 591

haran (katsina) female 29 yr 23.11.09

diagnosis: PVIII (5 alive), ± 0.2 cm 0 urethrovesicovaginal fistula type **IIAa** midline, **leaking urine for 12 days** which started immediately following obstructed last labor for 2 days, in hospital live female, married 16 yr ago post(menar che 1 mth earlier), still living with husband, no menstruation, no (h/o) drop foot R (grade 5) and L (grade 5), no RVF, no yankan gishiri, no eclamp sia; normal AP diameter/pubic arch 85°, AR pos
EUO/F 3 cm, F/C 3 cm 142.5 cm

23.11.09 FOLEY Ch 18; free urine flow, EUO/BW 12 cm, moderate anterior eleva tion, EUO/B 2 cm
normal bladder capacity (longitudinal diameter 12-2 = 10 cm)
acceptable position UV-junction **against** middle/caudad third symphysis
normal-width 2 cm good-quality urethra_euo in anatomic position

28.12.09 not leaking at all cath removed bladder drill

28.01.10 not leaking at all, no incontinence, normal miction
Insp/ healed, moderate elevation, no stress incontinence

third obstetric fistula completely ok until PIX (6 alive) live female at home

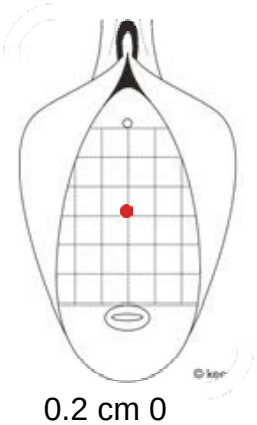
22.10.11 operation: fascia repair + uvvf-repair **vvf 8191**

21.11.11 not leaking at all cath removed bladder drill

06.12.11 not leaking at all, no incontinence, normal miction
insp/ healed, good elevation, no stress incontinence

27.02.12 idem

07.05.12 not leaking at all, no incontinence, normal miction healed, no stress



0.2 cm 0

pt 6440 katsina vvf 8191

third obstetric fistula cath 591

anterior trauma (large pcf defect) cath 1228

haran (katsina) female 31 yr 22.10.11

surgeon: kees waaldijk

assistant: kabir lawal

diagnosis: PIX (6 alive), ± 0.2 cm 0 urethrovesicovaginal fistula type **IIAa** midline within 5x1 cm transverse pcf defect, leaking urine for 3 mth which started immediately following obstructed last labor for 1 day, at home live male, married 18 yr ago post(menarche 1 mth earlier), still living with husband, no menstruation, drop foot R (grade 5) and L (grade 4-5), no rvf, no yankan gishiri, no eclampsia; ap diameter/pubic arch 85°, ar pos, cervix fixed onto i spine R
euo/f 2.5 cm, f/c 4 cm, i/v 12 cm 142.5 cm

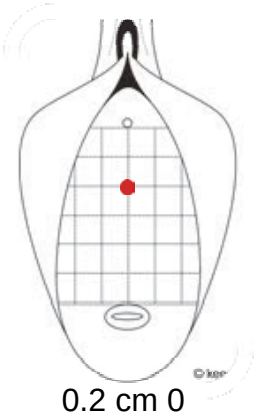
operation: transverse pc fascia repair/fixation + uvvf-repair **reconstructive surgery**

duration: 20 min healing 95% continence 95%

anesthesia: spinal L4/L5 with 3 ml bupivacaine 0.5%

transverse incision thru/at fistula/pcfascia defect, sharp dissection, tension-free trans verse pc fascia repair/fixation with transverse bladder/urethra closure by single layer of inverting serafit, **no** urine thru suture line/euo on rest/cough/pressure, triple fixation of foley ch 18, transverse avw adaptation by 2x everting seralon, check on hemostasis; free urine flow, euo/bw 12 cm, good anterior elevation, euo/b 1.8 cm
normal bladder capacity (longitudinal diameter 12-1.8 = 10 cm)
poor position of uv-junction **against** caudad third of symphysis
normal-width 2 cm good-quality urethra_euo in anatomic position

21.11.11	not leaking at all	cath removed	bladder drill
06.12.11	not leaking at all, no incontinence, normal miction		so
	insp/ healed, good elevation, no stress incontinence		
27.02	idem		
07.05.12	not leaking at all, no incontinence, normal miction		healed, no stress


0.2 cm 0

	RR
preanesthesia:	140/90 mm Hg
5':	140/80
10':	130/80
postoperation:	130/80

assessment at end of operation whether
urethra is pressed against the symphysis or not
in prospective study about continence to evaluate the effect of graft

fmgkd (kano) female 16 yr 29/01-90

surgeon: Kees WAALDIJK

assistant: Mairo ALIYU

diagnosis: PI, ± 1 cm 0 vesicovaginal fistula midline bladder neck **IIAa**, leaking urine for 2 yr which started 14 days following obstructed labor for 1 day, in hospital live female which died same day, married 3 yr ago pre(menarche 2 mth later), still living with husband, normal menstruation, no h/o drop foot, operated 1x
EUO/F 5 cm, F/C 6 cm

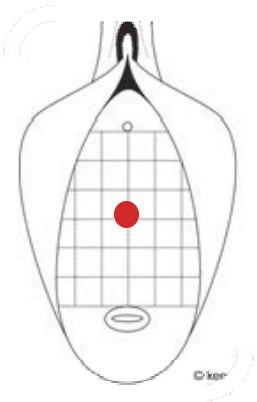
operation: VVF-repair

duration: 30 min

anesthesia: spinal L3/L4 with 4 ml bupivacaine 0.5%

incision at fistula edge with bilateral transverse extensions, sharp dissection of avw from bladder/urethra, scar tissue ++, FOLEY Ch 16, completely tension-free transverse bladder closure with a single layer of inverting chromic catgut 00, check by 20 ml gv, transverse avw closure with interrupted everting chromic catgut 1/5, vagina pack; free urine flow

11.02.90 not leaking at all cath removed bladder drill
12.02.90 not leaking at all, no incontinence, normal miction
insp/ healed, good elevation, no stress incontinence
19.02 + 05.03.90 idem
02.04.90 not leaking at all, no incontinence, normal miction healed, no stress



1 cm 0

RR
preanesthesia: 130/80 mm Hg
5": 120/70
10": 120/70
15": 120/70
postoperation: 110/60

pt 3904 kano vvf 4696

iatrogenic

hisk (kano city) female 16 yr 21.11.11

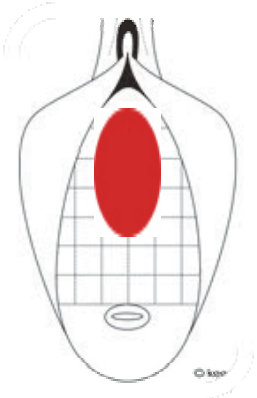
surgeon: kees waaldijk
assistant: binta musa

diagnosis: PII (1 alive), ± 5x2 cm urethrovesicovaginal fistula type **IIBa**, leaking urine for 6 mth which started immediately following yankan gishiri by wanzami bco refusing sex with husband when 4 mth pregnant, native medicine, married 2 yr ago post(menarche 1 yr earlier), still living with husband, no menstruation (delivered 27 days ago live female in mmash after 2 days), no drop foot R (grade 5) and L (grade 5), no rvf; normal ap diameter/wide pubic arch 90°, ar pos, cervix mobile
lying/roped so she could not move/aska/tissue removed (-ectomy)
euo/f 0 cm, f/c 3 cm, i/v 12 cm 158 cm

operation: continent urethra/fascia/avw reconstruction
duration: 45 min healing 95% continence 90%
anesthesia: spinal L4/L5 with 3 ml bupivacaine 0.5%

small epi L, bilateral ureter catheterization for 20 cm, wide H incision around fistula, sharp dissection, sharp mobilization of (para)urethra tissue, tension-free longitudinal urethra reconstruction over 4 cm with repositioning of retracted uv-junction by single layer of inverting interrupted serafit, bilateral fixation of pc fascia onto paraurethra_euo atf/symphysis by 2x serafit each side, euo/b 2.2 cm, **no** urine thru suture line/euo on rest/cough/pressure, triple fixation of foley ch 18, avw reconstruction by avw advance ment flap by 4-point fixation onto paraurethra atf/symphysis by everting seralon, check on hemostasis; free urine flow, euo/bw 12 cm, good anterior elevation, euo/b 2.2 cm normal bladder capacity (longitudinal diameter 12-2.2 = 10 cm) epi closure good position uv-junction **against** middle third symphysis
normal-width 2.2 cm medium-quality urethra_euo in anatomic position

18.12.11 not leaking at all cath removed bladder drill
25.12.11 not leaking at all, no incontinence, normal miction so Insp/ healed, good elevation, no stress
19.02.12 not leaking, incontinence +, normal miction healed, stress +
24.05.12 operation: urethralization vvf 4702
05.07 + 23.10.12 not leaking at all, no incontinence, normal miction healed, no stress


5x2 cm

RR
preanesthesia: 120/70 mm Hg
5': 120/70
10': 120/70
postoperation: 120/70

pt 2 katsina rvf 2
vvf

dbdm (katsina) female 15 yr 21/05-84

surgeon: kees waaldijk

assistant: dr rao

diagnosis: PI (0 alive), ± 2 cm 0 proximal rectovaginal fistula, vesicovaginal fistula, leaking urine/passing stools pv for 14 mth which started immediately following obstructed labor for 2 days, SB male, married 2 yr ago (menarche), not living with husband; mental retardation
I/F 8 cm, F/C 2 cm type **Ia**

operation: RVF-repair

duration: 50 min

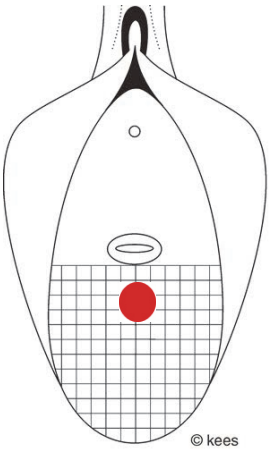
anesthesia: spinal L3/L4 with 2 ml lignocaine 5%

incision at 0.5 cm from fistula edge, sharp dissection/mobilization, tension-free transverse rectum closure by double layer of inverting chromic catgut 00, the first purse string and the second continuous, transverse pvw closure by everting dexon 1, sphincter ani dilatation, pack

04/06-84 no stools_flatus pv, normal defecation insp/ completely healed

24/04-86 operation: uvvf_urethra_ff graft R rvf healed vvf 363

14/07-86 not leaking, incontinence ±, normal miction stools ok
insp/ **both** healed, stress incontinence ±



2 cm

	RR
preanesthesia:	130/80 mm Hg
5':	130/80
10':	125/75
postoperation:	125/80

pt 864 katsina rvf 1101
cut-thru trauma cath 1508

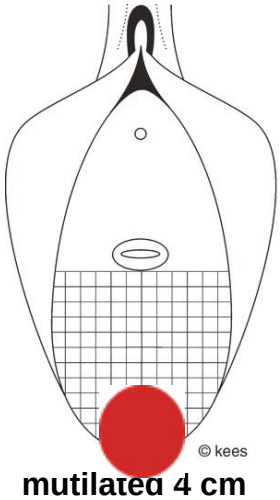
ssdm (katsina) female 23 yr 26.05.13

surgeon: kees waaldijk
assistant: kabir lawal

diagnosis: PIII (2 alive), **mutilated** sphincter ani rupture with 4 cm longitudinal ano rectum trauma, stool_flatus incontinence for 8 yr that started immediately following obstructed first labor for 2 days, in hospital sb female, married 10 yr ago post(menarche 2 mth earlier), not living with husband, still menstruation, drop foot R (grade 4) and L (grade 4), no yankan gishiri, no h/o eclampsia; normal ap diameter/wide pubic arch 100°, ar pos, immedi ate suturing and 1x repair resulting in **tissue loss/mutilation**
s end R at 9 hr and L at 3 hr
a/f 0 cm, i/v 14 cm 152.0 cm

operation: anorectum + sphincter ani + perineal body reconstruction
duration: 20 min healing 85% continence 90%
anesthesia: spinal L4/L5 with 3 ml bupivacaine 0.5%

deep dissecting incision at pvw edge with freshening of sphincter ani ends, **no** further dissection, longitudinal anorectum closure with adaptation_rhaphy of internal sphincter over 5 cm up to anocutaneous junction (with repositioning of anterior anus) by double layer of inverting interrupted/continuous serafit, inner ring of external sphincter adapted, end-to-end sphincter ani reconstruction by 3x serafit, perineal body repair with (in)direct re-union of transversus perinei muscles and (in)direct posterior re-union of bulbocaver nosus muscles by 3x serafit starting para-anally, perineum well adapted with anus in anatomic position, check on hemostasis
foley ch 18; free urine flow, euo/bw 10 cm, moderate elevation, euo/b 2 cm
25.06.13 stools/flatus ok, not leaking at all
09.07.13 stools/flatus ok, full continence, not leaking at all
insp/ **all** healed, good elevation, no stress incontinence
17.09.13 idem
19.11.13 stool/flatus ok, full continence, not leaking at all **all** healed, no stress



mutilated 4 cm

RR
preanesthesia: 160/110 mm Hg
5': 140/100
10': 140/90
postoperation: 130/80

pt 6790 katsina vvf 8606

iatrogenic by wanzami with medical licence

hmj (katsina female 42 yr 28.05.13

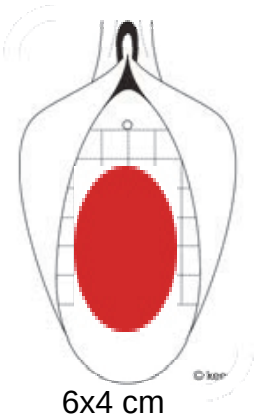
surgeon: kees waaldijk
assistant: kabir lawal

diagnosis: PV (3 alive), **mutilated** ± 6x4 cm longitudinal urethrovesicovaginal fistula type **IIAa** with bladder mucosa prolapse, **leaking urine for 42 days** which started immediately following operation in hospital by doctor bco prolapse married 30 yr ago pre(menarche 1 yr later), still living with husband, still menstruation though cx not identified, foot drop R (grade 5) and L (grade 5), no rvf; normal ap diameter/**wide** pubic arch 100°, ar pos, cervix not identified, median longitudinal 6x4 cm pc fascia defect
never leaking urine with prolapse **extensive -ectomy**
euo/f 2 cm, f/v 0 cm, i/v 5 cm 152.5 cm

operation: longitudinal fascia repair with uvvf-repair
duration: 25 min healing 95% continence 90%
anesthesia: spinal L4/L5 with 3 ml bupivacaine 0.5%

small epi L, ureters **not** identified within inflamed bladder mucosa prolapse, incision at fistula edge, **minimal** sharp dissection, tension-free longitudinal fascia repair with bladder_urethra closure by single layer of inverting serafit, **no** urine thru suture line/euo on rest/cough/pressure, foley ch 18, longitudinal avw adaptation by 2x everting seralon, check on hemostasis, skin closure; free urine flow, euo/bw 10 cm, good anterior eleva tion, euo/b 1.9 cm
normal bladder capacity (longitudinal diameter 10-1.9 = 8 cm)
acceptable position of uv-junction against middle/caudad third of symphysis
normal-width 2 cm good–quality urethra_euo in anatomic position

26.06.13 not leaking at all cath removed bladder drill
07.07.13 not leaking at all, no incontinence, normal miction
insp/ healed, good elevation, no stress incontinence
02.09 + 26.10.13 idem
16.12.13 not leaking at all, no incontinence, normal miction healed, no stress


6x4 cm

RR
preanesthesia: 110/80 mm Hg
5': 110/80
10': 110/80
postoperation: 110/80

pt 6401 katsina vvf 8401/8134

congenital; now good-quality pc fascia; not responding to bladder drill

<u>final assessment of possibilities</u>

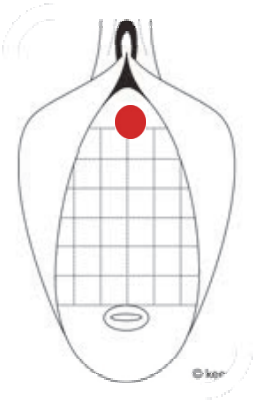
not bedwetting since objective intrinsic incontinence/leaking during daytime

fmm (katsina) female 16 yr 29.07.12

surgeon: kees waaldijk
assistant: kabir lawal
diagnosis: P0, still total **"genuine"** urine intrinsic_stress incontinence grade III after urethralization 14.7.11, leaking urine whilst lying/sitting/standing/walking + spontaneous miction for 16 yr since she was born, **never** married, nor mal menstruation; normal ap diameter/pubic arch 85°, ar pos, no flatus_ stool incontinence, **no longer** cystocele or 2° cervix pro euo/c 6 cm no s/o spina bifida normal-width urethra_euo slightly post pulled inside euo/bw 12 cm, poor elevation, euo/b 1.7 cm, i/v 11 cm165 cm
operation: para-euo pc fascia fixation **last resort final**
duration: 25 min healing 95% continence 75%
anesthesia: spinal L4/L5 with 3 ml bupivacaine 0.5%

dye/ **no** leakage, **no** clear urine urine level in accord with respiration small epi L physiologicincision at 2 cm from euo parallel/within ruga folds, sharp dissection, now good-quality intact fascia plate, bilateral fixation of pc fascia onto para-euo atf by 1x serafit each side with normalization of urethra_euo, now euo/b 2.3 cm, **no** urine thru euo on rest/cough/pressure, triple fixation of foley ch 18, transverse avw daptation by 2x everting seralon, check on hemostasis, epi closure; free urine flow, euo/bw 12 cm, good elastic anterior elevation, euo/b 2.3 cm
normal bladder capacity (longitudinal diameter 12-2.3 = 9.5 cm)
goode position uv-junction **against** middle third symphysis
good-quality fascia plate good-quality pcm pat needs **proper counseling/instruction**
normal-width 2.5 cm good-quality urethra_euo in anatomic position
nothing has been done against anatomy/physiology **wait for physiologic stress**

27.08.12 not leaking at all cath removed bladder drill
04.09.12 not leaking at all, no incontinence, normal miction so insp/ healed, good elevation, no stress
14.10.12 not leaking at all, no incontinence, normal miction healed, no stress



RR
preanesthesia: 120/70 mm Hg
5': 120/70
10': 120/70
postoperation: 120/70

pt 6735 katsina vvf 8544

span too wide; anterior/posterior trauma

hsmb (katsina) female 70 yr 24.02.13

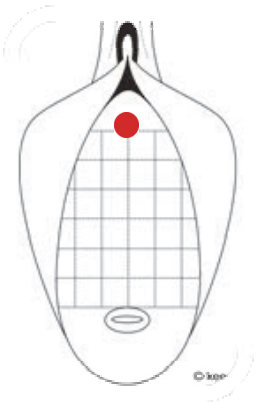
surgeon: kees waaldijk
assistant: kabir lawal

diagnosis: PX (7 alive), cystocele_3° cervix prolapse_rectocele without genuine stress incontinence, something coming out of vagina for 30 yr that started spontaneously following last labor for 1 day, at home live female, married 58 yr ago pre(menarche 1 yr later), still living with husband, menopause 25 yr ago, drop foot R (grade 5) and L (grade 5), no vvf/rvf, yankan gishiri no, no h/o eclampsia; normal ap diameter/**wide** pubic arch 100°, ar pos, large decubitus ulcer posterior cervix
euo/c 7 cm **never** leaking urine normal-width urethra_euo in anat pos
no objective stress incontinence (also not after reduction)
euo/bw 17 cm, poor elevation, euo/b 1.4 cm 156.0 cm

operation: cervix suspension at L
duration: 10 min healing 95% continence 95%
anesthesia: spinal L4/L5 with 3 ml bupivacaine 0.5%

small avw/ruga fold incision L with transverse extension up to cervix, sharp dissection to create wound area/surface, paravesical space free, fixation of cervix (with adherent pc fascia) onto L superior pubic bone/pc_ilc_iom/atf/atl by 2x seralon, euo/b cm, **no** urine thru euo on rest/cough/pressure, foley ch 18, check on hemostasis; free clear urine flow, euo/bw 17 cm, good elastic anterior elevation at L, rotational descent at R, euo/b 2.8 cm (**re-urethralization**) good cervix fixation
increased bladder capacity (longitudinal diameter 17-2.8 = 14 cm)
good position of uv-junction against middle third of symphysis
normal-width 3 cm good-quality urethra_euo in anatomic position
no longer urethra caruncle

26.03.13 no prolapse, not leaking at all
31.03.13 no prolapse, not leaking at all, no incontinence, normal miction
insp/ cx properly fixed, healed, good elevation, no stress incontinence
03.05 + 15.08.13 idem
06.12.13 no prolapse, not leaking at all cx properly fixed, no stress



RR
preanesthesia: 160/90 mm Hg
5': 150/90
10': 140/90
postoperation: 140/80

pt 6706 katsina vvf 8512

span too wide; anterior + posterior trauma
pubic arch by stainless steel angle measure instrument

msks (rép niger) female 28 yr 08.02.13

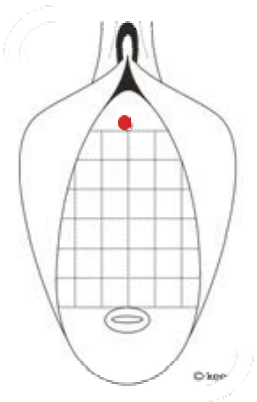
surgeon: kees waaldijk
assistant: kabir lawal

diagnosis: PVII (5 alive), cystocele_3° cervix prolapse_rectocele without genuine stress incontinence, something coming out of vagina for 2 yr that started spontaneously following last labor for 1 day, in hospital live male, married 15 yr ago post(menarche 5 mth earlier), still living with husband, still men struation, no h/o drop foot R (grade 5) and L (grade 5), no vvf/rvf, yankan gishiri no, eclampsia no; normal ap diameter/**wide** pubic arch 105°, ar pos, decubitus ulcer/erosion small cervix she wants more children
longitudinal median defect with bladder herniation
euo/c 10 cm **never** leaking urine **narrow** urethra_euo in anat pos
no objective stress incontinence (also not after reduction)
euo/bw 17 cm, poor elevation, euo/b 1.0 cm 158.0 cm

operation: cervix suspension at L
duration: 15 min healing 95% continence 95%
anesthesia: spinal L4/L5 with 3 ml bupivacaine 0.5%

small avw incision avw ruga fold with transverse extension up to cervix, sharp dissection to create wound area/surface, paravesical space free, fixation of cervix (with adherent pc fascia) to L superior pubic bone/pc_ilc_iom/atf/atl by 2x seralon, euo/b cm, **no** urine thru euo on rest/cough/pressure, foley ch 18, check on hemostasis; free clear urine flow, euo/bw cm, good elastic anterior elevation at L, slight rotational descent at R, euo/b 2.5 cm (**re-urethralization**) good cervix fixation
increased bladder capacity (longitudinal diameter 17-2.5 = 14.5 cm)
good position of uv-junction against middle third of symphysis
normal-width 2.5 cm good–quality urethra_euo in anatomic position

04.03.13 no prolapse, not leaking cath removed bladder drill
08.03.13 no prolapse, not leaking at all, normal miction
insp/ cx properly fixed, no stress
10.06.13 idem
02.09.13 no prolapse, not leaking at all cx properly fixed, no stress



RR
preanesthesia: 120/70 mm Hg
5': 110/70
10': 110/60
postoperation: 110/60

thirty years of fistula research 1984-2013

research
this is a continuous process, first in a retrospective way resulting in a PhD thesis at the University of Utrecht in 1989 when already a classification, clinical data, hyponatremia due to high oral intake, male:female sex rate of (stillborn) infants of 2:1 etc etc were presented; but later on, only in a **prospective evidence-based** way

only by clinical research we came far and found **scientific, theoretic and practical** solutions for each and every problem encountered resulting in a long list:

minimum surgery; immediate active management by catheter and/or early closure; ?why become an outcast by passive laissez-fair?; preoperative high oral fluid intake; no routine antibiotics; spinal anesthesia; the vagina as route of choice; exaggerated lithotomy position; good access by episiotomy(ies); scientific classification of VVF; scientific classification of RVF; one-layer bladder closure, water-tight; no MARTIUS fibrofatty pad graft; two-layer rectum closure, air-tight; half-open adaptation of anterior and/or posterior vagina wall; circumferential repair by end-to-end vesicourethrostomy of type IIAb fistulas; continent urethra reconstruction; a variety of rotation/advancement flaps; end-to-end adaptation of sphincter ani rupture; postoperative high oral fluid intake; vaginoplasty in vagina atresia; bladder drill as conservative treatment of stress incontinence; urethralization and fasciocolposuspension in severe total (postrepair) stress incontinence; meticulous repair of endopelvic fascia to reduce postoperative stress incontinence; indwelling bladder catheterization of postpartum atonic bladder; immediate mobilization; a bit of salt in the preoperative fluids to prevent hyponatremia; active mobilization to prevent contractures in foot drop etc etc

export of insight and techniques to the industrialized world
it is high time for our insight and **state-of-the-art** techniques to be exported to the industrialized world: physiologic vagina incisions, stress incontinence, sphincter ani rupture, total 3° cervix prolapse, live functional pelvis floor anatomy/physiology etc

early marriage/childbirth
has **nothing** to do with **the obstetric fistula**, only with **obstetric care**; do **not use** the **wrong** argument for the **right** cause

hypocrisy
if **one cannot prevent early childbirth in his own country** (480,000 in the US in 2002, without a single fistula) do not come to Africa telling people there what to do; first **stay at home and clean up your own mess**

1984 right from the start applying the **proven principles of general surgery, trauma surgery, reconstructive surgery and septic surgery using common sense as the main guide**
actually, when the author started **no** surgical textbooks or guidelines were available so he had to find out for himself in an isolated situation under primitive conditions

1984 right from the start **high oral fluid intake** pre- and postoperatively

1984 right from the start **active mobilization** of all patients immediately upon arrival pre- and post-operatively; besides the fact that this is according to **sound** surgical principles; it is also the best prevention of hip, knee and ankle contractures and as such in the optimum interest of the patient

1984 right from the start **immediate postoperative mobilization** of patient; by the latest the morning after surgery

1984 right from the start individual **systematic operation reports** with the relevant information in order to evaluate the results against what has been done; at each follow-up check the results as to closure/continence etc etc are again systematically documented in these operation report

1984 right from the start **exclusively vaginal approach** for vvf and rvf; the author does not understand the rationale to open skin, subcutis, fascia, muscle, fascia and then either anterior bladder wall or peritoneum and again peritoneum or bladder to operate inside the vagina via an abdominal transperitoneal or transvesical approach when the fistula is right there inside the vagina

1984 right from the start **spinal anesthesia** has been used which proved to be simple, safe (even in the exaggerated lithotomy position), highly effective and cheap

1984 till today continuous clinical research into the **mechanism of urine (in)continence** in the female in order to prevent and to treat (postrepair) incontinence; this was **solved with consequences for genuine intrinsic_stress incontinence** with excellent evidence-based results in over 1,000 patients in the latter group

1984 till today continuous clinical and surgical research in the **mechanism of stool (in)continence** in the female in order to treat fresh, old and failed sphincter ani ruptu res; this was **solved with consequences for the surgical reconstruction of stool/ flatus incontinence in sphincter ani rupture**, a world-wide problem, with excellent evidence-based results in over 800 patients

1984 april circumferential defect
vvf katsina 00018

1984 august: start with bilateral fixation of bladder (+ pubocervical fascia) onto atf/ symphysis; however, the insight was missing at that time
vvf katsina 00062

1984 august: unreliability of checking with a dye for closure with catheter in situ at 14 days postoperatively bco of catheter-induced urge
vvf katsina 00063

1984 august: start with closure/fixation of fistula angles from laterally towards midline
vvf katsina 00067

1984 september: first **early closure**
vvf katsina 00072

1984 september: successful repair whilst pregnant: almost no blood loss contrary to what most people (verbal surgeons) think

vvf katsina 00074

1984 research into **yankan gishiri** resulting into presentation about 577 patients

1985 systematic issuing cards to patients with full details of history, (date of) operation and recommendations for them to carry wherever they go and to show whenever they need medical but especially obstetric care; it is the philosophy that the **patient is the owner of all her medical/surgical data**

1985 january: small fistula + scarring

vvf katsina 00087

1985 february: systematic **one-layer bladder closure**

vvf katsina 00090

1985 february: systematic bilateral fixation of martius fibrofatty graft onto pubic bones /arcus tendineus fasciae in order to prevent postrepair incontinence

vvf katsina 00101

1985 march: first **circumferential repair** of circumferential fistula

vvf katsina 00116

1985 may: using pubococcygeus muscles graft/sling in postrepair incontinence surgery in order to elevate bladder neck/uv-junction/urethra against symphysis; used several times; however, not further developed since it is a non-physiologic procedure

vvf katsina 00174 after successful closure **00025**

1985 july: posterior vagina wall reconstruction by skin rotation flap from buttocks

vvf katsina 00197

1985 october: systematic spinal anesthesia with bupivacaine 0.5%

vvf katsina 00223

1985 october: avw reconstruction by skin/mucosa flap from labia

vvf katsina 00232/00075

1985 november: systematic photographic documentation

vvf katsina 00258

1985 december: peritonization of repair

vvf katsina 00269/00156/00161

1986 bladder fixation as **first stage** in **IIBb** fistulas; this turned out to be the optimum approach for these extensive fistulas; actually several patients became total continent by only bladder neck function and did not need **second stage** urethra reconstruction

vvf katsina vvf 00423

1986 is it **hyponatremia?** immediately postoperatively; actually the fitting is probably **eclamptic** due to rebound effect on blood pressure after spinal anesthesia

1986 circumferential defect in drawings

1987 new postoperative ward

1987 postmeasles noma vaginae with extensive type IIBa or IIBb fistula

1987 first **urethralization + pubocervical fascia fixation to arcus tendineus fasciae** for incontinence; however, its importance not understood at this time; years later this would become theoretically and practically the technique of choice

1987 postrepair incontinence healed completely by pregnancy

1987 start with **immediate catheter treatment**; conclusion now after **2,750** catheter treatments: if by **mass campaign** this regimen could be **implemented** that a FOLEY Ch 18 catheter is inserted immediately the moment the leaking of urine is manifest in **any woman affected** this would **cure at least 25%** of the patients and would have a **major impact** since it is **more than all the operations** of all fistula surgeons in the world combined; if implemented it will **cure a minimun of 25,000 women a year**

1987 minute fistula with intrinsic/stress incontinence; either the small fistula or the scarring acts like an **ectopic pacemaker for the bladder**

1988 prospective study role of martius fibrofatty graft in preventing incontinence

1988 bladder stone removal + repair in same session

1988 january disruption of rectum stricture in proximal type **Ib** fistulas
rvf katsina 0052

1988 systematic **prospective VVF classification: I, IIAa, IIAb, IIBa, IIBb and III**; so far it is the **only scientific classification** as based on qualitative and quantitative tissue loss of the closing/continence mechanism with **consequences** for **operation technique** and **prognosis** as to **healing and continence**; the longer the author uses this classification the more **valuable** it becomes in now over **23,000 operations**

1988 nonintentional vvf-repair during pregnancy; turned out to be almost bloodless and highly successful

1989 anterior vagina wall reconstruction by skin-mucosa rotation labia flap

1989 more extensive systematic history

1989 period between giving spinal anesthesia and operation begin reduced to 10 min

1989 fixation of avw (+ pubocervical fascia) in order to prevent incontinence

1989 introduction of fixation of **avw as hammock** in (postrepair) stress incontinence onto abdominal wall/pubic bones/pcm (explicitly described as such in **step-by-step surgery 1994**, p 87); however, later it turned out that the **hammock concept is not the right way** to describe the function of the pubocervical fascia/avw but that it is more appropriate to replace it by a **skin-drum-like diaphragm concept**

1989 PhD thesis **the (surgical) management of bladder fistula in 775 women in northern nigeria;** PhD degree in the obstetric fistula at University of Utrecht with peer review by 5 prominent professors from 3 different universities with general and specific objectives, epidemiologic base line data, preoperative preparation, spinal anesthesia, operation techniques, postoperative care, **evidence-based** results, vvf classification in **775 consecutive patients** with specific surgical recommendations and recommen dations from a public health viewpoint

scientific classification of fistulas
epidemiologic baseline data for the obstetric fistula
male:female ratio of 2:1 up till now mechanism not solved
yankan gishiri fistula
measles fistula
spinal anesthesia
catheter treatment
hyponatriemia incorrect concept
recommendation international society of reconstructive surgeons

1990 comprehensive **plan for a VVF-service for (Northern) Nigeria and (West) Africa)**; sent as proposal to who, undp, unfpa, large ngo's and several governments; however, **nobody interested** since it is not prevention but curative surgery

1990-92 phasing out of martius fibrofatty graft since it did not contribute to healing and to continence as **evidence-based conclusion** of a prospective study; actually, **all grafting** is a **non-physiologic** procedure and as such **inferior to restoring the functional anatomy**

1990 grading of **urine incontinence** as **grade I** only leaking urine on cough/standing up, **grade II** also leaking urine whilst standing/walking and **grade III** leaking almost continuously whilst lying/sitting/standing/walking with(out) spontaneous miction

1990 advancement/circumferential bladder fixation as first stage in **IIBb** fistulas

1990 systematic urethra length and position at operation end

1990 start of systematic **circumferential dissection** and **circumferential repair (end-to-end vesicourethrostomy)** of **circumferential fistulas**; this is the theoretical and practical solution of this type of fistulas: the philosophy is to reconstruct the functional anatomy so that normal physiology will be restored

1990 neourethra from anterior bladder wall in type **IIBb** fistulas; however, it did not function as expected in subsequent repairs

1990 technique for female epispadias: so far 10 patients treated who all became totally dry/continent

1990 foley catheter ch 18 as catheter of choice

1990 peritonization whilst avw left open since no avw left or everything fixed

1991 successful **vaginal ureter implantation** in ureter fistula type **III**

1991 systematic documentation of urethra length, elevation and bladder capacity

1992 first edition of the **obstetric fistula handout (manual) for trainees** which was continuously revised once or twice a year according to the latest insight/experience resulting in 25 editions

1992 height of patient; however, what has height to do with the obstetric fistula?

1992 first H incision, urethra reconstruction, pubocervical fascia + avw fixation in fistulas type **IIBa**; years later this would become the technique of choice

1992 bladder prolapse is bladder base prolapse and not bladder roof prolapse since anterior bladder wall fixed to symphysis/anterior abdominal wall

1992 transverse duplication of bladder neck in multiple small residual fistulas; actually it is transverse repair of pubocervical fascia defect

1992 systematic longitudinal bladder diameter in cm as indication of bladder capacity

1992 perforation anterior bladder wall to create urethra; successful on right indication

1992 circumferential repair for lungu-lungu fistulas

1992 systematic **immediate management by catheter and/or early closure**; the most important contribution to the obstetric fistula; **postponing** this management is **malpractice**

1992 small fistula + scar tissue; either the small fistula and/or the scarring functions like **ectopic pacemaker of the bladder resulting in intrinsic/urge incontinence**

1992 clinical and epidemiologic baseline data of 2,500 VVF/RVF patients with special emphasis on the obstetric fistula in cohorts of 100 consecutive patients; this has been published later on inside **obstetric fistula surgery; art and science 2008**, also to demonstrate the enormous variety between the cohorts

1992 stroke during delivery in teenage patients with long-standing symptoms/signs

1993 based upon a prospective study **no longer martius fibrofatty graft at all** since it does not contribute to closure and to continence; actually **all grafting** is a **non-physiologic** procedure

1993 systematic **V**oluntary **M**uscle **T**esting = VMT of peroneal nerve function

1993 avw advancement flap in type **IIBa** fistulas

1993 urachus fistula; only symptoms following cs

1993 ureters at fistula edge due to sliding bladder base prolapse; ureter os different fixation

1993 hypocalcemia during immediate postoperative period

1993 how early can an obstetric fistula be repaired

1994 systematic distance ab/au in cm in circumferential fistulas

1994 genuine intrinsic_stress incontinence as healing phase of atonic bladder

1994 textbook **step-by-step surgery of vesicovaginal fistulas** in which the surgical management is being described systematically for all the different types; also a technique for (post-repair) incontinence is described where the anterior vagina wall functions as **hammock** (explicitly described as such, p 87)

1994 leaking for 49 years and **six live children with fistula**

1995 fixed inversion/plantiflexion contracture both ankles due to **immobilization**

1995 systematic removal of ureter catheters at operation end

1995 longitudinal incision for lungu-lungu fistulas

1995 tunneling for urethra on indication

1995 total loss continence/closing mechanism but full continence after circumferential repair

1995 systematic grading of tissue quality in urethra reconstruction

1995 fistula + atonic bladder

1995 development of vagina stenosis

1996 written **training curriculum** for doctors and nurses in **the (surgical) management of the obstetric fistula**

1996 start of total 3° prolapse operation by cervix fixation

1996 mechanism of those specific fistulas after cs

1996 bilateral ureter prolapse in extensive fistula

1996 vesicocervicovaginal fistula after vaginal delivery following previous cs

1996 vesicocervicovaginal fistula without ever cs

1996 previous abdominal repair complicates further vaginal surgery for residual fistula and/or incontinence

1996 bladder defect far larger than avw defect

1997 leaking after yankan gishiri only after repair of obstetric fistula

1997 fistula at tip of ^ avw structure

1997 post-cs-delivery **deep vein thrombosis L leg**

1997 also traumatized bladder dome after obstructed labor ?how?

1997 yankan gishiri: **scarification/-tomy/-ectomy**

1997 open episiotomy + **objective** stool_flatus incontinence post partum

1998 **fourth obstetric fistula** in a row

1998 systematic anteroposterior diameter and pubic arch

1998 yankan gishiri 4x withouit leaking which started after 5th yankan gishiri

1998 ureters inside tissue bridge; due to **separate blood supply**

1998 if vesicalization of proximal urethra this will **urethralize** under physiologic stress

1998 bladder peritoneum will **epithelize** into vagina mucosa if there is no avw tissue left to cover the bladder

1998 pubic arch documented in degrees

1998 yankan gishiri documentation **lying or sitting or squatting/persons number/ wanzami or ungozoma/aska or razor/scratching or cutting or excision**

1999 long-standing atonic bladder

1999 specific postpartum incontinence grade III with specific urethra_euo trauma

1999 start using synthetic nonabsorbable suturing material seralon for avw

1999 fistula + total 3° cervix prolapse after delivery I

2000 systematic **prospective RVF classification: Ia**, **Ib**, **Ic**, **IIa**, **IIb** and **III**; hoever, though the surgical principles for each type could be established, there is no clear correlation with prognosis; except for the fact that the type **Ic** fistulas are the most complicated to repair and have the worst results

2000 only adaptation of avw according to principles of septic surgery; vagina is **never** sterile

2000 start bilateral fixation pc fascia onto paraurethral arcus tendineus fasciae

2000 start using polyglycolic acid sutures for bladder closure

2000 start systematic **urethralization + dynamic fasciocolposuspension** for post **IIAa** and **IIBa** repair incontinence and for genuine intrinsic_stress incontinence; highly successful; first procedure already in **1987**; over 90% successful

2000 start systematic **urethralization + static fasciocolposuspension** for post **IIAb** and **IIBb** repair incontinence; only 50% successful

2000 uv-stricture + minute fistula or minute fistula + uv-stricture; therefore in dealing with the uv-stricture it is a must to perform a dye test to confirm or exclude fistula

2000 metromenorrhea due to blocked cervix os

2001 free fascia lata sling in urethra reconstruction; not functioning

2001 first continent urethra reconstruction; new technique; functioning very well

2001 open suprapubic cystostomy in complicated repeat repairs

2001 stab incision to increase proximal urethra length

2002 importance of internal sphincter within anorectum fully understood as the **major** factor contributing to stool continence

2002 fixation of cervix onto atf/atl/internal obturator muscle for total 3° prolapse

2002 needle dissection in early closure

2002 systematic episiotomy in skin grease for cosmetic healing

2002 pathophysiology of genuine intrinsic_stress incontinence

2002 chip of pubic bone broken off

2002 inoperability due to excessive obesity; once drastic weight loss then operable

2002 wide 1 cm defect pubic symphysis cartilage, **no** symphysiolysis

2003 systematic anal reflex testing as function of pudendal nerve; saddle anesthesia

2003 proximal vagina pouch on special indication

2003 intrisinc_stress incontinence + ureter fistula disappears after ureter implantation

2003 needle dissection in early closure

2003 longitudinal **striae** in vagina as sign of pc fascia fiber trauma

2003 urethra between bilateral pc fascia strips

2003 systematic triple fixation of FOLEY catheter

2003 better insight into atonic bladder

2003 start of entering all **relevant** data into a **comprehensive electronic database** with over 250 parameters per patient including epidemiologic data, clinical data, operation techniques, classification, evidence-based results, long-term follow-up etc etc in order to perform prospective research

2003 postmeningitis total intrinsic_stress incontinence

2004 masked intrinsic_stress incontinence?? in total 3° prolapse definitely **no**

2004 different terminology: anterior elevation

2004 total bladder avulsion

2004 ureter fistula without ever cs

2004 healing of total intrinsic incontinence after successulf vaginal implantation of ureter fistula

2004 incontinence cured by 1x rhaphy suture

2004 minute fistula requires large incision + excision of scar tissue; otherwise the bladder cannot be inverted and it will not heal

2004 that specific **sandglass** distal urethra_euo trauma post partum resulting in **genuine intrinsic incontinence**

2004 spontaneous healing of saddle anesthesia within 30-40 days

2004 correction of open urethra/euo by bilateral pc fascia fixation

2004 pregnancy after succesfull repositioning of cervix (behind posterior fornix) after obstetric fistula surgery

2004 punched defects of pubococcygeus muscle and of internal obturator muscle

2004 congenital malformations + total intrinsic_stress incontinence grade III

2004 fatty degeneration of pubococcygeus muscle

2004 analysis of 1,716 consecutive prospective **immediate management** procedures showed **excellent evidence-based results as to healing and continence** (amer j obstet gynecol; 2004, 191, 795-9) with **secondary prevention** of the woman from becoming an **outcast**; I consider this my best contribution to the obstetric fistula; however, it met/meets a lot of criticism and obstruction
my counter-question to these critics is: do you let these patients suffer unnecessarily in order to raise funds and/or do you need this longer time to evangelize them

2005 final stage/perfection of **sphincter ani rupture** with anorectum trauma and perineal body rupture (also disruption of “union” of transversus perinei and bulbospongiousus muscles which radiate into perineal body) according to stool continence mechanism in the female with functional **anatomic reconstruction of internal and external sphincters and support**
it has to be stressed that the **end-to-end sphincter ani reconstruction** is the **physiologic technique** to reconstruct the functional anatomy; the **overlapping** repair is **nonphysiologic** and as such **inferior** also requiring more dissection

2005 prospective prediction of healing and continence at operation end; this will give a better **evidence-based evaluation**

2005 systematic repair/(re)fixation of pubocervical fascia

2005 start of **systematic pelvis floor tissue loss analysis/documentation**; every piece is falling into its own place

2005 start of systematic **continent urethra reconstruction** by H incision etc

2005 the **enormous healing power of nature**; surgeons do not heal, they only bring tissue into contact with each other

2005 urge incontinence triggered by scar tissue as **?ectopic pacemaker?**

2005 specific type **IIAa_b** fistula in combnation with retracted/moving cervix after cs

2006 fifth obstetric fistula

2006 draining scarred ureter fistula tract into bladder

2006 spinal anesthesia by only 3 ml of bupivacaine 0.5%

2006 incontinence mechanism; traction by fixed cervix

2006 continence mechanism and total 3° prolapse; the concept of masked incontinence and continence due to kinking of the urethra are false

2006 perfection of technique for total 3° prolapse by transverse avw T incision up to cervix; cervix in direct contact with atf/atl/levator ani_internal obsturator muscle

2006 systematic length/width/position/support/tissue quality of urethra_euo in cm etc

2006 theoretical insight into real tissue pathology

2006 spontaneous healing of small proximal rvf without rectum stricture; systematic examination/documentation

2006 correction of all defects

2006 distal fixation, euo rhaphy, uy-plasty etc as **last resort** in incurable incontinence uy-plasty for stabilizing distal urethra_euo

2006 closed urethra_euo rhaphy in postpartum total incontinence grade III

2006 final (in)continence theory + practical implications; the **hammock concept** is **incorrect**

2006 circumferential trauma analyzed by anatomic tissue loss; refixation of pc fascia

2006 development of lateroposterolateral vagina stricture

2006 major pc_ilc muscle loss without circumferential repair

2006 spontaneous healing of negative anal reflex with bilateral saddle anesthesia; however,

2006 persisting negative anal reflex with bilateral saddle anesthesia with healed ulcers even 6 yr after index delivery

2006 narrowing of distal urethra_euo in total 3° cervix prolapse as physiologic reaction to maintain full urine continence; the enormous healing potential of the human body

2007 stainless steel ruler for **objective measurements in cm/mm**

2007 only correction of defects; **customized individualized repair**

2007 fluid transition between the different fistulas

2007 intrinsic incontinence due to pull onto posterior urethra wall by congenital midline vagina septum

2007 variety of compression/trauma

2007 ectopic pacemaker

2007 debridement and early closure in the same session; how early can one go?

2007 scarring pulls distal urethra_euo wide open causing intrinsic incontinence

2007 check anatomic defects in genuine intrinsic incontinence

2007 obesity as contributing factor in cs fistulas including ureter fistulas

2007 stroke during/after delivery **due to eclampsia**

2008 only do what is necessary: **no** longer routine **vagina pack**

2008 handbook **obstetric fistula surgery; art and science; basics** as the first in a series of books in order to describe the complex trauma of the obstetric fistula, the exact pelvis floor tissue loss, the tissue loss of the continence/closing mechanism, physiology of wound healing, classification as based on qualitative and quantitative tissue loss of the closing/continence mechanisms, principles of operation techniques with prospective prediction of results as to healing and continence, the mechanism of urine/stool (in)continence and the principles of incontinence surgery etc etc

2008 systematic **history of eclampsia** since this may interfere with postoperative care; if yes then **10 mg of diazepam on operation day** to prevent eclamptic fits due to blood pressure rebound effect after spinal anesthesia; since this was introduced no more fitting

2008 systematic documentation of gm_sm_at contracture during foot drop grading in degrees using the neutral zero method

2008 strange **urethrovesicovaginorectal fistula**
vvf katsina 7404

2008 uy-euo-plasty for securing/stabilizing distal urethra_euo

2008 systematic vagina length from vaginocutaneous junction to vault in cm during the routine examination under anesthesia just before the repair is started; normal length seems to be 10-12 cm; this is another tool in evaluating the obstetric trauma

2008 total pressure necrotic cervix/uterus loss

2009 circular scar pulling at posterior urethra wall causing intrinsic incontinence

2009 postoperative fitting and peridelivery eclampsia
vvf kano 04319

2009 congenital intrinsic incontinence

2009 perfection technique for post **IIAb** intrinsic incontinence

2009 anterior urethra pressed against symphysis; **kinking not possible**

2009 **large physiologic incision** gives proper access to lungu-lungu fistulas

2009 role of fascia/pelvis in mechanism of prolapse

2010 natural tissue forces within the body in relation to healing etc under physiologic stress

2010 cervix fixation at L and fascia/avw fixation at R in total 3° cervix prolapse with intrinsic_stress incontinence

2010 inoperable due to severe obesity; repair “possible” after slimming down

2010 mutilation + labia gangrene after layman’s sphincter ani operation

2010 vaginal cystostomy + stone removal + avw adaptation

2010 systematic check on urine thru euo on rest/cough/pressure after closure for pre diction and evaluation of post-repair intrinsic incontinence

2011 systematic check for and documentation of cervix mobility in records

2011 evidence of still cervix fixation after vaginal childbirth of live infant after technique of uterus-saving fixation of total 3° cervix prolapse

2011 fixation of cervix in total 3° cervix prolapse heals like “ligament”

2011 long-time observation: fascia/bladder slip cephalad

2011 skene gland cyst as ?ectopic pacemaker? though fascia intact

2011 since repair now according to natural tissue forces all mutilation will heal; see evidence-based follow-up

2011 documented evidence of what a **detergent** (in sitzbaths) can do **to clean up extensive infected gangrenous lesions**

2011 repair of dehiscent perineal body for better configuration of both urine/stool con tinencemechanisms

2011 large cystocele but cervix still fixed after 5x vaginal deliveries including one twin delivery following uterus-saving cervix fixation bco 2° cervix prolapse 8 years earlier

2011 obstetric forceps delivery witih resulting **fournier gangrene of labia**

2011 full urine continence with narrow 0.8 cm urethra in total 3° cervix prolapse

2011 better description of fascia defects in cm in line with the obstetric trauma; for better evaluation of the obstetric trauma defects and for better reconstruction of the functional anatomy

2011 evidence-based proof of theory and solution of post **IIAb delivery** total intrinsic incontinence

2011 what kind of mechanism of spontaneous total 3° cervix prolapse for 1 yr in 15-yr-old P0 girl with full urine continence and **narrow** 1.4 cm urethra

2011 fish-mouth type **IIAb** fistula and its operation technique

2012 start made with **systematic final last resort assessment of posibilities**

2012 complete recovery of strength in bilateral foot drop; however, still gm_sm_at contracture up to 90°/0° dorsiflexion; forced immediate mobilization witl prevent this outcome

2012 circular euo + protruding circular iuo; so how transverse urethra anterior to posterior coaptation

2012 neutralization of traction upon posterior urethra wall (by fixed cervix) only after/ by bilateral para-euo fascia fixation + avw/cervix

2012 theoretics and **practical solution** of cystocele with(out) 2° cervix prolapse with resulting reduction of cervix into its mobile anatomic position

2012 gm_sm_at contracture due to wearing high heels all the time

2012 different **total physiologic** operation technique for total 3° cervix prolapse in young women with “complete” restoration of normal functional anatomy; theoretically a rhaphy of the scarouterine ligaments should also be performed

2013 obstetric ureter fistula without ever cs or operation with also intrinsic inconti nence

2013 para-euo fixation (magic sutures) most important in prevention/correction of (post-repair) intrinsic incontinence

2013 contrary to what is generally accepted we encounter **tough postmenopausal tissue** in our surgical procedures

2013 systematic measuring pubic arch in degrees by stainless steel instrument

2013 successful **closed** para-euo fascia fixation as **last resort** in hyperactive bladder with **urge incontinence**

2013 scarring prevents minute fistula from healing; after excision of scar tissue fistula no longer demonstrable not even by dye intra-operatively

2013 last piece of evidence in the mechanism of total 3° cervix prolapse; it is **median** and not lateral fascia defect(s)

2013 vagina empyema with severe iatrogenic mutilation

2013 longitudinal vagina striae as indication of longitudinal collagenic fascia fibers

2013 intracervical vesicocervicovagnal fistula without ever cs

2013 s-o-t-a step-bystep urethralization from 1.2 to 2.2 to 2.7 cm of urine intrinsic incontinence with cystocele confirning theory resulting in full continence

2013 s-o-t-a open para-euo fixation without dissection in genuine intrinsic incontinence in 14-yr-old PI (alive) resulting in full continence

2013 subtotal loss of symphysis cartilage but **no** lysis; actually the author has **never** encountered **total symphysiolysis with dislocation**

however, one should never be satisfied since there is always room for improvement, specifically if one is a perfectionist

workshops

there are several general and/or specific objectives: to operate a large number of patients within a short time, to demonstrate the **state of the art** operation techniques, to give high-quality lectures, to tackle a specific problem (stress incontinence, urinary diversion), to promote spinal anesthesia, to initiate doctors with low experience, to further train doctors with experience on an advanced level, to train nurses at all levels, to start a vvf service in a certain area and for advocacy and publicity

duration
from a minimum of 2-3 days to start a vvf service up to 2 weeks if large numbers of patients are available and reliable postoperative care can be secured

minimum number of patients
for a 1-week workshop 25-30 patients and for a 2-week workshop 40-50 patients, otherwise there is no cost-benefit effect

venue
any hospital which can handle the (large) number of patients to be operated within a short time: operation theater, autoclave, pre-/postoperative beds and trained personnel

equipment
if one/two fistula surgeon-trainer: one/two fistula operating table(s) with one/two full set(s) of instruments

pre-workshop screening
the (fistula) doctor of the hospital together with his staff is responsible to collect and screen the patients already far in advance
the logistic officer has to make all the necessary arrangements for accommodation, feeding and transport etc

facilitators
one or two experienced fistula surgeon-trainers, one or two experienced fistula operation theater nurses, one or two experienced spinal anesthesia nurses or doctors and two experienced pre-/postoperative nurses and one logistic officer

trainees
per trainer 3-4-5 doctors together with their operation theater nurse, their anesthetic nurse and their pre-/postoperative nurse
however, if the workshop is meant to start a vvf-service more doctors and especially more nurses and midwives should attend

workshop day-by-day
first day: opening, introduction, questionnaire by trainees for self evaluation and then history taking and examination of the patients, operation time-plan for each day
from second day onwards: wardround, operations with step-by-step demonstration of state of the art techniques, simple operations by the trainees under close supervision, pre-, intra- and postoperative questions and answers, lecture(s) and wardround
last day: ward round, evaluation by all participants, handing out certificates, closure

postworkshop follow-up
the fistula doctor of the hospital and his staff are responsible for the further post-operative care and follow-up of the patients
however, since we want to evaluate our work the surgical team comes back one time 4-5 weeks later to assess the results

philosophy
since the emphasis should be placed upon the quality and not the quantity it is better to execute small 4- to 5-day well organized workshops with small numbers of patients than large 10- to 14-day workshops with large numbers of patients where the organization on ground and good postoperative care being the weakest part cannot be ensured

optimal workshop
identify an area where the obstetric fistula is highly prevalent, select an obstetric fistula team, send them for training, this team selects and screens patients and then makes sure the conditions are ok, then invite real fistula surgeon(s) + team
the real expert fistula surgeon(s) + team in combination with the obstetric fistula team on ground screens all the patients for a final selection and sets the objectives
opening ceremony and handing out of a questionnaire for self-evaluation
starts operating whilst demonstrating the step-by-step technique followed by questions & answers about the procedure and theoretical lectures

during the year the chief consultant + team (co)facilitated 7 workshops making

a grand total of 61 workshops

nb during these workshops we encounter many patients who have become **inoperable** after one operation by surgeons who undertake things they cannot handle

side effect of paying ill-trained doctors per operation

half knowledge is extremely dangerous

is it quantity or quality we want

logbook activities 2013
day-to-day 10 consecutive weeks

wednesday 18 september 2013
zaria
0543_vvf 642 para-euo fixation in total post **IIAb** intrinsic incontinence in 34-yr-old para I (0 alive) leaking for 20 yr after delivery I, sb male by cs; operated 1x
0544_vvf 643 transverse closure of type **I** cs-fistula in 30-yr-old para V (3 alive) leaking for 5 mth after delivery V, sb male by cs
0545_vvf 644 bilateral para-euo fascia fixation with transverse closure of residual type **IIAb** fistula as **last resort final** in 16-yr-old para I (0 alive) leaking 10 mth after delivery I, sb male by cs-tah; operated 1x already as last resort final
0546_vvf 645 distal inverted T urethra-euo reconstruction of residual **IIAa** fistula in 19-yr-old para II (all alive) leaking for 1 yr after delivery II, live female in hospital; operated 2x
0547_cath 102 dye examination + catheter treatment of intrinsic incontinence grade **II** in 30-yr-old para V (2 alive) leaking for 3 mth after delivery V, live male by cs who died after 1 day
0548_vvf 646 transverse repair of sex-induced fistula after successful repair of type **I** cs-tah vault fistula leaking urine for 1 yr after delivery X (8 alive), sb female by cs-tah; with
0549_rvf 92 sphincter ani reinforcement/perineal body repair after successful sphincter ani repair with full stool/flatuscontinence however with thin perineum
operation reports, documentation, database
from 7.00 to 18.00 hr drive 20 km

thursday 19 september 2013
zaria
0550_vvf 647 bilateral para-euo fascia fixation in total post **IIAb** intrinsic incontinence in 45-yr-old para I (0 alive) leaking for 28 yr after delivery I, sb male in hospital;operated 2x
0551_rvf 93 anorectum rhaphy/sphincter/perineal body of wide open anus with stool/ flatus incontinence after reposition + (closure of) colostomy of ectopic anus in 17-yr-old para 0 operated 3x; no sphincter ani tissue identified
0552_rvf 94 anorectum closure with sphincter ani/perineal body reconstruction of type **IIb** stool fistula in 25-yr-old para IV (2 alive) stool/flatus incontinence for 1 yr after delivery IV, live male at home; operated 1x
traveling from zaria to katsine by road 3.5 hr drive over some 250 km
operation reports, documentation, database
from 7.00 to 18.00 hr drive 250 km

friday 20 september 2013
katsina
0553_cath 1540 catheter treatment of type **I** cs-fistula in 33-yr-old para IX (5 alive) leaking for 14 days after delivery IX, sb female by cs
0554_cath 1541 catheter treatment of total intrinsic incontinence due to specific urethra_euo trauma in 15-yr-old para I (alove) leaking for 11 days after delivery I, live female in hospital
0555_cath 1542 catheter treatment of necrotic type **IIAa** fistula with sphincter ani

rupture in 16-yt-old para I (0 alive) leaking/stool incontinence after delivery I, sb male in hospital
0556_cath 1543 catheter treatment of necrotic type **IIAa** fistula with **necrotic** pvw trauma and episiotomy breakdown in 18 yr old para I (alive) leaking/stool_flatus incontinence after delivery I, live female in hospital
0557_cath 1544 catheter treatment of total intrinsic incontinence as healing phase of atonic bladder with stool incontinence due to median rupture in 14-yr-old para I (alive) leaking/stool incontinence after delivery I, live male in hospital
0558_cath 1545 catheter treatment of total intrinsic incontinence in 16-yr-old para I (alive) leaking for 16 days after delivery I, live female in hospital
0559_cath 1546 catheter treatment of necrotic type **I** fistula in 14-yr-old para I (0 alive) leaking urine/stool_flatus incontinence for 22 days after delivery I, sb male in hospital
0560_cath 1547 catheter treatment of necrotic type **IIAb** fistula in 29-yr-old para IX (3 alive) leaking for 11 days after delivery IX, sb male by cs
0561_cath 1548 catheter treatment of necrotic type **I** fistula in 36-yr-old para X (7 alive) leaking for 14 days after delivery X, sb male in hospital
0562_cath 1549 catheter treatment of **necrotic** second obstetric type **IIAa** fistula in 28-yr-old para VII (3 alive) leaking for 21 days after delivery VII, sb female in hospital
0563_cath 1550 catheter treatment of total intrinsic incontinence as healing phase of atonic bladder in 19-yr-old para I (alive) leaking for 21 days after delivery I, live male in hospital
0564_vvf 8697 circumferential end-to-end vesicourethrastomy of type **IIBb** fistula not healed by catheter in 15-yr-old para I (0 alive) leaking for 72 days after delivery I, sb male in hospital; spontaneous healing of proximal rvf
0565_vvf 8698 quartercircular fascia repair/fixation with closure of type **IIAa** fistula and
0566_rvf 1110 anorectum/ sphincter ani/perineal body reconstruction in para I (0 alive) leaking urine/stool_flatus incontinence for 78 days after delivery I, sb male in hospital; not healed by catheter
0567_vvf 8699 catheterization L ureter + circumferential end-to-end vesicourethrostomy + quartercircular fascia repair/fixation of type **IIAb** fistula in 15-yr-old para I (0 alive) leaking for 3 mth after delivery I, sb male in hospital
operation reports, documentation, database
from 7.00 to 18.00 hr drive 30 km

saturday 21 september 2013
katsina
0568_8700 distal urethra_euo reconstruction as last resort final of type **IIBb** third obstetric fistula in 40-yr-old para VIII (4 alive) leaking for 3 mth after delivery VIII, sb female at home
0569_8701 open **state-of-the-art** para-euo fascia fixation in genuine obstetric incontinence in 14-yr-old para I (alive) leaking for 57 days after delivery I, live male in hospital; not healed by catheter
0570_8702 circumferential end-to-end vesicourethrostomy + quartercircular fascia repair/fixation of type **IIAb** fistula in 15-yt-old para I (0 alive) leaking for 42 days after delivery I, female sb in hospital; spontaneous healing of small proximal rvf
0571_8703 semicircular fascia repair/fixation with closure of mutilated type **IIA-Bb** fistula in 20-yr-old para II (1 alive) leaking for 2 y after delivery II, sb male by cs; operated 3x
0572_cath 1551 catheter treatment of necrotic type **IIAa** fistula in 22-yr-old para VIII (2 alive) leaking for 24 days after delivery VII, sb male in hospital
0573_cath 1552 catheter treatment of multiple necrotic fistulas type **IIAa** in 30-yr-old para X (4 alive) leaking for 12 days after delivery X, sb female by cs

0574_cath 1553 catheter treatment of necrotic type **IIAa** fistula in 31-yr-old para X (5 alive) leaking for 27 days after delivery X, live male in hospital
operation reports, documentation, database
from 7.00 to 18.00 hr drive 30 km

sunday 22 september 2013
katsina
0575_vvf 8704 quartercircular fascia repair/fixation, 4/5 circumferential end-to-end vesicourethrostomy + euo-rhaphy of **severely mutilated type IIBb** fistula in 15-yr-old para I (alive) leak ing for 35 days after delivery I, live female in hospital
0576_vvf 8705 transverse fascia repair with closure of strange retracted type **IIAa** forceps fistula in 25-yr-old para VII (1 alive), sb female by failed forceps and then cs
traveling by road from katsina to kano over 200 km in 3.5 hr
operation reports, documentation, database
from 7.00 to 18.00 hr drive 200 km

monday 23 september 2013
kano
0577_cath 947 catheter treatment of necrotic type **I** fistula in 30-yr-old para V (3 alive) leaking for 17 days after delivery V, sb female in hospital
0578_cath aajal bladder drill for total intrinsic urine incontinence **III** in 15-yr-old para I (alive) leaking for 5 mth after delivery I, live male in hospital
0579_cath aajam bladder drill for total intrinsic incontinence **III** in 17-yr-old para I (0 alive) leaking for 10 days after delivery I, live male in hospital
0580_cath aajan bladder drill for total intrinsic incontinence with type **IIAa** trauma in 15-yr-old para I (0 alive) leaking for 10 days after delivery I, sb female at home
0581_cath aajao bladder drill for total intrinsic incontinence **III** in 20-yr-old para II (0 alive) leaking for 15 days after delivery II, sb male at home
0582_cath aajap bladder drill for total intrinsic incontinence **III** in 16-yr-old para I (alive) leaking for 28 days after delivery I, live male in hospital
0583_cath 948 catheter treatment of total incontinence with type **IIAa** avw trauma in 15-yr-old para I (0 alive) leaking for 13 days after delivery I, sb male in hospital
0584_cath 949 catheter treatment of **necrotic** type **IIAa** fistula in 18-yr-old para I (0 alive) leaking for 19 days after delivery I, sb female in hospital
0585_cath 950 catheter treatment of **necrotic** type **IIAa** trauma with atonic bladder in 22-yr-old para I (0 alive) leaking for 12 days after delivery I, sb male in hospital
0586_cath 951 catheter treatment of total intrinsic incontinence **III** in 18-yr-old para I (0 alive) leaking urine for 17 days after delivery I, live male in hospital
0587_cath 952 catheter treatment of total intrinsic incontinence **III** in 21-yr-old para III (2 alive) leaking for 27 days after delivery III, sb male by vacuum
0588_cath 953 catheter treatment of total intrinsic incontinence **III** as healing phase of atonic bladder in 17-yr-old para I (0 alive) leaking for 55 days after delivery I, sb male cs
0589_cath 954 catheter treatment of **necrotic** type **IIAa** fistula in 35-yr-old para XII (9 alive) leaking for 12 days after delivery XII, sb male at home
0590_cath 955 catheter treatment of **necrotic** type **IIAa** fistula in 17-yr-old para I (0 alive) leaking for 21 days after delivery I, sb male in hospital
0591_cath 956 catheter treatment of overflow incontinence due to atonic bladder in 16-yr-old para I (0 alive) leaking for 11 days after delivery I, sb male in hospital
0592_cath 957 catheter treatment of **necrotic** type **I** fistula in 15-yr-old para I (0 alive) leaking for 3 days after delivery I, sb female in hospital
0593_rvf 791 anorectum/sphincter ani/perineal body reconstruction of mutilated sphinc ter rupture and

0594_cath 958 catheter treatment of total intrinsic urine incontinence in 30-yr-old para I (alive) leaking urine/stool_flatus incontinence for 32 days after delivery I, live male in hospital
0595_4762 circumferential **s-o-t-a** fixation of bladder neck into euo in 12-yr-old para 0 leaking for 16 days after yankan gishiri by wanzami bco refusing husband
0596_4763 ureter R + transverse fascia repair with closure of type **IIAa** fistula in 20-yr-old para III (2 alive) leaking for 41 days after delivery III, sb male at home
0597_4764 quartercircular fascia repair/paraurethra_euo fixation with circumferential end-to-end vesicourethrostomy in 26-yr-old para VI (4 alive) leaking for 3 mth after deli very VI, sb female in hospital
operation reports, documentation, database
from 7.00 to 18.00 hr drive 20 km

tuesday 24 september 2013
kano
0598_vvf 4765 transverse fascia repair/fixation with closure of type **IIAa** fistula in 15-yr-old para I (0 alive) leaking for 52 days after delivery I, sb male in hospital; atrophic_ fibrotic vagina
0599_vvf 4766 transverse fascia repair with closure of type **IIAa** fistula in 16-yr-old para II (1 alive) leaking for 75 days after delivery II, live male at home
0600_vvf 4767 highly complicated transverse closure of fibrotic type **IIAa** fistula in 33-yr-old para VIII (4 alive) leaking for 2 yr after delivery VIII, sb male by sth_cs; operated 1x, fibrosis ++
0601_vvf 4768 highly **complicated** transverse fascia repair with closure of type **IIAa** fistula in 32-yr-old para VIII (6 alive) leaking for 17 mth after delivery VIII, sb male by cs
operation reports, documentation, database
from 7.00 to 18.00 hr drive 20 km

wednesday 25 september 2013
kano
0602_rvf 792 approximation of cervix onto pvw as **primary suturing** of type **Ia** stools fistula only to improve the continuous stool contamination in extensive obstetric trauma in 16-yr-old para I (0 alive) leaking urine/passing stools pv for 3 mth after delivery I, sb male by cs; if not successful refer to katsina where conditions are better
0603_vvf 4769 highly complicated, obesity with circular stricture, 3/4 circumferential end-to-end vesicourethrostomy of type **IIAb** fistula in 29-yt-old para IX (8 alive) leaking for 30 days after delivery IX, sb male in hospital
0604_vvf 4770 urethralization + para-euo fascia fixation of total genuine urine inconti nence not responding to bladder drill in para I (alive) leaking for 52 days after delivery I, live male in hospital
traveling from kano back to katsina by road over 200 km in 3.5 hr; major problems with the 4-wheel drive toyota prado
operation reports, documentation, database
from 7.00 to 18.00 hr drive 200 km

thrusday 26 september 2013
katsina
0605_vvf 8706 complicated longitudinal closure of residual type **I** cs.vcvf in 38-yr-old para VI (3 alive) leaking for 10 mth after delivery VI, sb male by cs; unsuccessful primary suturing

0606_vvf 8707 primary suturing **last resort final** of inoperable type **IIBb** fistula and
0607_rvf 1112 closure **last resort final** of inoperable type **IIa** stool fistula in 15-yr-oldpara I (0 alive) leaking urine/passing stools pv for 4 mth after delivery I, sb male in hospital
0608_vvf 8708 repair/bilateralpara-euo fascia fixation and transverse bladder closure of multiple type **IIAa** fistula healed by catheter and cs-vcvf in para I (0 alive) leaking for 50 days after delivery I, sb male by cs
0609_vvf 8709 transverse fascia repair/para-euo fixation of **scarred** type **IIAa** fistula and transverse closure of cs.vcvf in 16-yr.old para I (0 alive) with double fistulas leaking for 50 days after delivery I, sb male by cs
0610_rvf 1113 complicated transverse closure of large type **Ia** stool distula in combi nation with extensive type **IIAa** in 15-yr-old para I (0 alive) leaking urine/passing stools pv for 4 mth after delivery I, sb male by cs and laparotomy with extensive resections/ sigmoidostomy bco generalized peritonitis with infectious necrosis
0611_cath 1554 catheter treatment of necrotic type **IIAa** fistula in 18-yr-old para II (1 alive) leaking urine/stool_flatus incontinence for 17 days after delivery II, sb male in hospital
operation reports, documentation, database
from 7.00 to 18.00 hr drive 30 km

friday 27 september 2013
katsina
0612_vvf 8710 transverse fascia repair with closure of type **IIAa** fistula in 36-yr-old para X (7 alive) leaking for 61 days after delivery X, sb male in hospital; not healed by catheter
0613_vvf 8711 complicated longitudinal fascia repair with bladder closure of type **I** cs-fistula in 38-yr-old para IX (5 alive) leaking for 10 mth after delivery IX, sb male by cs; poor access due to severe obesity with fixed cx
0614_8712 creation of proximal pouch in extensive type **IIAa** fistula with 2/3 bladder loss in 44-yr-old para XV (5 alive) leaking for 4 mth after delivery XV, sb male by cs
0615_8713 urethralization with para-euo fascia fixation of genuine intrinsic incontinence in 26-yr-old para XI (9 alive) leaking for 5 mth not responding to bladder drill after delivery XI, live male by cs
operation reports, documentation, database
from 7.00 to 18.00 hr drive 30 km

saturday 28 september 2013
katsina
0616_8714 bilateral para-euo fascia fixation in total genuine urine incontinence III in 16-yr-old para I (alive) leaking urine for 6 mth after delivery I, live male in hospital
0617_8715 fixation of 2° cervix prolapse onto L suprapubic bone periost in 31-yr-old para IV (2 alive) something coming out for 8 mth after delivery IV, sb female at home
0618_8716 transverse fascia with bladder closure of residual minute type **I** fistula in 14-yr-old para I (0 alive) leaking for 79 days after delivery I, sb male in hospital
0619_8717 highly complicated ureter catheterization L with transverse fascia repair and bladder/urethra closure of type **IIAa** in 30-yr-old para XI (4 alive) leaking for 4 mth after delivery XI, sb male by cs
operation reports, documentation, database
from 7.00 to 18.00 hr drive 30 km

sunday 29 september 2013
katsina
0620_8718 longitudinal closure of type **IIBa** fistula in 25-yr-old para 0 leaking for 5 yr after second yankan gishiri by wanzami bco congenital ba hanya
0621_8719 highly complicated last resort final extended primary suturing of large type **IIAb** fistula in 41-yr-old para VII (0 alive) leaking for 8 mth after delivery VII, sb male by cs
0622_8720 real **reconstructive pelvic surgery** of large cystocele/2° cx prolapse with in the process closure of **3rd obstetric** type **IIAa** fistula in 32-yr-old para XII (3 alive) leaking for 3 mth after delivery XII, live male at home
traveling from katsina to sokoto in Peugeot over 350 km in 4.5 hr
operation reports, documentation, database
from 7.00 to 18.00 hr drive 350 km

monday 30 september 2013
sokoto
0623_vvf 1231 quartercircular fascia repair with closure of type **IIAa** fistula and
0624_rvf 149 sphincter ani/perineal body repair in 16-yr-old para I (0 alive) leaking urine/stool incontinence for 3 mth after delivery I, sb male in hospital
0625_vvf 1232 quartercircular fascia repair/bilateral fixation of type **IIAa** fistula in 18-yr-old para II (1 alive) leaking for 7 mth after delivery II, sb male by cs
0626_vvf 1233 continent urethra/fascia/avw reconstruction of extensive type **IIBa** fistula in 16-yr-old para 0 leaking for 2 yr after yankan gishiri by wanzami bco dyspareunia
0627_vvf 1234 semicircular fascia repair/paraurethra_euo fixation of type **IIBb** fistula in 15-yr-old para I (0 alive) leaking for 3 mth after delivery I, sb male in hospital; spontaneous healing of stool/flatus incontinence
operation reports, documentation, database
from 7.00 to 18.00 hr drive 20 km

tuesday 1 october 2013
sokoto
0528_vvf 1235 bilateral ureter catheterization + under tension quartercircular fascia repair/bilateral fixation with closure of type **IIAa** fistula with **b** characteristics in 15-yr-old para I (0 alive) leaking for 4 mth after delivery I, sb male by cs
0629_vvf 1236 circumferential end-to-end vesicourethrostomy as **first stage** of extensive multiple type **IIBb** fistula in 27-yr-old para IV (3 alive) leaking for 1 yr after deli very IV, sb male by cs.sth
0630_vvf 1237 highly complicated transverse fascia repair under tension with closure of type **I** fistula in 28-yr-old para IX (3 alive) leaking for 9 mth after delivery IX, sb female by cs
0631_vvf 1238 under tension circumferential fixation of bladder neck up to 1.5 cm to euo of extensive **inoperable type IIBb** fistula in 15-yr-old para I leaking for 4 mth after delivery I, sb female by cs after failed forceps
operation reports, documentation, database
from 7.00 to 18.00 hr drive 20 km

wednesday 2 october 2013
sokoto
0632_vvf 1239 complicated transverse fascia repair with closure of type **I** cs-vcvf in 36-yr-old para VII (4 alive) leaking for 7 mth after delivery VII, sb female by cs

0633_vvf 1240 complicated urethra/fascia/avw reconstruction of type **IIBa** fistula in 14-yr-old para 0 leaking for 4 mth after yankan gishiri by wanzami
0634_vvf 1241 excision of fibrosis/scar tissue and complicated closure of mutilated type **IIAa** fistula in 28-yr-old para VII (4 alive) leaking for 1 yr after delivery VII, sb male by cs; operated 1x
0635_vvf 1242 transverse fascia repair with closure of type **I** cs-fistula in 20-yr-old para II (0 alive) leaking for 3 mth after delivery II, sb male by cs
0636_vvf 1243 refixation of skin graft onto para-euo symphysis at L only for total post **IIAa** incontinence in 33-yr-old para I (0 alive) leaking for 15 yr after delivery I, sb female by cs; operated 2x whereby skin graft from L was used
operation reports, documentation, database
from 7.00 to 18.00 hr drive 20 km

thursday 3 october 2013
sokoto
0637_vvf 1244 highly complicated para-euo fixation of fascia for total genuine intrinsic incontinence in 15-yr-old para **I** leaking urine for 1 yt after delivery I, live male at home
0638_vvf 1245 highly complicated fascia repair with closure of large type **IIAa** necrotic-cs-fistula in 28-yr-old para VIII (2 alive) leaking/**stool_flatus incontinence** for 11 mth after delivery VII/VIII, sb male/female twins by tah-cs
0639_vvf 1246 highly complicated kwaskwarima + para-euo fascia fixation of total post **IIAb** intrinsic_stress_urge incontinence as **last resort** on 25-yr-old para I (0 alive) leaking for 5 yr after delivery, sb male at home; operated 2x
0640_vvf 1247 highly complicated fascia fixation with closure of **inoperable** extensive type **IIBb** fistula in 47-yr-old para VII (3 alive) leaking dor 30 yr after delivery I, sb male at home; operated at least 3x
operation reports, documentation, database
from 7.00 to 18.00 hr drive 20 km

friday 4 october 2013
sokoto
0641_vvf 1248 transverse fascia repair with closure of **strange** type **IIAa** fistula in 26-yr-old para VII (2 alive) after delivery VII, sb male in hospital
0642_vvf 1249 highly complicated para-euo fixation of fascia with closure of extensive type **IIBAb** fistula and
0643_rvf 150 anorectum/sphincter/perineal body reconstruction in 16-yr-old para II (0 alive), sb male in hospital; successful vvf-repair delivery I
0644_vvf 1250 para-euo **state-of-the-art** fascia fixation with closure of type **IIBa** fistula in 14-yr-old par I (0 alive) leaking for 2 mth after delivery I, sb male in hospital
0645_vvf 1251 complicated transverse fascia repair with closure of **tricky** type **IIAa** fistula in 33-yr-old para X (4 alive) leaking for 6 mth after delivery X, sb male by cs
operation reports, documentation, database
from 7.00 to 18.00 hr drive 20 km

saturday 5 october 2013
up to the maishai and traveling back from sokoto to katsina 8.00-13.30 hr over 350 km
operation reports, documentation, database
from 7.00 to 18.00 hr drive 350 km

sunday 6 october 2013
katsina
0646_vvf 8721 highly complicated oblique fascia repair with bladder closure of type **I**

fistula fixed onto R pelvis wall in 27-yr-ild para VIII (2 alive) leaking for 4 mth after delivery VIII, sb female by cs-sth; not healed by catheter
0647_vvf 8722 para-euo fixation as **last resort final** in post **IIAb** delivery total intrinsic incontinence as **4th obstetric leakage** and
0648_rvf 1114 ps-like closure of type **Ia** stool fistula in 39-yr-old para V (0 alive) leaking urine/passing diarrheic stools pv for 7 yr after delivery V, sb male by cs
0649_vvf 8723 transverse fascia repair with closure of type **IIAa** fistula and longitudinal **ps like** closure of **multiple fistulas** in 16-yr-old para I (0 alive) leaking for 49 days after delivery I, sb female in hospital
0650_vvf 8724 circumferential fixation of bladder neck into "euo" as **first stage** of extensive type **IIBb** fistula as a result of **obstetric yankan gishiri** in 42-yr-old para XIII (3 alive) leaking for 4 mth after delivery XIII, sb male in hospital
0651_vvf 8725 transverse fascia repair/para-euo fixation of retracted type **IIAa** fistula in 28-yr-old para VI (2 alive) leaking for 4 mth after delivery VI, sb male in hospital
operation reports, documentation, database
from 7.00 to 18.00 hr drive 30 km

monday 7 october 2013
katsina
0652_vvf 8726 highly complicated **primary suturing** of type **I** fistula at L lateral retracted cervix in 29-yr-old para IX (3 alive) leaking for 73 days, sb male by cs
0653_vvf 8727 final last resort distal urethra_euo reconstruction + para-euo fixation of post **IIAb** total intrinsic incontinence in 33-yr-old para IX (3 alive) leaking for 4 yr after delivery IX, sb female by cs; after successful repair 3.5 yr ago
0654_vvf 8728 transverse fascia repair with closure of type **I** fistula in 15-yr-old para I (0 alive) leaking for 28 days with tusa pv after delivery I, sb female in hospital; eclampsia yes
traveling from katsina to kano by road over 200 km in 3.5 hr
operation reports, documentation, database
from 7.00 to 18.00 hr drive 200 km

tuesday 8 october 2013
kano
0655_rvf 793 severing of perineum bridge + anorectum/sphincter/perineal body recon struction of **mutilated** sphincter ani rupture with anorectum trauma in 23-yr-old para I (alive) stool/flatus incontinence for 26 days after delivery I, live male in hospital
0656_vvf 4771 transverse fascia repair/para-euo fixation of type **IIAa** fistula in 25-yr-ild para V (1 alive) leaking for 48 days after delivery V, sb male by cs
leaving kano at 13.00 and arriving abuja at 19.30 in hotel by road over 500 km
operation reports, documentation, database
from 7.00 to 19.30 hr drive 500 km

wednesday 9 october 2013
abuja
meeting about g-win pooled efforts at fmoh
leaving abuja at around 15.30 and arriving in hotel in zaria at 20.00 hr over 350 km by road
from 8.00 to 20.00 hr drive 350 km

start of pooled effort g-win fmoh
thursday 10 ocotber 2013
zaria

0657_vvf 648 complicated transverse fascia repaor with closure of type **I** cs-fistula in 27-yr-old paraVII (3 alive) leaking for 7 mth after delivery VII, sb male by cs; cx retracted /moving and bilateral foot drop with contractures
0658_vvf 649 quartercircular fascia repair/para-euo fixation with transverse closure of type **IIBb** fistula in 17-yr-old para I (0 alive) leaking for 54 days after delivery I, sb male at home
traveling 250 km zaria to katsina 14.45 to 18.00 hr by road
operation reports, documentation, database
from 7.00 to 18.00 hr drive 250 km

friday 11 october 2013
katsina
0659_vvf 8729 highly complicated **final last resort assessment** of possibilities by para-euo fascia/avw fixation for post **IIAb** total intrinsic incontinence **III** in 36-yr-old para IV (0 alive) leaking for 15 yr after delivery II, sb female in hospital; operated 4x
0660_vvf 8730 quartercircular fascia repair/paraurethra_euo fixation with closure of type **IIAa** fistula in 20-yr-old para II (0 alive) leaking for 1 yr after delivery II, sb male by cs
0661_vvf 8731 quartercircular fascia repair/paraurethra_euo fixation with transverse closure of type **IIAa** fistula in 17-yr-old para I (0 alive) leaking for 7 mth after delivery I, sb male by cs
0662_cath 1555 catheter treatment of small fistula within large type **IIAa** avw trauma in 25-yr-old para V/VI (1 alive) leaking for 35 days after delivery VI, sb male/female twins in hospital
0663_cath 1556 catheter treatment of type **IIAa** fistula in 14-yr-old para I (0 alive) leaking for 30 dayas after delivery I, sb male in hospital
0664_cath 1557 catheter treatment of overflow incontinence due to atonic bladder in 36-yr-old para XII (6 alive) leaking for 42 days after delivery XII, live male in hospital
0665_cath 1558 catheter treatment of large type **IIAa** fistula in 38-yr-old para XI (8 alive) leaking for 39 days after delivery XI, sb male by cs
operation reports, documentation, database
from 7.00 to 18.00 hr drive 30 km

saturday 12 october 2013
katsina
0666_rvf 1115 delayed primary anorectum/sphincter/perineal body reconstruction in 32-yr-old para V (1 alive) stiil flatus incontinence for 35 days after fall into well; wound only became clean after sitzbaths with a detergent
0667_vvf 8732 longitudinal repair of 5x2 cm fascia defect + para-euo fixation bco intrinsic genuine incontinence **I-II** in 23-yr-old para IV (3 alive) leaking for 4 mth after delivery IV, live male in hospital
0668_vvf 8733 longitudinal fascia repair + para-euo fixation with reduction of total cervix prolapse mobile into its anatomic position in 34-yr-old para X (3 alive) something coming out for 1 yr after delivery X,live female at home
0669_vvf 8734 quartercircular fascia repair/paraurethra_euo fixation with 5/6 circumferential end-to-end vesicourethrostomy of type **IIA_Bb** fistula in 15-yr-old para I (0 alive) leaking for 75 days after delivery I, sb male in hospital
0670_vvf 8735 anterolateral R quartecircular fascia repair/paraurethra_euo fixation of type **IIAa** fistula in para I (0 alive) leaking for 7 mth after delivery I, live male by cs who died same day
operation reports, documentation, database
from 7.00 to 18.00 hr drive 30 km

sunday 13 october 2013
katsina
0671_vvf 8736 quartercircular fascia repair/paraurethra_euo fixation with closure of mutilated type **IIBb** fistula and
0672_rvf 1116 anorectum/sphincter ani/perineal body reconstruction of sphinc ter ani rupture in 32-yr-old para IV (3 alive) leaking/flatus incontinence for 17 yr after delivery I, sb male in hospital; operated 3x
0673_vvf 8737 quartercircular fascia repair/paraurethra_euo fixation with closure of type **IIAa** fistula with **b characteristics** in 18-yr-old para I (0 alive) leaking for 3 mth after delivery I, sb male in hospital
0674_vvf 8738 quartercircular fascia repair/paraurethra_euo fixation with closure of type **IIAb** fistula in 15-.yr-old para I (0 alive) leaking for 7 mth after delivery I, sb male in hos pital
operation reports, documentation, database
from 7.00 to 18.00 hr drive 30 km

monday 14 october 2013
katsina
0675_vvf 8739 longitudinal fascia repair/para-euo fixation in genuine intrinsic_stress incon tinence and
0676_rvf 1117 fascia/sphincter/perineal body reconstruction bco flatus incontinence in 18-yr-old para I (0 alive) leaking/flatus incontinence for 7 mth after delivery I, sb male in hospital
0677_vvf 8740 complicated longitudinal fascia repair with closure of type **I** fistula in 30-yr-old para X (4 alive) leaking for 74 days after delivery X, sb female by cs; not healed by catheter
operation reports, documentation, database
from 7.00 to 18.00 hr drive 30 km

tuesday 15 october 2013
eid-el-kabir
katsina
documentation and database
from 7.00 to 18.00 hr drive 30 km

wednesday 16 october 2013
eid-el-kabir
katsina
documentation and database
from 7.00 to 18 hr drive 30 km

thursday 17 october 2013
katsina
0678_vvf 8741 highly complicated fascia repair/fixation with 3/4 circumferential end-to-end vesicourethrostimy of severely mutilated type **IIAb** fistula fixed to cephalad symphysis +
0679_rvf 1119 transverse rectum closure of type **Ia** stool fistula in 26-yr-old para I (0 alive) leaking urine/passing diarrheic stools pv for 11 yr after delivery I, sb female by cs; opera ted 3x

0680_vvf 8742 complicated transverse iso longitudinal closure type **IIAa** fistula in 26-yr-old para VI (4 alive) leaking urine/passing stools pv for 3 mth after delivery VI, sb male by cs; type **Ic** stool fistula too complicated to handle in the same session
operation reports, documentation, database
from 7.00 to 18.00 hr drive 30 km

friday 18 october 2013
katsina
0681_vvf 8743 highly complicated excision of fibrosis/scar tissue + epithelized tracts of mutilated type **I** cs-tah-fistula in 16-yr-old para I (alive) leaking for 2 yr after delivery I, live female by cs; operated 3x
0682_8744 complicated ureter catheterization L ureter + longitudinal fascia repair with closure of extensive type **IIAa** fistula (ruptured bladder) in 28-yr-old para VIII (3 alive) leaking for 4 mth after delivery VIII, sb male by cs
0683_cath 1558 catheter treatment of **necrotic** type **IIA** fistula in 38-yr-old para XI (8 alive) leaking for 39 days after delivery XI, sb male by cs
0684_cath 1559 catheter treatment of minute fistula within type **I** avw trauma in 14-yr-old para I (0 alive) leaking for 50 days after delivery I, sb male in hospital
9685_cath 1560 catheter treatment of small type **I** cs-fistula in 40-yr-old para VIII (7 alive) leaking for 15 days after delivery VIII, live female by cs
0686_cath 1561 catheter treatment of type **IIAa** fistula in 28-yr-old para VII (4 alive) leaking for 15 days after delivery VII, sb male by cs
operation reports, documentation, database
from 7.00 to 18.00 hr drive 30 km

saturday 19 october 2013
katsina
0687_vvf 8745 longitudinal repair of 4x3 cm fascia defect in large cystocele with 2° cervix prolapse in 28-yr-old para VIII (5 alive) something coming out for 11 yr after delivery II, sb male at home; never leaking urine
0688_vvf 8746 open para-euo fascia fixation for genuine post **IIAa** intrinsic incontinence in 28-yr-old para VII (4 alive) leaking for 4 mth after delivery VII, sb male by cs
0689_vvf 8747 quartercircular fascia repair/paraurethra_euo fixation of type **IIAa** fistula in 15-yr-old para I (0 alive) leaking for 62 days after delivery I, sb male in hospital
0690_vvf 8748 fixation of cervix at L with bilateral avw para-euo fixation of 3° cervix prolapse with intrinsic incontinence **I-II** and
0691_rvf 1119 anorectum/sphincter ani/perineal body reconstruction of sphincter ani rupture in 38-yr-olf para VII (3 alive) something coming out/urine incontinence/stool incontinence for 2 yr after delivery VII, live male at home
0692_vvf 8749 highly **complicated** transverse “fascia” repair with closure of recurrent type **IIAb second obstetric** fistula as **last resort** in 24-yr-old para V (0 alive) leaking for 1 yr after delivery V, sb male by cs
operation reports, documentation, database
from 7.00 to 18.00 hr drive 30 km

sunday 20 october 2013
katsina
0693_cath aapab spontaneous healing of sandglass urethra_euo without subjective/objecttive intrinsic incontinence and
0694_rvf 1120 prerectal fascia/sphincter ani/perineal body reconstruction in **second obstetric** sphincter ani rupture in 25-yr-old para V/VI (3 alive) stool incontinence for 41 days after delivery V/VI, live/sb male **twins** in hospital

0695_vvf 8750 longitudinal **s-o-t-a** fascia repair for large cystocele with 2° cervix prolapse in 30-yr-old para IV (all alive) something coming out for 15 yr after delivery I, .live male at home
0696_vvf 8751 para-euo fascia fixation as **last resort** in **inoperable** total intrinsic incon tinence and
0697_rvf 1121 anorectum/sphincter/perineal body repair as **last resort** of **inoperable sevely mutilated** sphincter ani rupture in 16-yr-old para I (0 alive) leaking/ stool_incontinence for 2 yr after delivery I, sb male in hospital; “operated” 1x
0698_vvf 8752 transverse fascia repair with closure of type **IIAa** fistula in 22-yr-old para IV (2 alive) leaking for 3 mth after delivery IV, sb male in hospital; not healed by catheter
0688_vvf 8753 transverse closure of residual **extensive** type **IIAb** fistula in 16-yr-old para I (0 alive) leaking for 2 yr after delivery I, sb male in hospital
operation reports, documentation, database
from 7.00 to 18.00 hr drive 30 km

monday 21 october 2013
katsina
0700_vvf 8754 quartercircular fascia repair/paraurethra_euo fixation with 4/5 circumfer ential end-to-end vesicourethrostomy in 37-yr-old para X (8 alive) leaking for 38 days after delivery X, sb male in hospital
0701_vvf 8755 transverse fascia/posterior cx repair with closure of type **IIAa** cs-sth-fistula in 38-yr-old para X (8 alive) leaking for 52 days after delivery X, sb male by cs-sth
operation reports, documentation, database
from 7.00 to 18.00 hr drive 30 km

tuesday 22 october 2013
katsina
0702_vvf 8756 transverse fascia repair with closure of type **IIAa** fistula in 42-yr-old para XIII (4 alive) leaking for 5 mth after delivery XIII, sb male by cs; operation by **trainee** under strict direct personal supervision
0703_vvf 8757 transverse fascia repair with closure of type **IIAa** fistula in 15-yr-old para I (0 alive) leaking for 50 days after delivery I, sb female in hospital; operation by **trainee** under strict direct personal supervision
0704_vvf 8758 quartercircular fascia paraurethra_euo refixation in total post **IIAb** intrin sic incontinence after 2 operations in 19-yr-old para II (0 alive) leaking for 3 yr after delivery II, sb female by cs
0705_vvf 8759 quartercircular fascia repair/paraurethra_euo fixation with 2/3 circumfer ential end-to-end vesicourethrostomy of type **IIAb** fistula in 14-yr-old para I (0 alive) leak ing for 3 mth after delivery I, sb female by cs
operation reports, documentation, database
from 7.00 to 18.00 hr drive 30 km

wednesday 23 october 2013
katsina
0706_vvf 8760 marsupialization of either cyst or ectopic hydrouereter L into bladder bco congenital leaking in 17-yr-old para II (all alive)
0707_vvf 8761 closure/paraurethra_euo fixation of recurrent type **IIAb** lungu fistula after early sex of healed circumferential end-to-end vesicourethrostomy in 43-yr-old para XV (6 alive) now again leakinmg for 4 mth
traveling from katsina to zaria over some 250 km in 4 hr by car
operation reports, documentation, database
from 7.00 to 18.00 hr drive 250 km

thursday 24 october 2013
zaria
0708_vvf 651 end-to-end vesicourethrostoimy with quartercircular fascia repair/paraure thra_euo fascia fixation of type **IIBb** fistula in 15-yr-old para I (0 alive) leaking for 3 mth after delivery I, sb male in hospital
0709_rvf 95 transverse rectum closure of type **Ia** stools fistula leaving pvw open due to stool contamination and
0710_vvf 652 quartercircular fascia repair/paraurethra fixation with 4/5 circumferential end-to-end vesicourethrostomy in 42-yr-old PIII (1 alive) leaking/passing stools pv for 15 yr after delivery III, sb male in hospital; operated several times
0711_vvf 653 para-euo fascia fixation with transverse closure of type **IIAb** fistula in 32-yr-old para I (0 alive) leaking for 17 yr afterd delivery I, sb male by cs-sth;operated 6x
0712_cath 103 still catheter treatment of minute type **I** cs-intracervical or –intrauterine fistula in 34-yr-old para III (2 alive) leaking for 8 mth after delivery III, sb male by cs; also mental confusion
0713_rvf 96 prerectal fascia repaor with rhaphy of internal sphincter/sphincter ani/peri neal body reconstruction and
0714_vvf 654 quartercircular fascia repair/paraurethra_euo fixation with closure of type **IIAa** fistula as **first stage** in 20-yr-old para III (1 alive) leaking/stool incontinence for 5 mth after delivery III, sb male by cs
operation reports, documentation, database
from 7.00 to 18.00 hr drive 20 km

friday 25 october 2013
zaria
0715_vvf 655 transverse fascia repair with closure of retracted type **I** fistula in 21-yr-old para V (2 alive) leaking for 41 days after delivery V, sb female in hospital
0716_vvf 656 longitudinal fascia repair bco genuine total instrinsic incontinence in 23-yr-old para III (1 alive) leaking for 8 yr after delivery I, sb female at home
0717_vvf 657 para-euo fascia fixation as **last resort final** bco post **IIAb** intrinsic inconti nence grade II in 26-yr-old para II (1 alive) leaking for 11 yr after delivery I, sb female by cs
traveling by commercial transport (total breakdown of Toyota jeep) back from zaria to katsina over 250 km from 13.30 to 17.30 hr
operation reports, documentation, database
from 7.00 to 18.00 hr drive 250 km

saturday 26 october 2013
katsina
0718_vvf 8762 transverse fascia repair with closure of type **IIAa** fistula in 35-yr-old para X (4 alive) leaking urine for 4 mth after delivery X, live male by cs; operation by trainee inder strict personal supervision
0719_vvf 8763 now **open** para-euo fascia/fibrosis fixation bco **mutilated** post **IIA** total intrinsic incontinence as **last resort final** in 18-yr-old para I (0 alive) leaking for 4 yr after delivery I, sb male in hospital; operated 4x
0720_vvf 8764 open para-euo fascia/fibrosis/avw fixation bco intrinsic incontinence grade **II** after successful **inoperable** type **IIAb** fistula in 31-yr-old para I (0 alive) leaking for 16 yr after delivery I, sb male in hospital; operated at least 4x
operation reports, documentation, database
from 7.00 to 18.00 hr drive 30 km

sunday 27 october 2013
katsina
0721_cath 1562 catheter treatment for small cs-fistula/ureter fistula/incontinence in 20-yr-old para III (1 alive) leaking for 4 mth after delivery III, sb female by cs; **inconclusive** dye test
0722_vvf 8765 bilateral longitudinal severing of distal avw stricture with traction onto posterior urethra and total post **IIAb** incontinence in 57-yr-yr-old para I leaking for 40 yr after delivery I, sb male in hospital; operated at least 7x
traveling from katsina to sokoto by road over 350 km in 4.5 hr
operation reports, documentation, database
from 7.00 to 18.00 hr drive 350 km

monday 28 october 2013
sokoto
0723_cath 75 catheter treatment of type **IIAa** fistula in 35-yr-old para XI (6 alive) leaking for 2 days after delivery XI, sb male in hospital
0724_vvf 1252 circumferential end-to-end vesicourethrostomy with quartercircular para urethra_euo fascia fixation of type **IIAb** fistula in 18-yr-old para II (0 alive) leaking for 1 yr after delivery II, sb male in hospital
0725_vvf 1253 transverse fascia repair with closure of type **IIAa** fistula not healed by cath 75 in 35-yr-old para XI (6 alive) leaking for 24 days after delivery XI, sb male in hospital; operation by **trainee** under strict personal supervision
0726_rvf 151 prerectal fascia/sphincter ani/perineal body reconstruction of poorly healed sphincter ani rupture in 15-yr-old para I (0 alive) stool incontinence for 40 days after delivery I, sb male at home; operated 1x
traveling from sokoto to b-kebbi over 150 km by road in 2 hr
operation reports, documentation, database
from 7.00 to 18.00 hr drive 150 km

tuesday 29 octobee 2013
birnin kebbi
0727_vvf 201 bilateral ureter catheterization + transverse fascia repair with closure of fixed type **IIAa** fistula in 23-yr-old para IV (2 alive) leaking for 6 mth after delivery IV, sb male by cs-sth; **highly complicated under tension**
0728_vvf 202 highly **complicated** transverse fascia repair with closure of **fibrosed** type **I** fistula in 62-yr-old para IX (2 alive) leaking for 30 yr after delivery VI, sb male at home; after large impacted stone removal and **no** compliance
0729_vvf 203 continent urethra/fascia/avw reconstruction of type **IIBa** fistula in 23-yr-old para 0 leaking for 3 mth after yankan gishiri by wanzami
0730_rvf 24 severing of perineal skin bridge and anorectum/sphincter ani/perineal body reconstruction of sphincter ani rupture in 26-yr-old para I (alive) stool incontinence for 6 mth after delivery I, live female in hospital; operated at least 1x
0731_vvf 204 transverse fascia repair with closure of type **IIAa** fistula in 18-yr-old para II (1 alive) leaking for 7mth after delivery II, sb male by cs; operated 2x
operation reports, documentation, database
from 7.00 to 18.00 hr drive 20 km

wednesday 30 october 2013
birnin kebbi
0732_vvf 205 transverse fascia repair with closure of type **I** cs-tah fistula in 32-yr-old para VIII (3 alive) leaking for 7 mth after delivery VIII, sb male by cs-tah bco ruptured uterus, complicated by obesity

0733_vvf 206 longitudinal closure with bilateral para-euo fascia fixation of severely **muti lated** type **IIBb** fistula in 25-yr-old para III (2 alive) leaking for 2 yr after delivery III, sb male by craniotomy; operated 2x
0734_vvf 207 transverse fascia repair with closure of **strange** type **IIAa** fistula in 15-yr-old para I (0 alive) leaking for 6 mth after delivery I, sb male in hospital
0735_rvf 25 anorectum/sphincter ani/perineal body reconstruction as **step-by-step tea ching** of sphincter ani rupture in 38-yr-pld para VIII (4 alive) stool incontinence for 26 yr yr after rape before menarche; operated at least 3x
traveling back from birnin kebbi to sokto by road over 150 km in 2 hr arriving 17.20 hr
operation reports, documentation, database
from 7.00 to 18.00 hr drive 150 km

thursday 31 october 2013
sokoto
0736_vvf 1254 transverse fascia repair/para-euo fixation with closure minute residual type **IIAb** fistula in 16-yr-old para I (0 alive) leaking 9 mth after delivery I, sb male in hospital; operated 1x
0737_vvf 1255 quartercircular fascia repair/paraurethra_euo fixation of extensive type **IIAb** fistula in 31-yr-old para VII (2alive) leaking for 4 mth after delivery VII, sb female in hospital
0738_vvf 1256 deblocking cervix os as first stage bco **cryptolochiarrhea** with type **IIBb** fistula in 17-yr-old para I (0 alive) leaking/stool incontinence for 42 days after delivery I, sb male in hospital
0739_vvf 1257 double para-euo fascia fixation as **last resort final** bco total post **IIAb** delivery intrinsic incontinence in 29-yr-old para III (1 alive), sb male by cs; **second** ob stetric leakage, operated at least 4x
0740_vvf 1258 quartercircular fascia repair/paraurethra_euo fixation with closure of type **IIAb** fistula in 19-yr-old para I (0 alive) leaking for 3 yr after delivery I, sb male by cs: operated at least 1x
0741_vvf 1259 closure of minute type **I** cs-tah-fistula in vault pocket in 31-yr-old para II (1 alive) leaking for 8 yr after delivery II, sb male by cs-tah; operated at least 1x
operation reports, documentation, database
from 7.00 to 18.00 hr drive 20 km

friday 1 november 2013
sokoto
0742_vvf 1260 quartercircular fascia repair/paraurethra_euo fixation with closure of lungu type **IIAb** at L with total intrinsic incontinence in 18-yr-old para II (1 alive) leaking for 4 yr after delivery I, sb male by cs; operated 1x
0743_vvf 1261 transverse fascia repair with closure of minute lungu type **IIAb** fistula at L in 18-yr-old para I (0 alive) leaking for 3 yr after delivery I, sb male in hospital; operated 1x
0744_vvf 1262 transverse fascia repair with closure of minute type **I** fistula as **first stage** in 22-yr-old para IV (0 alive) leaking for 1 yr after delivery I, sb male in hospital; **second obstetric** multiple fistulas, operated at least 4x
operation reports, documentation, database
from 7.00 to 18.00 hr drive 20 km

saturday 2 november 2013
up to the maishai and then traveling back to katsina over 350 km in 5 hr
operation reports, documentation, database
from 7.00 to 18.00 hr drive 350 km

sunday 3 november 2013
katsina
0745_vvf 8766 longitudinal fascia repair of 5x3 cm defect bco 2° cx prolapse/cystocele with genuine intrinsic incontinence grade **I** in 18-yr-old para II (all alive) something coming out/leaking whilst coughing for 7 mth after delivery II, live female at home
0746_vvf 8767 excision of slough and **under tension** extended **primary suturing** as safe procedure of type **IIAb** fistula and
0747_rvf 1122 primary suturing of type **Ia** stool fistula in 24-yr-old para VI (1 alive) leak ing/passing stools pv for 47 days after delivery VI, sb male by cs
0748_cath 1563 catheter treatment of intrinsic incontinence grade **III** in 16-yr-old para II (1 alive) leaking for 21 days after delivery II, live male in hospital
screening of patients for g-win training program
operation reports, documentation, database
from 7.00 to 18.00 hr drive 30 km

monday 4 november 2013
katsina
0749_vvf 8768 urethralization by longitudinal/transverse fascia fixation bco genuine to tal post **IIAa** incontinence after healing by catheter 1554 and
0750_rvf 1123 prerectal fascia/sphincter ani/perineal body repair of sphincter ani ruptu re in 18-yr-old para II (1 alive) leaking/stool incontinence for 58 days after delivery II, sb male in hospital
0751_vvf 8769 transverse fascia repair with bladder closure of type **I** cs-fistula as **second stage** after success first stage type IIAa repair in 20-yr-old para II (1 alive) lea king for 6 mth after delivery II, sb male by cs
0752_vvf 8770 extended **primary suturing** as **minimum first stage** of extensive type **IIBb** fistula in 19-yr-old para I (0 alive), sb male in hospital
arrival of 4 doctors and 3 nurses for g-win training program
operation reports, documentation, database
from 7.00 to 18.00 hr drive 30 km

tuesday 5 november 2013
katsina
start g-win training program of 4 doctors and 3 nurses
handout + questionnaire to all trainees
0753_rvf 1124 prerectal fascia/anorectum closure with rhaphy of internal sphincter and sphincter ani/perineal body reconstruction and
0754_vvf 8771 highly complicated **primary suturing** as **last resort** closure of extensive type **IIAb** fistula in 29-yr-old para VI (2 alive), sb male by cs; operated 5x
0755_rvf aalac assessment of **inoperable** stool fistula due to rectum ca in 52-yr-old para XIV (3 alive) passing stools pv for 4 mth
0756_vvf 8772 highly complicated longitudinal closure of intracervicouterine type **I** cs-fistula in para III (2 alive) leaking for 42 days after delivery III, sb male by cs
lecture I: the obstetric fistula
operation reports, documentation, database
from 7.00 to 18.00 hr drive 30 km

wednesday 6 november 2013
katsina
0757_vvf 8773 highly complicated R ureter catheterization with transverse fascia repair

and closure of strange type **IIAa** fistula in 16-yr-old para I (0 alive) leaking for 6 mth after delivery I, sb male by cs
0758_rvf 1125 revision, release of scar with widening plasty of fibrotic quartercircular lpl scar with pain and iska pv in 17-yr-old para I (alive) pain around median episiotomy site with iska per vagina, for 6 mth after delivery I, live male in hospital; operated 1x
fmohpe 001 longitudinal dascia repair with closure of type **I** cs-fistula in 35-yr-old para IX (6 alive) leaking for 46 days after delivery IX, sb male by cs
0759_vvf 8774 sharp opening + blunt dilatation as **last resort necessary** of severe euo stenosis with **"dysuria"** in 21-yr-old para I (0 alive) leaking for 2 yr after delivery I, sb female in hospital; operated 6x
fmohpe 002 highly complicated transverse closure of type **I** cs-fistula with retracted cervix in 38-yr-old para X (4 alive) leaking for 34 days after delivery X, sb male by cs
lecture II: pelvis (floor) anatomy
lecture III: obstetric trauma to pubocervical fascia
lecture IV: obstetric trauma in relation to pelvis inlet
operation reports, documentation, database
from 7.00 to 18.00 hr drive 30 km

thursday 7 november 2013
katsina
0760_vvf 8775 highly complicated **primary suturing as last resort** of residual type **IIAb** in 32-yr-old para I (0 alive) leaking urine for 15 yr after delivery I, sb female by cs-sth; the problem **poor access** due to narrow pubic arch 50°
0761_vvf 8776 transverse fascia repair/paraurethra fixation of type **IIAa** fistula in 15-yr-old para I (0 alive) leaking for 1 yr after delivery I, sb male by cs; operated 1x; operation by trainee under strict direct personal supervision
0762_vvf 8777 assessment and compression/ligation of inferior rectal artery branch of **inoperable** type **IIBb** fistula in 15-yr-old para I (0 alive) leaking urine for 3 mth after deli very I, sb male by cs-sth; since good bladder capacity for review in 1 yr
0763_vvf 8778 aspiration, opening, drainage and packing of postdelivery hematocolpos in 20-yr-old PI (0 alive) after delivery I, sb male in hospital; also 3x repair for type **IIAb** fistula
operation reports, documentation, database
from 7.00 to 18.00 hr drive 30 km

friday 8 november 2013
katsina
0764_vvf 8779 para-euo ff graft/fascia fixation bco late post **IIAb** intrinsic incontinence "pipe stem" due to severe traction by fibrosis/fixed cx in 48-yr-old para IV (1 alive) leaking for 11 mth after severe vomiting after successful repair 25 yr ago after delivery IV, sb male in hospital
0765_vvf 8780 longitudinal repair/para-euo fixation of 4x3 cm fascia defect with total post **IIAb** intrinsic incontinence in 20-yr-old para II (1 alive), leaking for 2 yr after delivery II, sb male in hospital; operated 3x
0766_rvf 1126 posterolateral rupture of stricture and transverse **primary suturing** of type **Ib_c** stool fistula in 43-yr-old para XIII (8 alive) leaking/passing stools pv for 5 mth after delivery XIII, sb male by cs
lecture V: sphincter ani rupture; a complex trauma
lecture VI: prevention of post IIAa intrinsic incontinence
operation reports, documentation, database
from 7.00 to 18.00 hr drive 30 km

saturday 9 november 2013
katsina
0767_vvf 8781 final last resort assessment of **really inoperable type IIBb** fistula in 42-yr-old para X (9 alive) leaking for 5 yr after delivery X, sb male in hospital; after 1x **ps** as **final last assessment of possibilities**
0768_vvf 8782 bilateral para-euo fascia fixation as **last resort** of post mutilated **IIBb** to tal intrinsic incontinence in 26-yr-old para IV (1 alive) leaking for 3 yr after delivery IV, sb male in hospital; operated 5x
0769_vvf 8783 highly complicated **primary suturing** of small type **I** fistula in 17-yr-old para I (0 alive) leaking for 3 yr after delivery I, sb male by cs-sth; operated 1x, poor access due to retracted/moving cx/obesity
0770_vvf 8784 fixation of cervix bco recurrent total 3° cervix prolapse in 78-yr-old para IX (5 alive) something coming out for 5 mth after period of severe gastroenteritis; com pletely ok for 3yr following fixation bco prolapse for 50 yr
lecture VII: immediate management: mass campaign immediate catheter
lecture VIII: surgery of genuine intrinsic_stress incontinence
operation reports, documentation, database
from 7.00 to 18.00 hr drive 30 km

sunday 10 november 2013
katsina
0771_vvf 8785 transverse fascia repair with closure of type **IIAa** fistula in 32-yr-old para IX (7 alive) leaking for 9 mth after delivery IX, sb female by cs
0772_vvf 8786 paraurethra fascia fixation with closure of lungu-lungu fistulas R/L in 33-yr-old para II (0 alive) leaking since she was born; many operation in different centers by different surgeons
traveling from katsina to sokoto by road over 350 km in 5.5 hr
operation reports, documentation, database
from 7.00 to 18.00 hr drive 350 km

monday 11 november 2013
sokoto
0773_vvf 1263 bilateral ureter catheterization and **under tension** circumferential end-to-end vesicourethrostomy of extensive fixed type **IIAb** fistula in 28-yr-old para VI (4 alive) leaking/stool incontinence for 57 days after delivery VI, sb male by cs
fmohpe 003 longitudinal closure of type **IIAa** fistula in 12-yr-old para 0 leaking for 8 yr after removal of bladder stone by wanzami
0774_vvf 1264 highly complicated continent urethra/fascia/avw of mutilated type **IIBb** fistula in 23-yr-old para II (0 alive) leaking for 3 yr after delivery II, sb female by cs; operated several times
0775_vvf 1265 quartercircular fascia repair/paraurethra_euo fixation of lungu lungu type **IIAb** fistulas in 37-yr-old para II (0 alive) leaking for 15 yr after delivery II, sb female at home; completely ok after vvf/rvf delivery I
fmohpe 004 urethra reconstruction of type **IIBa** fistula in 17-yr-old para I (0 alive) leaking for 1yr after delivery I, sb male by cs; operated 2x
traveling from sokoto to b/kebbi over 150 kn by road in 2 hr arriving 18.30 hr
operation reports, documentation, database
from 7.00 to 18.00 hr drive 150 km

tueday 12 november 2013
b/kebbi
0776_vvf 208 para-euo fixation with transverse closure of severely mutilated type **IIBb**

fistula in 15-yr-old para I (0 alive) leaking for 1 yr after delivery I, sb male in hospital; severe uv-strictire etc after 1x operation; now **last resort final**
fmohpe 005 transverse closure of type **IIAb** fistula in 27-yr-old para II (0 aölive) leaking for 6 yr after delivery II, sb male in hospital; operated at least 2x
0777_vvf 209 continent urethra/fascia/avw reconstruction of minute fistula within **seve rely mutilated** type **IIBb** neourethra in 20-yr-old para I (alive) leaking for 4 yr after delivery I, live female by cs; operated 7x; now **last resort final**
fmohpe 006 transverse fascia repair with closure of type **IIAa** fistula in 15-yr-old para I (0 alive) leaking for 9 mth after delivery I, sb female in hospital
0778_vvf 210 transverse fascia repair with closure of type **IIAa** fistula at tip of ^ avw structure in 20-yr-old para II (1 alive) leaking for 4 mth after delivery II, sb female by cs
fmohpe 007 transverse closure of large type **IIAb** fistula in 30-yr-old para VI (3 alive) leaking for 4 mth after delivery VI, sb male in hospital
0779_vvf 211 transverse fascia repair with closure of **severely mutilated** type **IIAa** fis tula in 24-yr-old para I (0 alive),sb female in hospital; operated 1x; **last resort final**
fmohpe 008 quartercircular fascia repair/paraurethra_euo fixation with closure of type **IIAb** fistula in 16-yr-old para I (0 alive) leaking for 2 yr after delivery I, sb male by cs
0780_cath 14 catheter treatment as **first stage** in long-standing post **I** atonic bladder in 43-yr-old para III (1 alive) leaking for 15 yr after delivery II, live male by cs; operated 2x
fmohpe 009 circumferential end-to-end vesiourethrostomy of type **IIAb** fistula in 25-yr-old para I (0 alive) leaking for 4 mth after delivery I,sb male at home
operation reports, documentation, database
from 7.00 to 18.00 hr drive 20 km

wednesday 13 november 2013
b/kebbi
0781_vvf 212 highly complicated paraurethra fascia fixation with transverse closure of type **IIBb** fistula in 24-yr-old para III (0 alive) leaking for 4 yr after delivery III, live male by cs; operated at least 8x
fmohpe 010 transverse fascia repair with closure of type **IIAa** fistula with bladder base prolapse in 27-yr-old para V (1 alive) leaking for 3 mth after delivery V, live male in hospital
07812_vvf 213 transverse fascia repair with closure of type **IIAa** fistula in 15-yr-old para I (0 alive) leaking for 3 mth after delivery I, sb female in hospital; operation by **trainee** under strict direct supervision
fmohpe 011 transverse fascia fixation with closure of type **IIAa** fistula as **first stage** in 30-yr-old para VII (4 alive) with multiple fistulas, leaking for 2 yr after delivery VII, sb male in hospital
0782_vvf 214 quartercircular fascia paraurethra_euo fixation with closure of **mutilated** type **IIBb** fistula in 20-yr-old para I (0 alive) leaking for 5 yr after delivery I, sb female at home; operated at least 6x
fmohpe 012 transverse fascia repair with closure of type **IIAa** fistula in 28-yr-old para II (1 alove) leaking for 12 yr after de.livery I, sb male at home; operated at least 2x
traveling from b/kebbi back to sokoto by road over 150 km in 2 hr
operation reports, documentation, database
from 7.00 to 18.00 hr drive 150 km

thursday 14 november 2013
ashoura
sokoto
documentation and database

friday 15 november 2013
sokoto
0783_vvf 1266 para-euo fascia fixation + fixation of cervix at L bco post **IIAa** repair in continence in 37-yr-old para IX (2 alive) leaking/prolapse for 22/18 yr after delibery I resp III, sb male in hospital
fmohpe 013 transverse fascia repair with closure of type **IIAa** fistula in 17-yr-old para I (alive) leaking for 20 days after yankan gishiri by wanzami bco refusing husband 2 mth after delivery I, live male at home
0784_vvf 1267 transverse fascia repair/bilateral para-euo fixation with closure of mutilated type **IIAa** fistula in 34-yr-old para VIII (7 alive) leaking for 1.5 yr after delivery VIII, live female in hospital; operated 1x
fmohpe 014 longitudinal urethra reconstruction with perineal body reconstruction of type **IIBa** fistula in 16-yr-old para I (0 alive) leaking for 28 days after delivery I, sb male at home
0785_rvf 153 prerectal fascia/anorectum/sphincter ani/perineal body repair of small anterior sphincter defect and
0786_vvf 1268 highly complicated ureters + longitudinal closure of **extensive** type **IIAa** fistula in 40-yr-old para XII (5 alive) leaking/stool incontinence for 11 mth after delivery XII, sb female by tah-cs
fmohpe 015 bilateral ureter catheterization + longitudinal closure of large type **IIAa** fistu la in 17-yr-old para I (0 alive) leaking for 2 mth after delivery I, sb male in hospital
operation reports, documentation, database
from 7.00 to 18.00 hr drive 20 km

saturday 16 november 2013
8.00 hr up to maishai and further traveling back from sokoto to katsina over 350 km by road arriving aat 13.00 hr safely
operation reports, documentation, database
from 7.00 to 18.00 hr drive 350 km

sunday 17 november 2013
katsina
0787_rvf 1127 severing of perineum bridge and anorectum/sphincter ani/perineal body reconstruction of sphincter ani rupture in 18-yr-old para I (0 alive) stool/flatus inconti nence for 10 mth after delivery I, sb male in hospital; operated 2x
0788_cath 1564 catheter treatment of type **IIAa** fistula in 15-yr-old para I (0 alive) leak ing for 9 days after delivery I, sb male in hospital
0789_cath 1565 catheter treatment of type **IIAa** fistula in 16-yr-old para I (0 alive) leak ing for 34 days after delivery I, sb male in hospital
0790_cath 1566 catheter treatment of large type **IIAa** fistula in 37-yr-old para VII (5 alive) leaking/stools incontinence for 20 days after delivery VII, sb male in hospital; she needs support at standing/walking
operation reports, documentation, database
from 7.00 to 18.00 hr drive 30 km

monday 18 november 2013
katsina
0791_rvf 1128 transverse primary suturing as **last resort final** of severely mutilated **extensive** type **IIa** fistula with sigmoidostomy and
0792_vvf 8787 longitudinal repair with urethra reconstruction of severely mutilated **ex tensive** type **IIBb** fistula as **last resort final** in 18-yr-old para I (0 alive) leaking/passing stools pv for 1 yr after delivery I, sb male in hospital; operated 3x

0793_vvf 8788 excision of scar tissue at vault and transverse closure of **mutilated** strange type **IIAb** fistula as **last resort final** in 24-yr-old para III (1 alive) leaking for 6 yr after delivery III, sb male in hospital; operated 6x
operation reports, documentation, database
from 7.00 to 18.00 hr drive 30 km

tuesday 19 november 2013
katsina
0794_vvf 8789 severing of severe stenosis and **ps-like last resort final** closure of **se verely mutilated inoperable extensive** type **IIAb** fistula with subtotal bladder loss in 26-yr-old para V (1 alive) leaking for 10 yr after delivery I, sb male in hospital; operated 1x
0795_vvf 8790 longitudinal fascia repair/para-eio fixation of **genuine + post I** intrinsic incontinence **III** in 14-yr-old para I (0 alive) leaking for 3 mth after delivery I, sb male in hospital; successdul closure of fistula by catheter treatment
0796_vvf 8791 refixation of cervix at L bco recurrence of total 3° cervix prolapse after
operation reports, documentation, database
period of cough in 73-yr-old para II (all alive); operated 1x
from 7.00 to 18.00 hr drive 30 km

wednesday 20.november 2013
katsina
0797_vvf 8792 transverse fascia repair with closure of type **IIAa** fistula in 15-yr-old para I (alive) leaking for 30 days after delivery I, live male in hospital; operation by **trainee** under **strict** direct supervision
0798_vvf 8793 highly complicated **last resort** quartercircular fascia repair/pararethra_ euo fixation with closure of minute type **IIBb** fistula in 28-yr-old para I (0 alive) leaking for 11 yr after delivery I, sb male in hospital; operated at least 5x
0799_vvf 8794 s-o-t-a longitudinal fascia repair/para-euo fixation of 2° cervix prolapse with large cystocele in 37-yr-old para IX (7 alive) something coming out for 3 yr after delivery VIII, live male in hospital
operation reports, documentation, database
from 7.00 to 18.00 hr drive 30 km

rhursday 21 novembe 2013
katsina
0800_vvf 8785 highly complicated transverse fascia repair with closure of type **I** cs-sth fistula in 23-yr-old para V (2 alive) leaking for 63 days after delivery V, sb male by cs-sth; seems total anterior cx/uterus loss
0801_vvf 8796 transverse fascia repair with closure of type **IIAa** fistula not healed by catheter in 16-yr-old para I (0 alive) leaking for 42 days after delivery I, sb male in hospital; by **trainee** under strict direct supervision
0802_vvf 8797 distal urethra_euo reconstruction with para-euo fascia fixation bco of type **IIBa** fistula in 16-yr-old para I (alive) leaking for 3 mth after delivery I, live female by cs; operated 3x for yankan gishiri fistula
operation reports, documentation, database
from 7.00 to 18.00 hr drive 30 km

friday 22 novembee 2013
katsina
0803_vvf 8798 quartercircular fascia repair/paraurethra_euo fixation with 3/4 circumfer ential end-to-end vesicourethrostimy of type **IIAb** fistula in 30-yr-old para IX (5 alive)

leaking/flatus incontinence for 5 mth after delivery IX, sb male in hospital; by **trainee** under strict direct supervision
0804_vvf 8799 cervix suspension at R for large cystocele still after successful cervix suspension at L in 53-yr-old para XII (6 alive) something coming out for 25 yr after delivery VII, live male at home
0805_vvf 8800 complicated gradual dilatation of stone-hard post **IIBb** uv-stricture in 22-yr-old para II (1 alive) leaking 4 yr after delivery III, live male by cs; third obstetric leakage after at least 7x repair
0806_vvf 8801 unusual peritoneum/symphysis/para-euo/urethra closure of **severely mutilated** type **IIAb** fistula in 16-yr-old para I (0 alive), sb male by cs; operated 1x in priv clin
operation reports, documentation, database
from 7.00 to 18.00 hr drive 30 km

saturday 23 november 2013
katsina
0807_vvf 8802 highly complicated closure of two residual fistulas in 30-yr-old para VI (3 alive) leaking for 3 yr after delivery VI, sb male in hospital; operated 1x
operation reports, documentation, database
0808_vvf 8803 quartercircular fascia repair/paraurethra_euo fixation **under tension** of type **IIAb** fistula in 16-yr-old para I (0 alive) leaking for 10 mth after delivery I, sb female by cs
from 7.00 to 18.00 hr drive 30 km

sunday 24 november 2013
katsina
0809_vvf 8804 highly complicated transverse closure with cx fixation of **severely muti lated** type **IIBb** fistula at base of **scarred neourethra** in 63-yr.old para I (0 alive) leaking for 45 years after delivery I, sb male at home; operated at least 3x
0810_vvf 8805 ureter R catheterization **under high tension** closure of **inoperable** type **IIAb** fistula in 19-yr-old para I (0 alive) leaking for 2 yr after delivery I, sb female by cs; operated 6x
0811_vvf 8806 kwaskwarima + assessment of operable **mutilated** type **IIBa** fistula in 22-yr-old para 0 leaking for 9 yr after yankan belu by wanzami bco congenital vagina malformation; operated 2x, no surgery by urethra reconstruction since pt prefers the existing hanya into bladder
operation reports, documentation, database
from 7.00 to 18.00 hr drive 30 km

monday 25 november 2013
katsina
0812_vvf 8807 distal urethra_euo reconstruction + para-euo fixation as **last resort final** bco post **IIAb** delivery total intrinsic incontinence in 42-yr-old para IV (1 alive) leaking for 18 yr after delivery III, sb male in hospital; operated at least 5x
0813_vvf 8808 transverse fascia repair with closure of minute type **IIAa** fistula in 35-yr-old para VI (3 alive) leaking for 8 mth after delivery VI, live male at home; by **trainee** under strict direct supervision
0814_rvf 1129 sphincter ani repair with perineal body reinforcement bco only diarrheic stool incontinence and

0815_vvf 8809 paraurethra_euo fascia fixation bco total post **IIAb** intrinsic incontinence III as **last resort final** in 25-yt-old para II (0 alive) leaking for 5 yr after delivery II, sb male at home; operated at least 6x
operation reports, documentation, database
from 7.00 to 18.00 hr drive 30 km

tuesday 26 november 2013
katsina
flag off g-win-fmoh program
traveling from katsina to zaria over 250 km arriving 19.00 hr in hotel
operation reports, documentation, database
from 7.00 to 19.00 hr drive 250 km

wednesday 27 november 2013
zaria
0816_vvf 658 quartercircular fascia repair/paraurethra_euo fixation with 4/5 circumferen tial end-to-end vesicourethrostomy of type **IIAb** fistula in 16-yr-old para I (0 alive) leak ing for 4 mth after delivery I, sb female in hospital (eclampsia)
0817_vvf 659 quartercircular fascia repair/paraurethra_euo fixation with closure of type **IIBa** fistula in 14-yr-old para 0 leaking for 6 mth after yankan gurya by wanzami
0818_vvf 670 quartercircular fascia repair/paraurethra_euo fixation with closure of type **IIAa** fistula in 17-yr-old para II (0 alive) leaking for 3 mth after delivery II, sb male in hos pital
0819_cath aaba first proper bladder drill for leaking urine only whilst standing/walking since she was born; for further decision after drill
0820_vvf 661 transverse para-euo fascia fixation with closure of residual type **IIAb** fistula in 16-yr-old para I (0 alive) leaking for 5 mth after delivery I, sb female in hospital; successful rvf repair
0821_vvf 662 transverse bladder/symphysis closure over residual lungu fistula R type **IIAb** in 18-yr-old para I (0 alive) leaking for 2 yr after delivery I, sb female in hospital
operation reports, documentation, database
0822_vvf cath 104 immediate catheter treatment of type **IIAa** fistula in 15-yr-old para I (0 alive) leaking for 14 days after delivery I, sb male in hospital
operation reports, documentation, database
from 7.00 to 18.00 hr drive 20 km

anatomy of female pelvis and pelvis floor
as based on textbooks

introduction

the anatomy should be studied from textbooks keeping in mind these are based on post mortem dissection

here only a short comprehensive outline is given as a start/incentive to more extensive self-study

this is not an easy task since the anatomy is complicated but mastering the anatomy is the first step for any surgeon in whatever field since reconstruction of the functional anatomy will ensure normal physiology

bony pelvis

this consists of 3 paired bones and 2 single bones connected to each other via joints and/or ligaments :
paired **pubis** bones “fused” anteriorly by cartilage as **symphysis**
paired **ischium** bones
paired **ilium** bones
single **sacrum** bone
single **coccyx** bone
there is a pelvis inlet into the true pelvis and a pelvis outlet and several other openings like bilateral obturator foramen and bilateral (greater and lesser) sciatic foramen

important pelvis ligaments

sacrotuberous ligament:
from posterior iliac spine, lateral/lower parts of sacrum, upper/lateral part of coccyx to ischial tuberosity

sacrospinous ligament:
in front of sacrotuberous ligament, triangular in shape from broad base: lateral/lower parts of sacrum, lateral/upper part of coccyx to apex of: ischial spine; (ischio)coccygeus muscle coexistensive with its pelvic aspects

pelvis foramina

obturator foramen
opening between superior pubis, inferior pubis and ischium bones; it is closed by the obturator foramen membrane

the sacrospinous ligament divides the space between the sciatic notch_spine and sacrum_coccyx into foramina with the lateral margin of the sacrotuberous ligament as boundary:

greater sciatic foramen thru which piriformis muscle, superior and inferior gluteal vessels and nerves, internal pudendal vessels, pudendal nerve, sciatic nerve cephalad from piriformis nerve, posterior femoral nerve and nerves to obturator and quadratus femoris muscles; is the cephalad=superior foramen

lesser sciatic foramen thru which internal obturator muscle tendon, nerve to internal obturator muscle, internal pudendal vessels and nerve; is the caudad=inferior foramen

pelvis connective tissue

the soft tissues of the pelvis are covered by and fixed (in)directly to the bony pelvis via a complicated system of connective tissue, sometimes called pelvis connective body

parietal pelvis fascia
part of general layer that lines the inner aspects of the abdominal and pelvis walls, in continuity with transversalis fascia and fascia iliaca; as part of pelvis floor (superior and inferior fascia of pelvic diaphragm) covering lateral pelvis wall (obturator fascia) and incompletely the posterior pelvis wall since it is absent on the median portion of the front of the sacrum

obturator membrane
the obturator membrane closes the obturator foramen and forms the origin of the obturator externus muscle on the outside and the origin of the obturator internus muscle on the inside

obturator fascia
part of parietal fascia covering obturator internus muscle

arcus tendineus fasciae = atf
partly as line of fusion of obturator fascia with superior/inferior fasciae of pelvis diaphragm
bilaterally from pubis 1-1.5 cm paraurethrally/laterally from midline symphysis (cartilage) and over internal obturator muscle to ischial spine; in upright position 10-20° as to horizontal/ground from anterior to posterior

arcus tendineus of levator ani muscle = atlam
partly as line of fusion between obturator fascia and superior/inferior fasciae of pelvis diaphragm
from 1 cm laterally from paraurethral arcus tendineus fasciae to ischial spine as origin of pubo-, ilio- and (ischio)coccygeus muscles

visceral fascia
from extraperitoneal tissue as packing for organs and sheath for vessels in between peritoneum and parietal fascia

pubocervical fascia
the pubocervical fascia forms the **cephalad pelvis diaphragm** or **female pelvis ceiling** and is (In)directly fixed circumferentially to the bony pelvis like the skin of a drum: since attached anteriorly to the pubis bones, bilaterally to the arcus tendineus fasciae (atf) and posteriorly to the sacrum via the cervix and sacrouterine, broad and cardinal ligaments and ?sacrospinal ligaments?
there remain 2 hiati, a small one anteriorly for the distal urethra and a larger one posteriorly in between the sacrouterine ligaments for the rectum
it keeps the abdominal contents and bladder from entering the vagina and via the vagina from prolapsing into the outside

prerectal fascia
the prerectal fascia covers the anterior rectum wall and is fixed to the levator ani fascia bilaterally via the arcus tendineus of the prerectal fascia; it is not well developed

perineal body
wedge-like connective tissue structure in between vagina and anus also called centrum tendineum perinei into which bulbospongiosus and transversus perinei muscles radiate; it stabilizes the (anterior) anus in its anatomic position

perineum membrane
semicircular from symphysis and arcuate ligament in between both inferior pubis and ischium bones up (in)to perineal body and transversus perinei muscles with wide opening medially for vagina/vulva
this membrane separates the deep perineal space, between the membrane and levator ani muscles, from the superficial perineal space, between the membrane and the subcutaneous fascia

pelvis muscles

there are 2 relatively small intrapelvic muscles which function as exo-rotators/abductors of the hip
obturator internus muscle
originates from pelvic surface of obturator membrane and pubic and ischial margins of obturator foramen with its tendon thru the lesser sciatic foramen and inserts into medial surface of trochanter major
piriformis muscle
originates from pelvic surface of sacrum and ilium just below posterior inferior iliac spine thru greater sciatic foramen inserting into upper border of trochanter major
and four extrapelvic muscles as exo-rotaors of the hip

then there are muscles which form the pelvis floor
levator ani muscle
originating from pubis and atlam and inserting into coccyx and anococcygeal ligament; actually one flat muscle but normally divided into different parts
pubococcygeus muscle
from pubis and atlam to coccyx and anococcygeal ligament
puborectalis muscle
medial part of pubococcygeus muscle fusing behind rectum and pulling it anteriorly

iliococcygeus muscle
from atlam to coccyx and anococcygeal ligament
(ischio)coccygeus muscle
from ischium to coccyx; sacrospinous ligament

then there are muscles at the pelvis outlet which belong as well to the pelvis floor
urethrovaginalis muscle
in the deep perineal space between perineal membrane and levator ani muscle
compressor urethrae muscle
in the deep perineal space between perineal membrane and levator ani muscle
bulbospongiosus muscle
in the superficial perineal space from symphysis laterally from clitoris and radiating into perineal body; closes the vagina introitus and stabilizes the (anterior) anus
ischiocavernosus muscle
in the superficial perineal space from ischial tuberosity into clitoris
transversus perinei muscle
from ischial tuberosity and radiating into perineal body for stabilization of (anterior) anus

real intrapelvic organs

in the tunnel-like space enclosed by the pubocervical fascia cepahalad, by the levator ani muscles bilaterally and caudad, by the ischiocavernosus muscles bilaterally and caudad and by the sacrum posteriorly

vagina
the vagina consists of 3 layers: mucosa, muscular coat and fibrous coat
the anterior vagina wall is adherent to pubocervical fascia and as such indirectly fixed to the pelvis wall via arcus tendineus fasciae
the posterior vagina wall is adherent to prerectal fascia and perineal body and as such indirectly fixed to pelvis wall via arcus tendineus of prerectal fascia
blood supply
upper part: branches of uterine artery
vaginal artery as 2 or 3 branches from internal iliac artery may anastomose in median plane to form longitudinal trunks as anterior and posterior azygos arteries of vagina
lower part: branches from artery of bulb of vestibule
nerves
by uterovaginal plexus except for its lowermost part by pudendal nerve; there is little sensation except for its lowermost part

cervix
entering thru the apical pubocervical fascia and proximal anterior vagina wall; stabilized in its anatomic position by the sacrouterine ligaments posteriorly, the broad and cardinal ligaments bilaterally and by the **pubocervical fascia anteriorly**
blood supply
branches of uterine artery
nerves
autonomic sympathetic and parasympathetic system

rectum
rectum consists of 3 layers: mucosa, muscular coat and fibrous coat
it is fixed to the sacrum and rests upon the levator ani muscles, anococcygeal ligament, and coccyx
reflection of peritoneum at anterior rectum at 5-6 cm from anus; distal part of rectum not covered by peritoneum
blood supply
most important unpaired superior rectal artery as continuation of inferior mesenteric artery
then:paired middle rectal artery, inferior rectal artery and median sacral artery
extensive anastomosis between the arteries; so if inferior mesenteric artery ligated, the middle and inferior rectal artery can supply the entire rectum
nerves
autonomous sympathetic and parasympathetic system: from pelvic plexus and from mesenteric plexus

anorectum with sphincter complex
the anorectum is fixed in its position by anococcygeal ligament, pubococcygeus muscle, puborectalis muscle, perineal body (centrum tendineum perinei), bulbospongiosus muscles and transversus perinei muscles
blood supply
unpaired superior hemorrhoidal artery (superior rectal artery) and paired middle hemor rhoidal artery (middle rectal artery) and paired inferior hemorrhoidal artery (internal pudendal artery)
nerves
inferior rectal nerve from pudendal nerve also for external sphincter whilst the internal sphincter is under autonomic parasympathetic and sympathetic control

extraperitoneal abdominal intrapelvic organs
in the space between the peritoneum, symphysis and the pubocervical fascia

female bladder
blood supply
upper part: usually by 2 or 3 superior vesical arteries from upper part of umbilical artery
lower part_neck: by inferior vesical artery and neck also by vaginal arteries
nerves
many nerve fibers from vesical (and prostatic) plexus as forward extension of inferior hypogastric plexuses

female urethra
blood supply
upper part: inferior vesical artery
middle part: inferior vesical artery and uterine artery
lower part: internal pudendal artery
nerves
upper part: vesical and uterovaginal plexuses
lower part: pudendal nerve

pelvis outlet organs

labia majora/minora
blood supply
anterior labial branches from external pudendal artery and posterior labial branches from internal pudendal artery
nerves:
anterior labial nerve (ilioinguinal nerve) and posterior labial nerve from pudendal nerve

pelvis blood supply

internal iliac (hypogastric) artery
from common iliac artery
supplies most of the pelvis

internal pudendal artery
from internal iliac artery
inferior rectal artery
posterior scrotal (labial) branches
perineal artery
artery of penis bulb
artery of bulb of vestibule
urethral artery
deep artery of penis or clitoris
dorsal artery of penis or clitoris

visceral branches from internal iliac artery
umbilical artery
superior vesical artery
ductus deferens artery homologous to uterine artery
inferior vesical artery

uterine artery
from internal iliac artery

vaginal artery
from internal iliac artery; sometimes in combination with uterine artery

middle rectal artery
sometimes absent

superior rectal artery
superior rectal artery as continuation of **inferior mesenteric artery**: most important for blood supply of rectum

pelvis nerves

nerve supply
from the sacral and coccygeal spinal nerves and from the pelvic part of the autonomic nervous system from sympathetic trunk and aortic plexus

sacral plexus (L4 to S5)
12 named branches:
7 distributed to the buttock and lower limb:
superior gluteal nerve (L5 to S1)
inferior gluteal nerve (L5 to S2)
nerve to quadratus femoris muscle (L4 to S1)
nerve to obturator internus muscle (L5 to S2)
posterior femoral cutaneous nerve (S1 to S3)
perforating cutaneous (inferior medial clunial) nerve (S2, S3)
sciatic nerve (L4 to S3), largest nerve in the body, leaves pelvis thru greater sciatic foramen below the pririformis; the two parts may leave separately, peroneal portion pierces the piriformis or even above piriformis and the tibial portion passes below it and the two parts remain separate throughout their course
5 distributed to the pelvis
nerve to piriformis (S1, S2)
nerves to levator ani and coccygeus (S3, S4)
nerve to sphincter ani externus (perineal branch of S4)
pelvic splanchnic nerves (S (2), 3, 4, (5))

pudendal nerve (S2, 3, 4)
thru greater sciatic foramen below piriformis and crosses the back of the ischial spine and supplies as well sphincter ani externus and skin around anus and anus mucosa up to pectinate line.

important facts

upright position
the spinae iliacae superiores and pubis tubercles are in the same frontal/vertical plane in the upright position

axis symphysis pubis
30-45° as to horizontal/ground from caudad=inferior to cephalad=superior; 6-7 cm broad in upright position

axis pubocervical fascia
15-20° as to horizontal/ground from symphysis to sacrum in upright position

angle between arcus tendineus fasciae and symphysis
this is in the range of 125-140°

discussion

though this is a condensate from the textbooks the author added some things and phrased some things in a different way for a better understanding, like
extraperitoneal abdominal intrapelvic organs and real intrapelvic organs
pubocervical fascia as cephalad pelvis diaphragm or female pelvis ceiling; it is fixed like skin of a drum (in)directly “circumferentially” to the bony pelvis in an overall way and not only bilaterally; this fascia plays a decisive role in female (in)continence and prolapse
anterior fixation of cervix by pubocervical fascia; mentioning of this important (anterior) fixation could nowhere be found
the functional anatomy will be presented in a separate chapter

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functional anatomy of female pelvis and pelvis floor for reconstructive surgeons personal concept

introduction

since the author started with obstetric trauma surgery in 1983 he tried to get a proper view of the complicated pelvis (floor) anatomy and an understanding of the physiology especially of the urine and stool continence/closing mechanism

it took quite some time to master the anatomy by hard study, far longer to have a three-dimensional view and very long to visualize everything in the upright position; he is still in the process of understanding the functional relations between all these structures especially with regards to the urine and stool continence and incontinence mechanisms in the female and the development of genital prolapse due either to obstetric trauma or to ageing processes

actually for the last 30 years there has not been a single day the author was not actively involved in clinical research; every day and every operation the author is still in a learning process finding new clues and (non)confirming theories and operation technique principles

however, how hard he studied he failed to comprehend the current theories since there was a discrepancy between what he saw/found during his extensive obstetric trauma reconstructive surgery and all these theories

the human anatomy does not change, except for under evolutionary impulses; but it seems another concept is needed for a comprehensive understanding

the following is a personal interpretation of the functional anatomy for a common sense approach

functional pelvis anatomy

the abdominopelvic space can be considered as a confined space with hydrostatic and compression pressure

the abdominopelvic cavity can be divided into **four** functional spaces:
the **intraperitoneal space** for the digestive tract enclosed by the parietal peritoneum
the **retroperitoneal space** for large vessels, pancreas, kidneys etc enclosed by parietal peritoneum anteriorly and spine with trunk muscles posteriorly
the **pre/subperitoneal space** for bladder and urethra enclosed by abdominal wall (below umibillicus) and symphysis anteriorly, pubocervical fascia caudad and parietal peritoneum posteriorly
the **subfascial/subperitoneal pelvis space** for the real intrapelvic organs: vagina,

cervix, rectum and anorectum enclosed by pubocervical fascia cephalad, pelvis floor muscles laterally and caudad, ischiocavernosus muscles laterally and caudad and sacrum and coccyx posteriorly

for obstetric trauma surgery the pre/subperitoneal space with its organs and the subfascial/subperitoneal pelvis space with its organs/structures are the most important though the intraperitoneal space and retroperitoneal space will sometimes be entered as well

concept of female subfascial/subperitoneal pelvis space

this is the space for the real intrapelvic organs and is enclosed by

pelvis ceiling

formed by the pubocervical fascia, cervix and broad/cardinal/sacrouterine ligaments

anterior

inferior/caudad edge of symphysis with anterior part of pubocervical fascia

lateral walls

levator ani muscles, (ischio)coccygeus muscles, sacrospinous ligaments, obturator internus muscles and piriformis muscles

posterior

sacrum and coccyx¸ and parietal peritoneum covering the posterior vagina fornix

pelvis floor

levator ani muscles, ischiocavernosus muscles, perineal body with transversus perinei and bulbospongiosus muscles, anorectum with external sphincter ani complex and perineal membrane

structures encountered from symphysis to coccyx/sacrum

symphysis pubis

the symphysis is 6-7 cm broad with an **axis** as to horizontal/ground of 30-45° from caudad (inferior) to cephalad (superior) in the upright position
it forms the anterior bony pelvis

bladder, bladder neck, uv-junction, proximal_mid_distal urethra

the anterior bladder, bladder neck, uv-junctuon and urethra rest on the symphysis in the upright position and are firmly attached to the symphysis and are pressed against the symphysis by intravesical/intraabdominal hydrostatic/compression pressure; as such these structures are immobile whilst
the posterior bladder (base), bladder neck, uv-junction and urethra rest on the pubocervical fascia in the upright position and are firmly attached to the pubocervical fascia; as such these structures are mobile depending upon the cephalad/caudad mobility of the pubocervical fascia
the **angle** between the symphysis and arcus tendineus fasciae is in the range of 125°-140°

pubocervical fascia

the pubocervical fascia separates the pelvis space from the pre/subperitoneal and intra-

peritoneal spaces and forms in combination with cervix and broad/cardinal/sacrouterine ligaments the cepahalad pelvis diaphragm or female pelvis ceiling
the fascia is well developed and seems to consist of longitudinal collagenic fibers (from anterior toward posterior) connected/interwoven by elastin and muscle tissue
the intact pubocervical fascia secures and stabilizes the (posterior) bladder base/neck, uv-junction and urethra in their anatomic position and as such supports the female urine continence mechanism
the intact pubocervical fascia prevents the pre/subperitoneal contents bladder/uv-junction/ urethra and intraperitoneal contents from entering the vagina and from prolapsing thru the vagina to the outside
the **axis** of the pubocervical fascia as to horizontal/ground is 15°-20° from symphysis to sacrum in the upright position

anterior vagina wall
the anterior vagina wall is adherent to the pubocervical fascia and as such indirectly fixed onto the pelvic walls

vagina lumen + cervix + vagina vault
the cervix enters the vaginal thru the proximal anterior apical vagina wall (vault); the cervix and posterior vault/fornix separate the intraabdominal space from the pelvis space; the posterior bladder wall rests on and is adherent to the anterior cervix
the cervix is secured and stabilized in its anatomic position by the sacrouterine ligaments posteriorly, the broad, cardinal and (sacrospinous) ligaments bilaterally and by the **pubocervical fascia** anteriorly

posterior vagina wall
the posterior vagina wall is adherent to the perineal body and prerectal fascia and as such also indirectly fixed onto the pelvis walls

perineal body (centrum tendineum perinei)
tough connective tissue structure into which bulbospongiosus and transversus perinei muscles radiate and which stabilizes the anterior anorectum it its anatomic position and as such supports the stool continence mechanism

prerectal fascia
thin connective tissue shealth connected to the levator ani muscles via the bilateral arcus tendineus of the prerectal fascia; far less developed than pubocervical fascia

anterior rectum wall
covered by peritoneum anteriorly and fixed to the posterior vagina wall

anterior external sphincter ani complex
covering distal anorectum over 2-3 cm though anteriorly it is thinner and separated from the internal sphincter by longitudinal muscle layer of the anorectum

anterior anorectum wall
covered by preanorectal fascia

rectum and anorectum lumen
empty or filled witth stools and/or gas

posterior rectum and anorectum
fixed to sacrum, anococcygeal ligament and levator ani muscles; posterior anorectum covered by external sphincter ani complex

posterior external sphincter ani complex
the external sphincter ani is thicker posteriorly than anteriorly

anococcygeal ligament
fixes anorectum to coccyx; the levator ani muscles radiate partially into this ligament

levator ani muscles
originating anterobilaterally from pubis bone and arcus tendineus of levator ani muscle like a sling around lateral vagina walls and underneath anorectum/rectum and inserting posteriorly into anococcygeal ligament and coccyx bone

coccyx and sacrum
these form the posterior bony pelvis

functional anatomic female continence mechanisms

female urine continence mechanism
the anatomic female urine mechanism comprises the bladder neck with both detrusor loops, the uv-junction and the whole urethra from internal to external opening over a total length of 4-5 cm with continence potential over the whole length under physiologic stress
the urethra is stabilized/secured in its anatomic position by the symphysis anteriorly and by the (intact) pubocervical fascia posteriorly
the levator ani muscles do not seem to play a direct role; however indirectly, contraction (with indirect tightening of lateral and posterior vagina wall) would lead to anterior shift of the anterior vagina wall and attached pubocervical fascia towards symphysis by direct action and by the increased compression pressure within the pelvis space according to pascal's law and may stretch the pubocervical fascia slightly whilst the striated urethra musculature may contract as well by reflex action

female stool continence mechanism
the anatomic female stool continence mechanism comprises the anorectum (internal sphincter) and external sphincter ani complex also over a total length of 4-5 cm; in colo-rectal surgery a rectum resection with continent end-to-end sigmoidoanorectostomy is only advisable if the remaining distal healthy anorectum stump is at least 4 cm long, the longer the anorectum/rectum stump the better the chance of stool continence
the anorectum is stabilized/secured in its anatomic position by the anococcygeal ligament/coccyx posteriorly and by the intact perineal body with bulbospongiosus and transversus perinei muscles anteriorly
the levator ani muscles do play a direct role, especially the puborectalis part

discussion

there is an enormous amount of research done mostly based on postmortem dissection and indirect imaging; however, the author failed to understand the functional anatomy and the resulting theories could not be confirmed by him in the living patient

the author gives a very personal interpretation of the functional anatomy as based on findings and evidence-based results during and following his extensive obstetric trauma reconstructive surgery; this does not mean he is right since it is the view of a surgeon and not of an anatomist; but definitely another concept is needed

though the author was probably one of the first already in 1994 to describe the function of the anterior vagina wall as a hanging mat (= hammock with 2-point bilateral fixation) this is not correct since the intact pubocervical fascia is more like a cephalad pelvis ceiling/diaphragm (with overall circumferential fixation onto the pelvic walls like the skin of a drum) securing the posterior urethra/uv-junction/bladder neck in their anatomic position allowing only slight cephalad/caudad movement; a hammock would allow far greater mobility of the (posterior) urethra especially from anterior to posterior with traction in the longitudinal urethra axis

several authors state that there is no well-developed pubocervical fascia but that it is the muscularis layer of the anterior vagina wall; however, during surgery it definitely looks like a whitish shiny tough fascia and its collagen fibers are longitudinal; as well there is no such layer at the posterior vagina wall which should be present if it were the muscularis layer of the vagina

whatever it is anatomically speaking, the pubocervical fascia plays an important role in the female urine continence mechanism and in (the prevention of) prolapse

the notion that the levator ani muscles are of utmost importance for the female urine continence mechanism and for (the prevention of) prolapse cannot be confirmed by the author; please look at the functional anatomic configuration

there is nowhere direct contact between the midline urethra/uv-junction/bladder neck (anatomic continence mechanism) and the lateral levator ani muscles

the urethra lies anteriorly at the midline against the symphysis and the nearest point the levator ani muscles come to the urethra is bilaterally 2-2.5 cm away at the most anterior part of the arcus tendineus of levator ani muscles (atlam); then the atlam runs immediately laterally and posteriorly to the ischial spine father away from the midline and urethra; so contraction cannot have a direct effect upon the urethra; the only thing possible is that the pubocervical fascia may be stretched slightly bilaterally and that by compression of lateral/posterior vagina walls the anterior vagina wall with attached pubocervical fascia shifts cephalad/anteriorly and as such provides a better support

the notion that the intact levator ani muscles prevent prolapse cannot be confirmed; to the author it looks far-fetched since there is nowhere direct contact between the prolapse-prone organs and the pelvis floor muscles

consider the tube-like configuration of the pelvis space and all the different intrapelvic structures between the pelvis floor and the pre/subperitoneal and intraperitoneal spaces; by what mechanism would the action of the levator ani muscles contribute

the diameter recta between the underside of symphysis and tip of coccyx is 9-9.5 cm and the levator ani muscles are fixed to coccyx/anococcygeal ligament

the distance from ischial spine to coccyx is minimally 5-6 cm; so at no point it is possible that the posterior union of the levator ani muscles can come into direct contact with the pubocervical fascia by contraction or anything physiologic

prolapse is not thru the levator ani muscles and other pelvis floor structures but the prolapse is thru defects in the pubocervical fascia

if there is prolapse, cystocele or 2° or 3° cervix prolapse, these slide “over” the levator ani muscles and other pelvis floor structures thru the vagina towards the outside; this process cannot be prevented or stopped by the levator ani muscles or other pelvis floor structures, either relaxed or contracted

based upon personal clinical and surgical research in the obstetric trauma the following proved to be something the author could understand

the pubocervical fascia is separating the intrapelvic space from the pre/subperitoneal space and intraperitoneal space and definitely does not belong to the pelvis floor but forms the pelvis space diaphragm/ceiling

the pubocervical fascia plays an important role in supporting the female continence mechanism

transverse, quartercircular, semicircular and longitudinal defects of the pubocervical fascia are found in the obstetric fistula; by repairing all these defects meticulously either at first repair or later at postrepair incontinence operation continence was restored

median defects in the pubocervical fascia play an important role in the pathophysiology of genuine intrinsic_stress incontinence: lateral defects were not found since the fascia retracts bilaterally towards the atf; by meticulous repair of these defects full continence was restored in over 98% of the patients

median defects in the pubocervical fascia play an important role in the pathophysiology of prolapse like cystocele and 2° and 3° cervix prolapse; lateral defects are not involved since the pubocervical fascia retracts bilaterally towards the atf

in reading the textbooks and articles it is stated that many muscle fibers of the levator ani muscles and other pelvis floor muscles leave the main muscle and interfere with each other

though anatomically that may be correct, surgically speaking the author never found levator ani muscle fibers crossing the anterior anorectum/rectum or fibers crossing the posterior urethra

the female urine and stool continence mechanisms will be presented in separate chapters

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pelvis

© kees

arcus tendineus fasciae = atf

© kees

arcus tendineus levator ani muscle = atl

© kees

atf + atl

© kees

atf + atl

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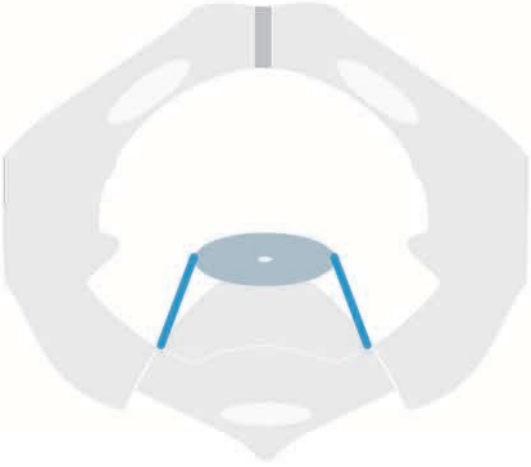
sacrotuberal ligament

sacrospinous ligament

sacrotuberal + sacrospinous ligament



cervix with sacrouterine ligament = sul

sacrotuberal ligament

sacrospinous ligament

atl origin pubococcygeus muscle
as part of levator ani

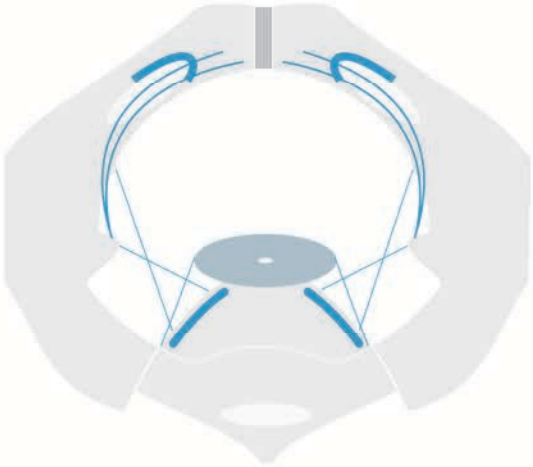
atl origin iliococcygeus muscle
as part of levator ani

atl origin (ischio)coccygeus muscle
as part of levator ani

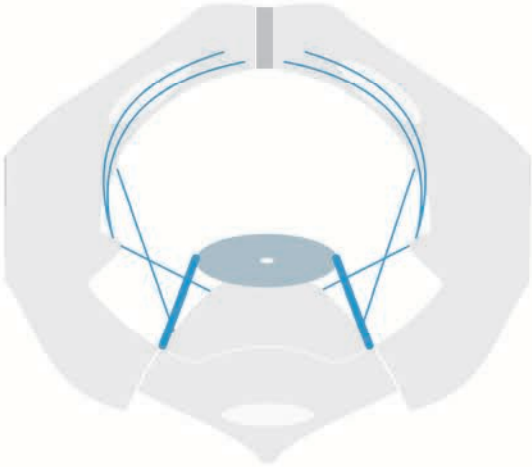
origin obturator internus muscle

origin piriformis muscle

origin obturator internus + piriformis muscle

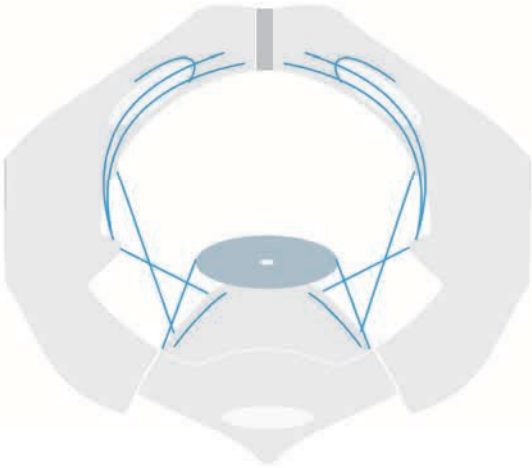


origin obturator internus + piriformis muscle

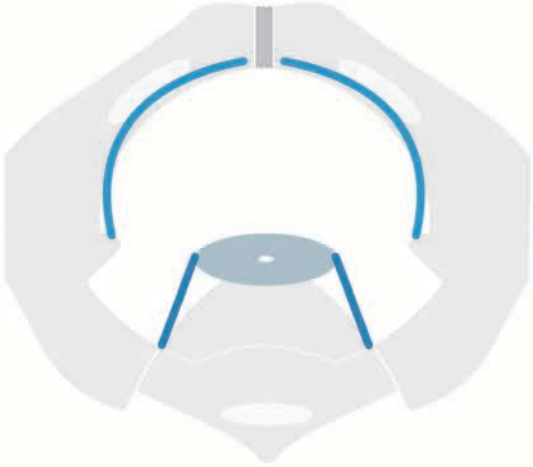


cervix with sacrouterine ligament

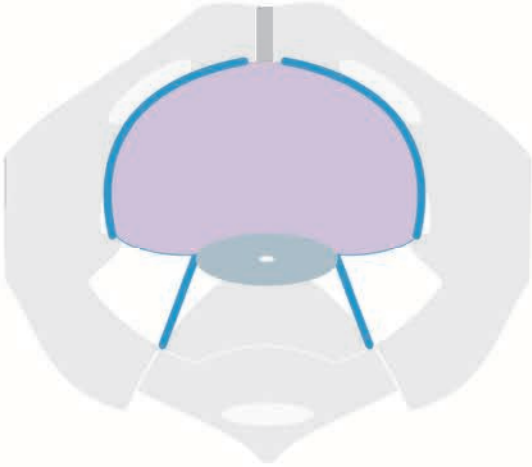
pelvis floor anatomy



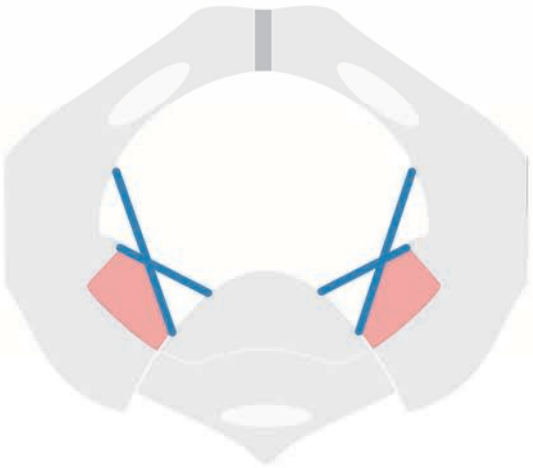
pelvis floor anatomy II



atf + cervix with sul



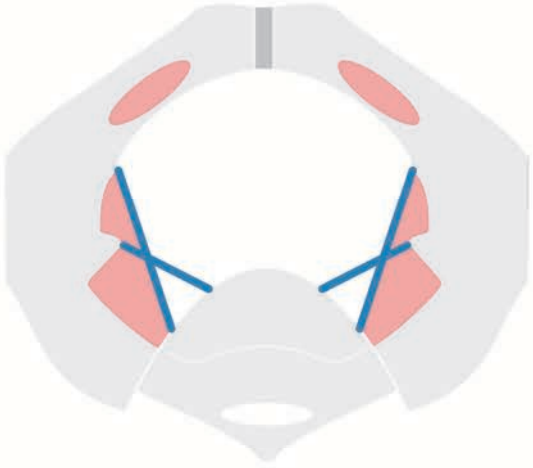
pubocervical fascia



greater sciatic foramen

lesser sciatic foramen

obturator foramen



pelvis foramina

pelvis
caudad view

pelvis
caudad view

intraabdominopelvic pressure dynamics
consequences for continence

introduction
movement of contents within an organ is due to intraluminal pressure differences from higher towards lower pressure

(in)continence is based upon pressure differences between proximal intraluminal excretion pressure and distal closing pressure by the continence mechanism

as long as the distal closing pressure is higher than the proximal excretion pressure there is continence

once the proximal excretion pressure becomes higher than the distal closing pressure the contents will move towards the outside

there are two important physical laws which have to be considered:

law of pascal
pressure exerted anywhere on a confined incompressible fluid is transmitted equally in all direction throughout the fluid such that the pressure variations (initial differences) remain the same

law of laplace
in cylindric structures (like urethra and anorectum)
wall tension = intraluminal pressure x radius
or intraluminal pressure = wall tension divided by radius
in spherical structures (like bladder and rectum ampulla)
wall tension = intraluminal pressure x radius x ½
or intraluminal pressure = wall tension x 2 divided by radius

there is hydrostatic pressure depending upon the vertical height of the filling content and there is compression pressure by the wall

the intraluminal pressure is influenced by filling of the organ (with increase in hydrostatic pressure at lowest point) and the (resulting) tonus of the organ wall; the tonus of the organ wall is increased by active contraction

the final resulting **intraluminal pressure** at a certain point is the sum of the intraluminal **hydrostatic pressure + compression pressure**

and then there is overall atmospheric pressure

intravesical pressure
inside the bladder there is hydrostatic pressure with a maximum on the uv-junction (lowest point) in standing position + intraluminal compression pressure;
in the standing position the hydrostatic pressure is highest on the uv-junction since that is the lowest point

in sitting, squatting and lying down the highest hydrostatic pressure changes/shifts to the lowest point which is no longer the uv-junction but changes over the bladder base towards the cervix since on lying the cervix is the lowest point whilst the vertical diameter of the bladder (and intraperitoneal cavity) changes and becomes less so the hydrostatic pressure at the lowest point becomes less but also on the uv-junction

if the intrinsic forces within the urethra are functioning well there will be full continence in walking, standing, sitting, squatting and lying and on sudden intraabdominal pressure rise like coughing or standing up

if the intrinsic forces become insufficient at a certain point there will be intrinsic stress incontinence depending upon the residual strength of the intrinsic forces first grade I only involuntary urine loss whilst standing up and/or cough in standing, then grade II also involuntary urine loss on standing/sitting with and/or without cough, then grade III more or less continuous urine loss whilst lying/sitting/standing/walking with and without spontaneous miction

(genuine) stress incontinence is always an expression of a deficient intrinsic closing/ continence mechanism; by reinforcing/reconstruction of the intrinsic continence mechanism stress incontinence will disappear

intraabdoninopelvic pressure

the abdominoplevic cavity is enclosed by the diaphragm cephalad, the anterior abdomi nal wall anteriorly, the lateral abdominal walls laterally, the spine with trunk muscles and sacrum posteriorly and the pelvis floor and coccyx/sacrum caudad

the abdominopelvic cavity can be divided into 4 different spaces

intraperitoneal space	its own entity
retroperitoneal space	its own entity
pre/subperitoneal bladder space	its own entity
subfascial/subperitoneal pelvis space	its own entity

it is important to have an idea about the differences in pressure within the abdomino pelvic cavity as a whole, within the 4 different spaces and within the organs

there is hydrostatic pressure due to the weight of the contents and additionally there is compression pressure due to the tonus of and upon contraction of diaphragm, abdominal musculature and pelvis floor musculature

these two pressures work upon all the intraabdominopelvic organs

then there are compression pressures within the 4 different spaces only for that specific individual space which may or may not be transmitted to the other spaces

during inspiration there is a reduction in compression pressure whilst during expiration there is increase in compression pressure; since abdominal wall and pubocervical fascia are mobile they will move

and there is pressure by the filling rate of the individual organs and contraction/tonus of the organ walls

the individual organs are (in)directly fixed to the abdominopelvic walls by connective tissue or ligaments; then they lie upon each other

in the male in the upright position the intraperitoneal organs rest upon the pelvis floor, coccyx and sacrum

in the female the pre/subperitoneal organs and the intraperitoneal organs rest first upon the pubocervical fascia, cervix, cardinal ligaments and sacrouterine ligaments; the pubocervical fascia is the first structure resisting/counteracting the hydrostatic pressure and compression pressure in the intraperitoneal and pre/subperitoneal spaces

intraabdominopelvic pressure rise
during cough with forceful contraction of diaphragm and abdominal anterior/?posterior? musculature the resulting intraabdominal pressure pulse will be from cephalad and anterior towards posterior and caudad; since the spine with trunk muscles are immobile the result will be that the mobile pubocervical fascia will move caudad with negative effect upon the female urine and stool continence mechanism though with reflex contractions of striated urethra and sphincter ani musculature

if on cough the pelvis floor muscles are contracted as well then the pressure wave moves simultaneously from caudad, anterior and cephalad towards posteriorly without downwards movement of pubocervical fascia

if the pelvis floor muscles contract just before cough then the pubocervical fascia moves cephalad and will be stabilized since the pressure wave first move from caudad with anterior/cephalad movement of the pubocervical fascia and then is joined by pressure waves from anteriorly and cephalad which will only result in a higher intraabdomino pelvic pressure

short-term reinforcement of continence mechanisms
if there is an urge to urinate or to defecate this may be counteracted by contraction of the pelvis floor muscles with anterior/cephalad movement of the pubocervical fascia and by contraction of the striated sphincters

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law of pascal

law of laplace

first edition november 2013

another concept needed about female urine (in)continence and genital prolapse

the author is privileged to study the experiments of nature about the (in)continence and prolapse mechanisms in the female as presented by the complex obstetric trauma

our findings of anatomic tissue loss, our physiologic operation techniques to step-by-step reconstruct the functional anatomy, our evidence-based results and our theory are in sharp contrast with the current theory about incontinence and prolapse in the female

the pubocervical fascia in combination with cervix, broad ligaments, cardinal ligaments and sacrouterine ligaments form the cephalad pelvis diaphragm and does not belong to the pelvis floor but is the pelvis ceiling which stabilizes/secures the urethra, bladder base and cervix in their anatomic position; it plays a major role in the urine (in) continence mechanism in the female

the levator ani muscles form the lateral and posterior walls of the pelvis and belong to the pelvis floor in combination with perineum, perineal body, transversus perinei muscles and (bulbocavernosus and ischiocavernosus muscles) and posteriorly the rectum with sphincter ani complex; the levator ani muscles form a bilateroposterior U sling with open anterior/cephalad gap

the pubocervical fascia fills up the **open** anterior/cephalad gap in the levator muscles **U sling**

there is no direct contact whatsoever between the cephalad pelvis diaphragm and the pelvis floor structures except for the arcus tendineus levator ani and arcus tendineus of levator ani muscles via the fascia of obturator internus muscle

the common theory that the pelvis floor with levator ani muscles play a major role in urine (in)continence in the female and are responsible for prevention and development of genital prolapse is incorrect

it is far more logical and surgically proven that defects of the pubocervical fascia are involved in the development of urine incontinence and the development of (urethro) cystocele and cervix prolapse

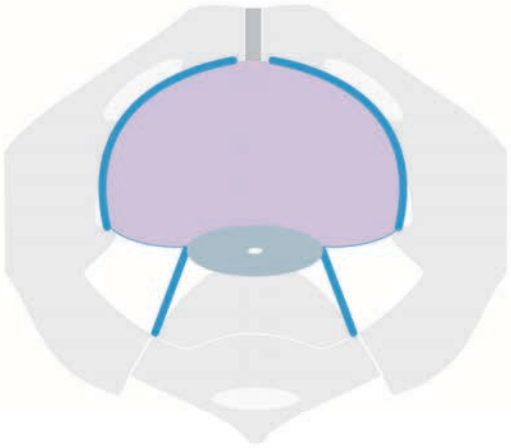
definitely, another concept is needed as will be set out in separate articles

the main obstacle to real reconstructive pelvic surgery will be
the conflict of financial interest of the surgeons
combined with the
heavy lobbying of the (in)continence and prolapse industry

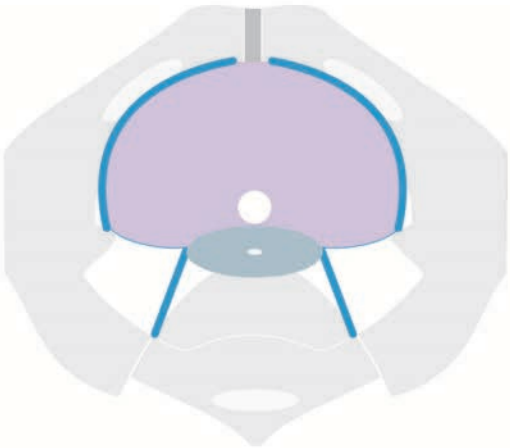
pubocervical fascia defects

arcus tendineus fasciae = atf

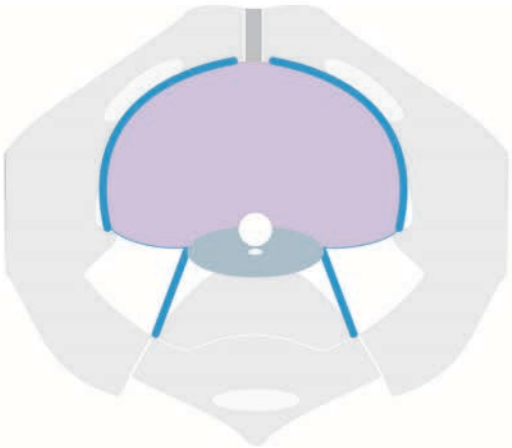
cervix with sacrouterine ligament = sul



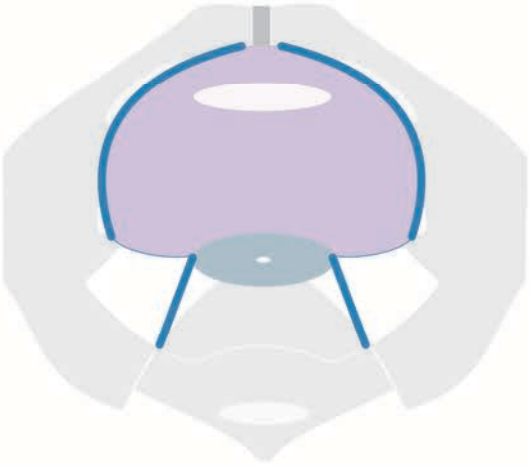
pubocervical fascia



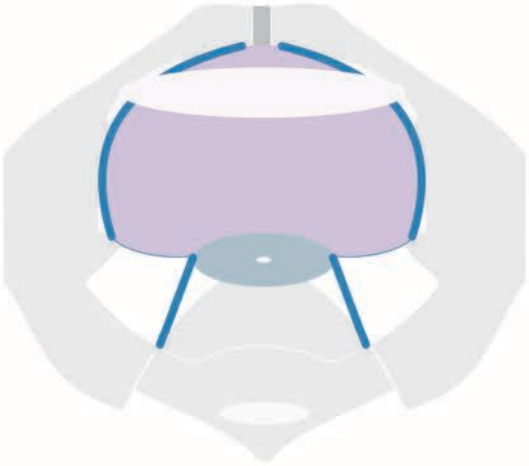
pubocervical fascia defect
type I fistula



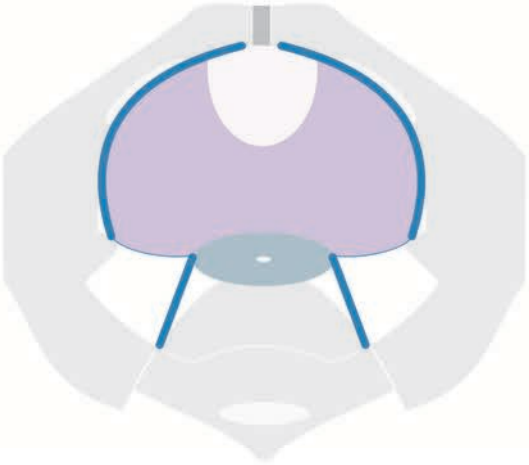
pubocervical fascia defect
type I fistula



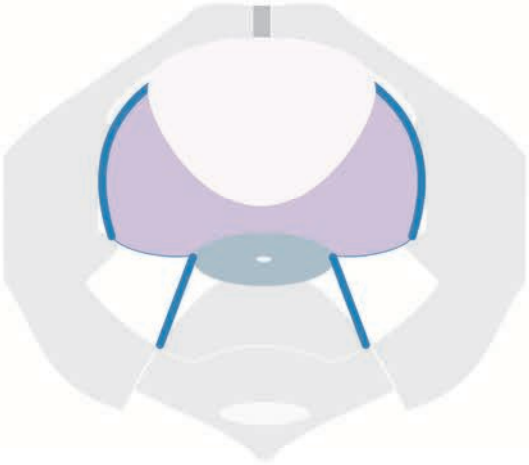
transverse defect pubocervical fascia
type IIAa fistula



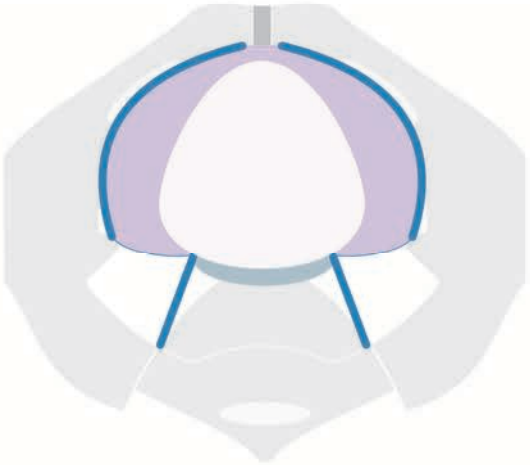
transverse defect pubocervical fascia
type IIAb fistula



defect pubocervical fascia
type IIBa fistula



defect pubocervical fascia
type IIBb fistula



median defect pubocervical fascia
intrinsic stress incontinence/cystocele

remarks about female urine continence mechanism

kees waaldijk MD PhD

introduction
the main continence mechanism is situated within the urethra whilst the potential can shift over the whole length from the bladder neck/urethrovesical (uv) junction/internal urethra opening towards the external urethra opening as based on physiologic stress

the author is privileged to study the experiments of nature about the urine continence mechanism in the female as presented by the complex obstetric trauma

our findings of anatomic tissue loss, our physiologic operation techniques to step-by-step reconstruct the functional anatomy, our evidence-based results and our theory are in sharp contrast with the current theory about the urine continence mecha nism in the female

remarks

mid-urethra as decisive factor
the concept of the middle third urethra being the decisive factor in continence seems to be incorrect since

several patients with total circumferential urethra loss type **IIBb** have full continence after circumferential fixation with rhaphy of the bladder neck into anatomic position of euo as first stage and do not need urethra reconstruction as planned second stage if the pubocervical fascia is refixed as well bilaterally onto arcus tendineus fasciae

more than 90% of the patients with circumferential loss of uv-junction/ proximal_ mid urethra type **IIAb** have full continence after circumferential end-to-end vesicoure throstomy even with urethra length of only 1-1.5 cm

the majority of patients with total 3° cervix prolapse are totally continent even with urethra length of only 0.5-1 cm and even after reduction not due to kinking (which anatomically is not possible) but due to narrowing of the distal urethra_euo under physiologic stress with an increase of the centripetal forces

preservation of distal urethra with external opening (even if only 0.1 cm left) will contribute to full post fistula repair continence as based by evidence

closure of the urethra: circular or by coaptation
on clinical examination both the external opening (inspected from the outside) and the internal opening (inspected from the inside during fistula repair) are **circular** and not horizontally flat; if the urethra closes by coaptation and not circularly (which is very well possible though why should the internal/external openings then be circular) it must be coaptation of the **mobile** posterior urethra wall onto the **fixed** anterior urethra wall; with exception of the distal urethra which closes circularly otherwise the external opening cannot be circular; and why is the internal opening circular during repair

pubocervical fascia/anterior vagina wall as backstop
the notion that the pubocervical fascia with anterior vagina wall functions as a backstop does not make sense since

how could the fixed immobile anterior bladder wall/uv-junction/urethra wall be compressed against the mobile fascia; is it not more logical if the mobile fascia with adherent posterior bladder neck/uv-junction/urethra wall is compressed against the fixed (onto symphysis) anterior bladder neck/uv-junction/ urethra wall; so if coaptation it must be posterior onto anterior

anterior to posterior coaptation
see previous argumant

pubocervical fascia/anterior vagina wall as hammock
though the author devised a technique in 1989 (as published 1994) of using the anterior vagina wall as a hammock to elastically elevate the bladder neck/uv-junction/urethra against the symphysis, this concept changed during his extensive obstetric trauma surgery
as a hammock there is only a two-point lateral fixation which would allow anterior/ posterior movements with traction onto posterior urethra wall
the pubocervical fascia is not fixed like a hammock but circumferentially like the skin of a drum securing/stabilizing the posterior bladder wall (base)/posterior uv-junction/ posterior urethra wall in their anatomic position ensuring continence under physiologic stress
as a **drum-skin-like diaphragm** there is circumferential fixation onto the bony pelvis with only slight cephalad/caudad movement with almost no traction upon the posterior urethra wall

pressure transmission
pressure transmission from where to where since

pressure exerted upon a fluid is evenly distributed into all directions (physical law of pascal)

how can pressure (rise) with the tendency to open the urethra now be involved in closure of the urethra

pelvis floor
when the levator ani muscles contract they squeeze the posterior and lateral vagina walls with the effect that the anterior vagina wall (not squeezed) moves anteriorly and cephalad together with the adherent pubocervical fascia with adherent posterior bladder neck, posterior uv-junction and posterior urethra wall
this will reinforce the **intrinsic** urine continence mechanism since the posterior urethra wall will move towards the anterior urethra wall and symphysis

functional anatomy
the levator ani musculature encircles three quarters of the vagina viz the bilateral and posterior walls whilst the open anterior/cephalad end of the **levator ani muscles U sling** is covered by the anterior vagina wall with adherent pubocervical fascia
the whole urinary tract is an abdominal “organ” though situated exclusively extraperi toneally, the kidneys in the retroperitoneal space and the bladder and urethra in the pre/ subperitoneal space connected by extraperitoneal ureters whilst
the levator ani muscles are exclusively an intrapelvic “organ”
so how can there be a direct major connection/influence between the pelvis floor and urine continence except for the fact that on active contractions of the levator ani

muscles there is also contraction of the urethra muscles via reflex action and the posterior urethra moves anteriorly towards the anterior urethra wall and symphysis (see mechanism of pelvis floor muscle exercises)

(sphincter) urethrovaginalis muscles
the author has difficulties in visualizing the exact topographic anatomic characteristics since it must be located distally and caudad from the pubocervical fascia and levator ani muscles; upon performing an episiotomy and in sphincter ani rupture the author could **not** identify this muscle as a separate entity
does this muscle really exist like described??

compressor urethrae muscles
the author has difficulties in visualizing the exact topographic anatomic characteristics since it must be located distally and caudad from the pubocervical fascia and levator ani muscles; upon performing a continent urethra reconstruction in type **IIBb** fistulas the author could **not** identify this muscle or the (sphincter) urethrovaginalis muscle; what is found is a **bare median symphysis**
do these muscles really fuse anteriorly from urethra??

anterior fusion of urethrovaginal/compressor urethrae muscles
for these muscles to function they must fuse anteriorly in between the symphysis and anterior urethra and distally and caudad from pubocervical fascia and proximally from anterior pubourethral ligaments; if they fuse anteriorly from the urethra is now the fusion of urethrovaginalis muscle situated in between fusion of compressor urethrae and anterior urethra or is the fusion of compressor urethrae situated in between fusion of urethrovaginalis and anterior urethra; or do they fuse next to each other, the one distally and the other proximally and what about the relations to the intermediate pubourethral ligament

urethra length and diameter
an effort has to be made to preserve as much of the urethra as possible during fistula repair; also an effort has to be made of reducing a wide external opening/distal urethra to a normal diameter

kinking of the urethra in total 3° cervix prolapse
is anatomically not possible since the anterior bladder neck/uv-junction/urethra are firmly attached to symphysis and in the upright position firmly pressed against the symphysis by gravity and the abdominal contents; kinking would mean that the anterior bladder neck/uv-junction/urethra would become loose from the posterior symphysis and by what kind of tissue/air/fluid would that space be filled since there cannot be empty spaces within the body mass whilst also a vacuum is not possible

masked incontinence in total 3° cervix prolapse
the norm is full continence even after reduction of the prolapse; only **over-correction** resulting into traction onto the posterior urethra wall may provoke the so-called masked incontinence

philosophy
reconstruction of the functional anatomy will ensure the depending physiology

first edition december 2013

urine continence mechanism

in the female

it is good to realize that the anatomic urine continence mechanism is located within the bladder neck and whole urethra over some 4-5 cm whilst the continence potential is from the trigonal ring and internal urethra opening throughout the whole urethra up to the external urethra opening and shifts upon physiologic stress

I bladder neck
- **a** trigone
- **b** trigonal ring
- **c** the two detrusor loops

II urethra
- **A** mucosa seal and coaptation
  - **a** urethra mucosa
  - **b** submucosal vascular plexus
  - **c** longitudinal smooth muscle fibers
  - **d** circular smooth muscle fibers
  - **e** elastic and connective tissue of urethra wall

  these structures are estrogen influenced
  - **f** slow-twitch horseshoe-shaped striated muscle fibers; maintaining contraction and tonus over long periods of time
  - **g** fast-twitch horseshoe-shaped striated muscle fibers; reflex contraction just before sudden intraabdominal pressure rise
- **B** length and diameter
  - **h** length of urethra; if it is $\leq$ 1.5 cm continence becomes critical
  - **i** diameter of urethra: physical law: the smaller the circumference of a tube-like structure the stronger the centripetal forces

III anatomic/physiologic support of urethra and bladder neck
- **A** static
  - **a** pubourethral ligaments; suspension
- **B** dynamic
  - **a** elastic pubocervical fascia bilaterally from arcus tendineus fasciae; for stabilization and securing the (posterior) urethra in its anatomic position so that it can exert itts physiologic function
  - **b** pubococcygeus musculature; contraction will squeeze three quarters circumference of bi-lateroposterior vagina walls so that anterior vagina wall wirh adherent pubocervical fascia will move anteriorly and cephalad

IV intact innervation of these components

It is not clear wheter urethra closure is **circular** (external and internal opening circular on direct inspection) **or** that it is by **coaptation**;
however, if it is by coaptation then coaptation of the **posterior** urethra **against** the **anterior** urethra wall since **immobile anterior** bladder neck/uv-junction/urethra more or less fixed to and pressed against symphysis whilst **mobile posterior** bladder neck(uv-junction/urethra adherent to elastic pubocervical fascia
the bladder neck keeps the urethra at full length and the urethrovesical junction closed; the nervous system is the coordinator

factor I keeps the urethrovesical junction closed; factors I, II and III keep the urethra stretched and the posterior urethra wall coapted against the anterior urethra wall whilst factor III stabilizes the urethra in its anatomic position and compresses it against the posterior pubic symphysis; factor IV is the coordinator

at rest during the filling phase of the bladder these mechanisms maintain closure of urethrovesical junction and urethra; when the bladder fills up more these forces increase via impulses from baroreceptors

voluntary increase of these forces is possible by contraction of the pubococcygeus musculature which squeezes three quarters circumference of bi-lateroposterior vagina wall so that the anterior vagina wall with adherent piubpcervical fascia will move anterior ly and cephalad to reinforce the continence mechanism in order to postpone voluntary miction for a short period of time

at sudden intraabdominal pressure rise there is a reflex contraction of the pubococcygeus musculature with anterior and cephalad movement of the pubocervical fascia and contraction of the fast-twitch muscle fibers maintaining the urethra stretched whilst its compression against the posterior pubic symphysis increases;;
this takes place a few milliseconds before there is an increase in intravesical pressure since first the diaphragm and the anterior abdominal musculature contract at cough and this causes intraabdominal pressure rise a few miliseconds later;
there is no pressure transmission involved keeping the urethra closed; how could it reach the urethra before reaching the bladder? and how would it close the urethra? as pressure exerted on a fluid is transmitted evenly in all directions
if these **intrinsic** mechanisms are deficient, for whatever reason, stress incontinence develops

at urge incontinence there are involuntary contractions of the detrusor muscle without reflex increase in these forces setting involuntary miction in motion whilst voluntary increase in these forces is too weak and too short to stop miction

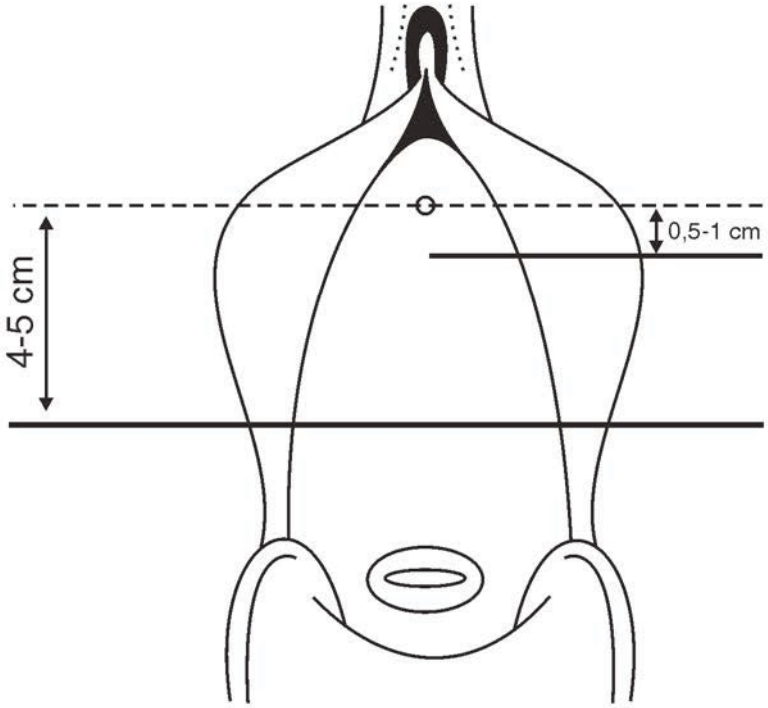
at the beginning of voluntary miction the two detrusor loops relax whilst the longitudinal detrusor muscle contracts with additional relaxation of the detrusor loops, the pubococcygeus musculature relaxes with relaxation of the fast-twitch muscle fibers of the urethra and with relaxation of the pubocervical fascia, the longitudinal smooth musculature of the urethra contracts whilst the circular smooth musculature and the slow-twitch muscle fibers relax resulting in urethra shortening with an increase in its diameter; so, the forces which close the urethra decrease whilst intravesical pressure increases and the urethra opens up from proximally, from the urethrovesical junction, towards distally, towards the external urethra opening and stays open during miction

at the end of miction the opposite takes place and the urethra stretches with a decrease in its diameter; so, the forces which close the urethra increase whilst intravesical pressure decreases and the urethra closes from distally, from the distal-mid urethra, towards proximally, towards the urethrovesical junction

pressure transmission is not involved

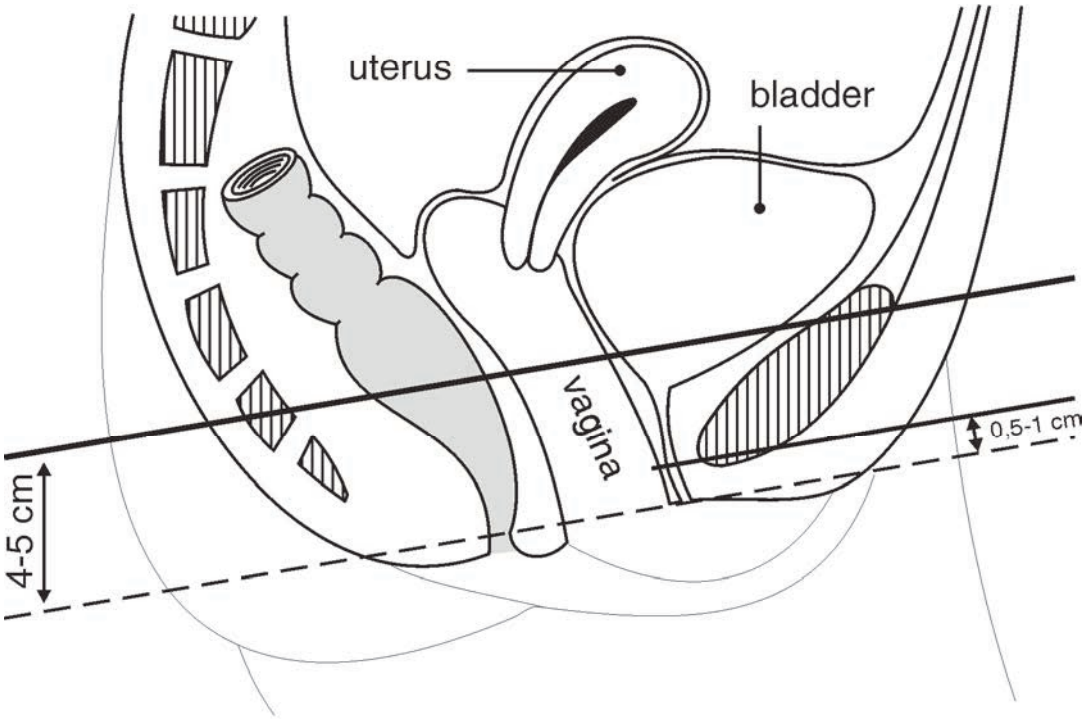
the pubocervical fascia secures/stabilizes the urethra in its anatomic position

figure 1



continence/closing mechanism: frontal

figure 2



continence/closing mechanism: sagittal

importance of pubocervical fascia in urine (in)continence

kees waaldijk MD PhD

introduction
this is based upon the systematic examination/assessment/documentation/analysis of tissue loss of the continence mechanism from one cell to total loss as a **natural experiment** within the **complex obstetric trauma**; what a privilege to observe this

main continence factors
intact bladder neck/urethrovesical (uv-) junction/trigonal ring
intact urethra anatomy with normal length of 3-4.5 cm and normal diameter
static suspension by pubourethral ligaments and adhesions between anterior urethra/anterior uv-junction/anterior bladder neck and the symphysis
dynamic support by pubocervical fascia securing and stabilizing the urethra in its anatomic position with also hinge effect compressing urethra against symphysis
intact innervation

continence potential
can shift over whole urethra length from bladder neck/uv-junction to the external urethra opening depending upon physiologic stress; the mobile posterior urethra wall coapts against the fixed anterior urethra wall closing the urethra

pubocervical fascia
circumferential fixation onto bony pelvis like skin of drum, anteriorly from bilateral paraurethral pubic bones, (antero)bilaterally from bilateral arcus tendineus fasciae from paraurethrally to ischiac spine and posteriorly from cervix and indirectly via the sacro uterine ligaments from the sacrum;
the posterior bladder, posterior bladder neck/uv-junction and posterior urethra wall rest upon and are adherent onto the pubocervical fascia
the anterior part of the pubocervical fascia in combination with its bilateral fixation to the symphysis and arcus tendineus fasciae secures and stabilizes the urethra in its anatomic position so that the urethra can exerts its physiologic closing/continence function; if this becomes defective, problems with continence may develop

mechanism of urine incontinence
the anterior external opening, anterior urethra, anterior uv-junction and anterior bladder neck are fixed/adherent to the posterior symphysis and the anterior bladder is adherent to the posterior symphysis and anterior abdominal wall; in the upright position the anterior bladder neck, anterior uv-junction and anterior urethra wall are pressed against the posterior symphysis and more or less immobile
there are two forces at work which exert traction upon the mobile posterior uv-junction and posterior urethra wall whereby
first the uv-junction and proximal urethra are pulled and pushed open and the urethra becomes functionally part of the bladder (vesicalization); as long as the remaining intrinsic continence mechanism is strong enough the woman is still continent but once the intrinsic continence mechanism cannot cope any more with increased intravesical pressure there is urine loss; though this is called genuine stress incontinence actually it is intrinsic incontinence

later there will be opening up of the whole urethra (total vesicalization); the posterior urethra wall is pulled away from the anterior urethra wall opposite to the direction of coaptation; besides this the posterior urethra wall is pulled towards the cervix as well with posterior deformation of the external urethra opening so that the smooth muscle fibers become more oblique and continent closure is no longer possible and the woman looses urine more or less continuously whilst lying/sitting/standing/walking, with or without spontaneous miction
the first force is downward due to herniation of the posterior bladder/posterior bladder neck/posterior uv-junction/posterior proximal urethra thru the median defect in the pubocervical fascia as seen in cystocele or as due to a loose pubocervical fascia since its connection to the arcus tendineus fasciae has been lost either directly as in circumferen tial fistulas or indirectly by a transverse defect in the pubocervical fascia: the second force is posterior into the direction of the cervix due to pull by the herniated and/or sagging down posterior bladder wall
this second force can be the main mechanism of incontinence as seen when a longitudinal median scar from the external urethra opening to cervix (see mutilating incision) keeps on contracting throughout life since it is perpendicular to the ruga folds; it can also been seen after a caesarean section whereby the cervix is fixed intra-abdominally and moves upward on cough with posterior traction onto the pubocervical fascia/anterior vagina wall; it is seen frequently in ureter fistulas type III due to its posterior traction effect upon the pubocervical fascia/anterior vagina wall; once there is vesicalization a downward force will come in as well

discussion and practical consequences
the obstetric fistula surgeon is in a unique position to study the urine continence mechanism in the female by direct observation of an endless variety of the natural experiment of complex obstetric trauma in all its forms
the term intrinsic stress incontinence is preferred above stress incontinence since it is the intrinsic continence mechanism which is defective and has to be corrected
the art of reconstructive surgery is to first assess the trauma and then to reconstruct only the functional anatomy so that physiology will be restored by physiologic stress
since any patient with urine incontinence is unique, once the general principles have been outlined the operation technique has to be customized to correct the specific individual lesions; a standard trick may work but it is insight that counts
for intrinsic-stress incontinence a physiologic reconstructive operation technique has been developed which only corrects the defects in the pubocervical fascia with tightening if necessary; these principles may be of value to the industrialized world as well since most operation techniques are tricks and nonphysiologic
for all the fistula types, type I; type IIAa, type IIAb, type IIBa and type IIBb operation principles have been developed to correct the respective defects in the pubocervical fascia and its fixation already during the repair to prevent postrepair incontinence

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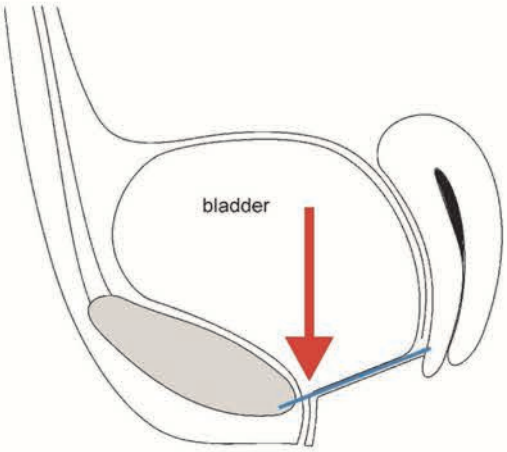
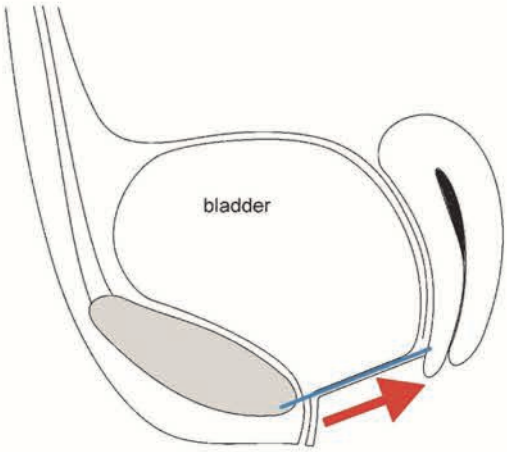
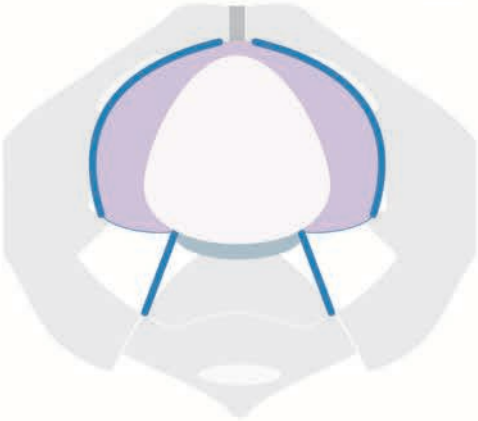
mechanism of incontinence



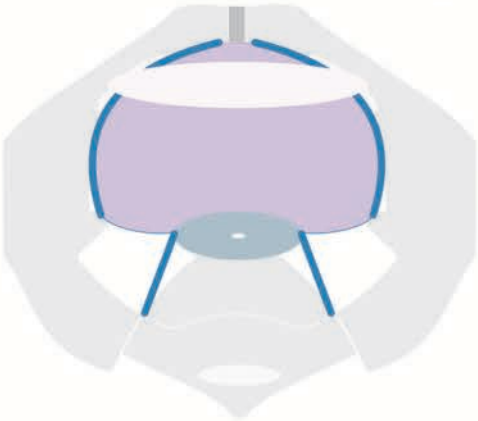
downward force



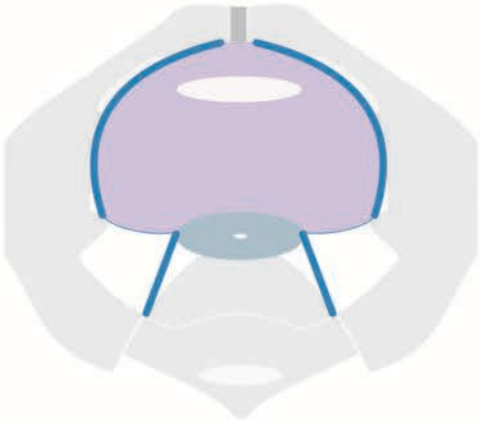
force towards cervix



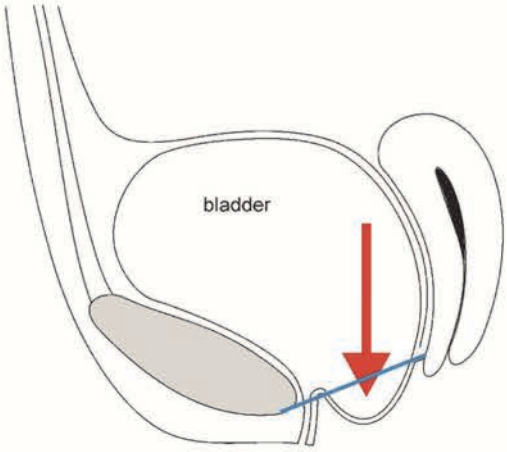
median defect pubocervical fascia
intrinsic stress incontinence/cystocele



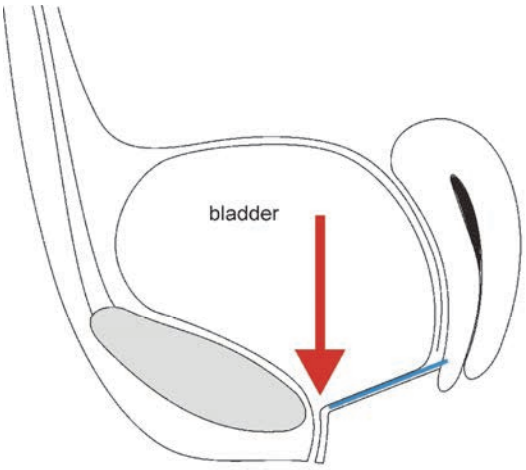
transverse defect pubocervical fascia
type IIAb fistula



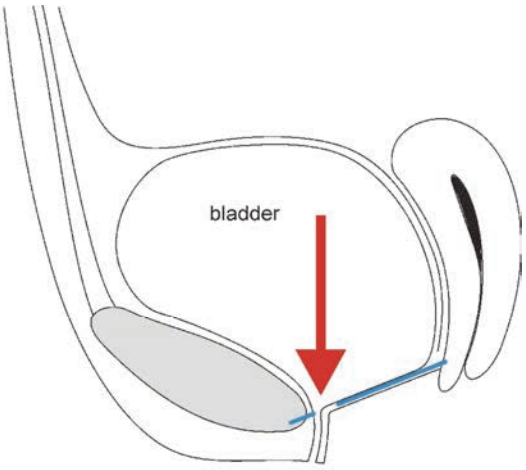
transverse defect pubocervical fascia
type IIAa fistula



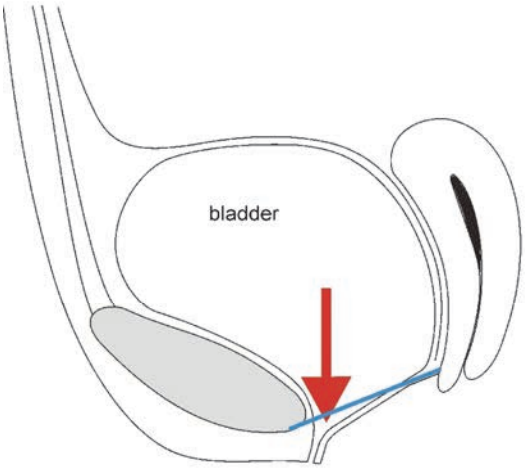
downward force
cystocele due to median defect pc fascia



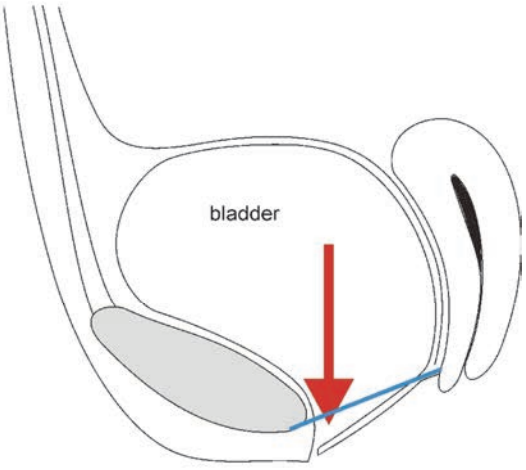
downward force
no connection pc fascia to atf



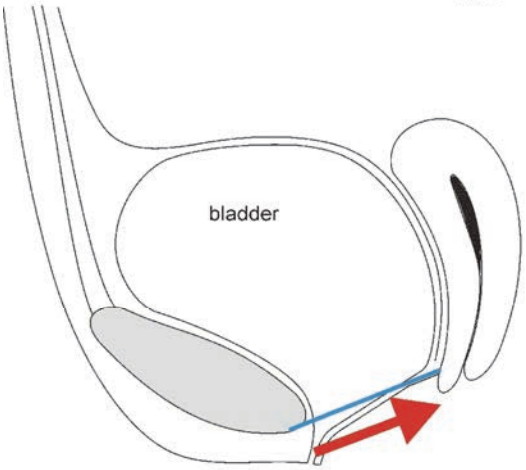
downward force
indirectly no connection pc fascia to atf



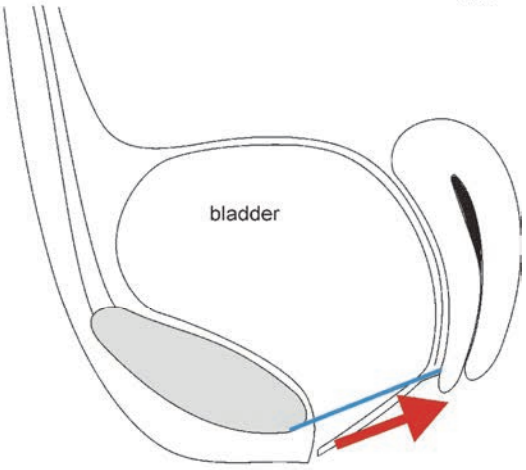
vesicalization of proximal urethra



total vesicalization



vesicalization of proximal urethra



total vesicalization

pelvis floor muscle exercises in intrinsic urine incontinence mechanism of action

kees waaldijk MD PhD

introduction
empirically, pelvis floor muscle exercises have a positive effect upon urine intrinsic stress incontinence
however, though it is recommended everywhere by everybody the author could not find an explanation for this action and it took him a long time to understand how it works

anatomy
the fundamental basis of everything, also of depending physiologic processes
the levator ani muscles envelop the vagina three-quarterly bilateroposteriorly as U sling being in direct contact bilaterally with the lateral vagina walls and in indirect contact (via anorectum) posteriorly with the posterior vagina wall
the open anterior/cephalad one quarter gap is filled up by the symphysis and anterior vagina wall with adherent pubocervical fascia with adherent posterior bladder base, posterior uv-junction and posterior urethra; the pubocervical fascia functions as a diaphragm and anatomically and functionally does not belong to the pelvis floor

mechanism of action
when the levator ani muscles contract they squeeze the posterior and lateral vagina walls with the effect that the anterior vagina wall (not squeezed) moves anteriorly and cephalad together with the adherent pubocervical fascia with adherent posterior bladder neck, posterior uv-junction and posterior urethra wall
this will reinforce the **intrinsic** urine continence mechanism since the posterior urethra wall will move towards the anterior urethra wall and symphysis

training of levator ani muscles
by regular training of the levator ani muscles their action will become stronger and their function better

optimal way of using levator ani muscles
one first contracts the levator ani muscles before standing up or before coughing so that the configuration of the anatomic urine mechanism is optimal just before there is an increase in intraabdominal pressure
if one does this regularly our able brain will create special pathways for it and it may become a reflex

first edition june 2013

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remarks about pelvis organ prolapse

the author is privileged to study the experiments of nature about the prolapse mechanism in the female as presented by the complex obstetric trauma

our findings of anatomic tissue loss, our physiologic operation techniques to step-by-step reconstruct the functional anatomy, our evidence-based results and our theory are in sharp contrast with the current theory about prolapse in the female

the pubocervical fascia in combination with cervix, broad ligaments, cardinal ligaments and sacrouterine ligaments form the cephalad pelvis diaphragm and does not belong to the pelvis floor but is the pelvis ceiling

the common theory that the pelvis floor with levator ani muscles are responsible for prevention and development of genital prolapse is incorrect since there is no contact whatsoever between the cephalad pelvis diaphragm and the pelvis floor structures

it is far more logical and surgically proven that defects of the pubocervical fascia are involved in the development of (urethro)cystocele and cervix prolapse

mechanism of action in prolapse

in the upright position the posterior urethra/uv-junction/bladder neck/bladder base rest upon the intact tough pubocervical fascia

the cervix is stabilized/indirectly fixed to the pelvis bones by the sacrouterine ligaments posteriorly, the broad and cardinal ligaments bilaterally and by the pubocervical fascia anteriorly; this last factor is not mentioned in textbooks

except for the bilateral arcus tendineus fasciae there is no direct contact between the pubocervical fascia and the levator ani muscles

at not a single point is there a direct contact between the levator ani muscles and the bladder and the cervix

in the female the intact tough pubocervical fascia is the first structure involved in resisting/counteracting the intraperitoneal and intravesical hydrostatic pressure and compression pressure; then the remaining rest pressure is transmitted to the levator ani muscles via the vagina and rectum

median defects of the fascia are involved in the development of (urethro)cystocele since the posterior bladder and/or urethra wall herniate thru the defect

transverse, quartercircular, semicircular and lateral defects are also possible but these lead not to cystocele; when these defects occur the loose pubocervical fascia seems to move anteriorly and cephalad due to retraction of the bladder towards the fixed anterior bladder wall; due to the natural forces in a balloon like structure where one side is fixed

median defects of the pubocervical fascia in combination with loosening of scarouterine, broad and cardinal ligaments lead to cervix/uterus prolapse and the cervix will herniate thru the median defect

median defects do occur since the **span is too wide** and **the weakest point is the median** where the **longitudinal fibers divide** due to hydrostatic and com pression pressure; then de defect becomes larger and the fascia retracts bilaterally towards the arcus tendineus fasciae due to the elastin and muscle fibers and becomes thicker; since the span is the widest proximally in between the ischial spines that is where it starts and then moves distally whilst normally over the last distal 2 cm the fascia will stay intact since here the span is narrow

the wider the pelvis the greater the chance that this will happen; therefore normally (urethro)cystocele and cervix prolapse are combined with a wide pelvis with pubic arch of $\geq$ 90° as found by the author during his surgery

pregnancy and childbirth may accelerate these processes though prolapse may be found in nulliparous patients as well

lateral defects of the pubocervical fascia are normally not involved in cervix prolapse; however, they may be found in extensive obstetric trauma in combination with other pressure necrotic lesions of broad, cardinal and sacrouterine ligaments even in patients with narrow pelvis with pubic arch or $\leq$ 80° and then lead to cervix prolapse which is seldom

the herniated bladder + anterior vagina wall slide thru the vagina towards the outside over the posterior vagina wall, anorectum and levator ani muscles

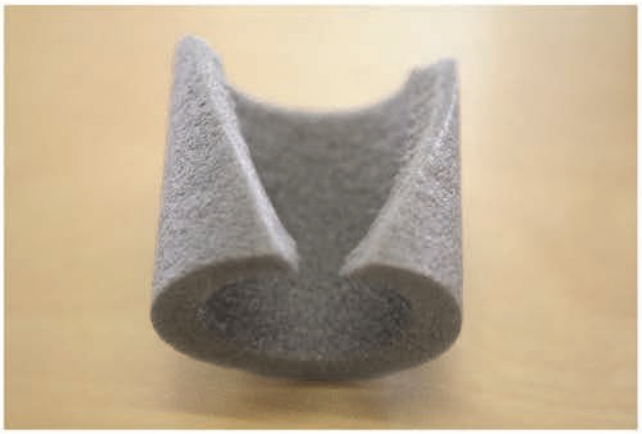
the prolapsed cervix slides thru the vagina towards the outside over the posterior vagina wall, ano)rectum and levators ani muscles

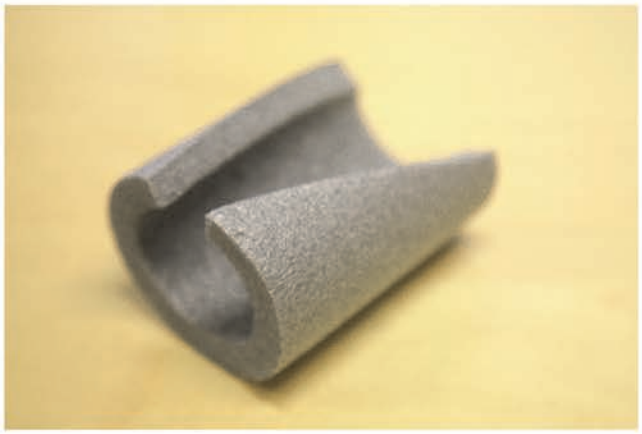
based on the functional anatomy, though contrary to popular belief, the levator ani muscles do not play a role in the development of prolapse since

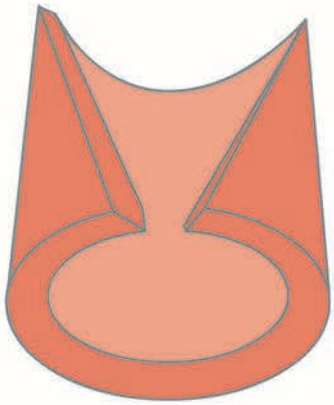
the levator ani muscles form the lateral and posterior walls of the pelvis and belong to the pelvis floor in combination with perineum, perineal body, transversus perinei muscles and (bulbocavernosus and ischiocavernosus muscles) and posteriorly the rectum with sphincter ani complex

since the pubocervical fascia and cervix fill up the anterior and cephalad gap of the U-shaped levator ani muscles sling and are nowhere in direct contact with these muscles it is clear that the levator ani muscles cannot have any influence whatsoever on the anatomic structure of the pubocervical fascia and on the fixation/stabilization of the cervix and

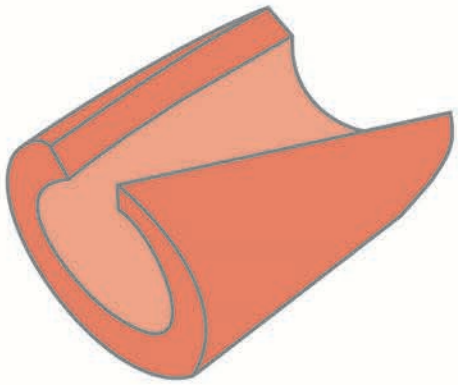
as such do not play a role in the development of genital prolapse



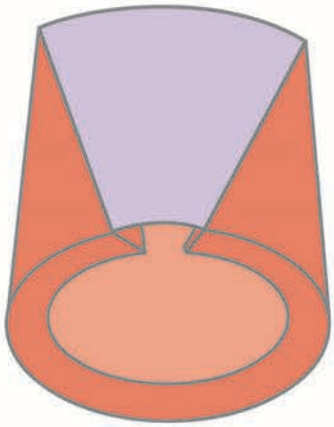




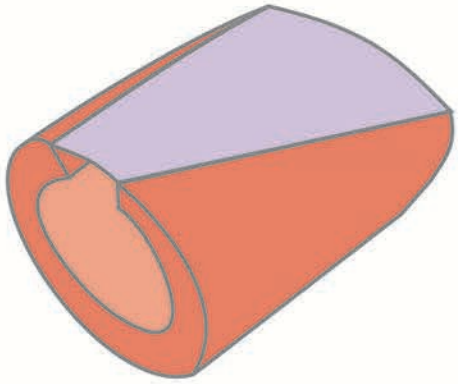
levator ani muscles sling
frontal view



levator ani muscles sling
lateral view



pubocervical fascia
frontal view



pubocervical fascia
lateral view

postrepair fertility

few articles in the literature deal with fertility in (post-repair) obstetric fistula patients; and when they do report they point to poor performance

however, that is not in line with the evidence as presented in this project where the great majority of patients do menstruate and become pregnant again and deliver new infants, stillborn and alive

the following is a list of **116** patients operated in zaria by the chief consultant surgeon who reported in person; this is roughly **a quarter** of the patients operated during the same period; far more patients must have delivered who did not report

so actually, the **evidence is that (post-repair) fertility with live infants is far better than assumed**

09.06.98	hkka	vvf 10	amenorrhea 5 mth
09.06.98	fhm	vvf 14/rvf 2	2x delivery alive new leakage only drill
29.09.98	raz	vvf 26	2x live male at home vvf 229
25.05.99	mlkd	rvf 5/vvf 51	1x sb male per vaginam vvf kats 6134
28.09.99	fnmy	vvf 57	1x delivery vvf 135
15.05.10	hsy	vvf 65	1x delivery vvf 149
27.06.00	syrk	vvf 69	3x by cs all alive
24.10.00	hat	vvf 85 rvf 8	1x delivery vvf 191 rvf 18
26.10.00	hljj	vvf 90/rvf 10	1x sb female at home vvf kats 6180
26.10.00	zikc	rvf 12/vvf 94	1x delivery sb at home vvf kats 6763
14.11.00	ask	vvf 102	4x delivery 2 alive
07.01.01	hag	cath 1	wx delivery alive by cs
17.01.01	muf	vvf 107	2x delivery sb female vvf 314/333
22.05.01	hus	vvf 115	1x delivery sb male vvf 274 rvf 37
03.07.01	mmk	vvf 118	1x delivery sb male vvf 185
31.01.02	bsg	vvf 133	2x sb male at home vvf 210/217
05.03.02	jid	vvf 137	amenorrhea 7 mth

18.06.02	hbg	vvf 142	live female at home	
17.09.02	aik	vvf 146	1x sb female by cs	vvf 273
08.10.02	smy	vvf 150	3x live male/female at home	vvf 225
20.05.03	hmn	cath 13	2x live/sb male by cs	vvf 421
20.05.03	satj	cath 14	2x delivery alive by cs	
23.10.03	aal	cath 17	1x delivery alive per vaginam	
04.11.03	hig	vvf 168	amenorrhea 3 mth	
27.01.04	ayy	vvf 171	1x sb male at home	vvf 412
27.01.04	sum	vvf 172	amenorrhea 3 mth	
09.03.04	fad	vvf 174	2x sb male/live female	vvf 310
09.03.04	makhz	cath 20	2x delivery per vaginam	
11.05.04	ztmg	vvf 176	amenorrhea 8.5 mth	
11.05.04	fakz	vvf 177	3x live male by cs	
03.06.04	fum	cath 25	1x delivery alive at home	
03.06.04	har	vvf 179	2x sb female at home	vvf 243 + 400
03.06.04	kjm	vvf 182	1x live female by cs	
20.07.04	mmk	vvf 185/cat 27	1x live male at home	
20.07.04	fum	vvf 186/rvf 17	2x live male by cs/at home	
30.09.04	hak	vvf 187	2x ive male lve by cs	
30.09.04	myd	vvf 188	2x live male by csl	
30.09.04	zsak	vvf 189	1x live male per vaginam	
30.09.04	mahz	vvf 190	2x sb/live male per vaginam	
27.10.04	mas	vvf 193	2x live female by cs	
01.02.05	has	vvf 199	amenorrhea 3 mth	
01.02.05	mad	vvf 200/252	live female by cs	
10.02.05	mati	vvf 203	sb male per vaginam	
12.04.05	khd	cath 35	2x delivery alive by cs/per vaginam	

05.07.05	sand		cath 40	live male per vaginam	
05.07.05	msj		vvf 209	live male per vaginam	
16.09.05	tabk		vvf 215	live female at home	vvf 490
19.03.06	hmd		cath 42	1x delivery alive by cs	
19.05.06	hmi		rvf 29	live by cs	
24.03.06	smy	150	vvf 225	live male by cs	
19.05.06	tatb		vvf 242	2x live female by cs	
23.06.06	har	179	vvf 243	sb female at home	vvf 400
14.07.06	syk		vvf 247	2x live malr/female by cs	
14.07.06	ausr		vvf 248	amenorrhea 4 mth	
29.09.06	hal		vvf 254/284/323	4x miscarriage	vvf 397
03.11.06	bsby		vvf 259/289	live female by cs	
09.11.06	gurc		cath 46	2x live female per vaginam	
02.02.07	huk		vvf 263	2x sb male/live female at home	
02.02.07	gur		vvf 265	2x live female per vaginam	
27.02.07	ham		vvf 267	live male by cs	
27.02.07	bmk		vvf 268	sb male pv vvf 422 2x live male by cs	
27.02.07	tuk		vvf 269	3x sb male/live female by cs	
28.02.07	aik		vvf 273	amenorrhea 8 mth	
28.02.07	zsza		rvf 35	2x delivery alive by cs	
01.03.07	hus	115	vvf 274/rvf 37	live male at home	
16.05.07	sykg		cath 48	live by cs	
18.05.07	hzm		vvf 281	1x sb male by cs	vvf 513
18.05.07	rio		vvf 282	live male by cs 15.03.09	
18.05.07	ssk		vvf 283	12.08.08 live male by cs	
19.05.07	rjbn		vvf 287	1x live male by cs	

19.05.07	hkg		vvf 288	live male in hosp
02.06.07	zska		vvf 297	live male by cs
15.06.07	saak		rvf 38	1x live female by cs
15.06.07	rdst		vvf 301	live male by cs
16.06.07	jikd		vvf 303	live male by cs
16.06.07	brd		vvf 304/364	aborted new leakage
16.06.07	huy		vvf 305	live male by cs
24.07.07	rskm		vvf 309/320	live male by cs
21.09.07	fad	174	vvf 310/344	live female by cs
26.10.07	asdd		vvf 316	live male by cs
23.11.07	nzz		cath 50+vvf ado	live male per vaginam
23.11.07	iaf		vvf 326/334	live male by cs
10.12.07	hlb		cath 51	2x delivery alive by cs
24.01.08	shkd		cath 52	live female by cs
29.02.08	hisg		vvf 335	amenorrhea 7 mth
29.02.08	hmua		vvf 336	live male twins per vaginam
29.02.08	shk		vvf 339	live female by cs
01.03.08	hmr		vvf 341	live female by cs
17.05.08	mbz		rvf 44	live female by cs
29.05.08	syyk		vvf 349	live male by cs
30.05.08	ujkb		rvf 48	amenorrhea 3 mth
03.10.08	amk		vvf 370/rvf 49	amenorrhea 7 mth
03.10.08	nbk		vvf 366	live female by cs
03.10.08	sikc		vvf 368	amenorrhea 4 mth
03.10.08	amk		vvf 370/rvf 49	live female by cs
04.10.08	mmm		rvf 50	live male per vaginam
04.10.08	zaj		vvf 371	sb male at home fistula

24.10.08	hmsgz	vvf 378	2x sb male at home/by cs
07.11.08	,hza	vvf 382	live male by cs
23.01.09	ksf	vvf 395	2x sb/live male home/by cs vvf 419
06.03.09	aab	vvf 402	live male by cs
05.03.09	migg	vvf 403	live male by cs
07.03.09	ysa	vvf 406	live male by cs
25.05.09	rirb	cath 56	1x delivery live male at home
05.06.09	snli	vvf 409	live female by cs
05.06.09	rkjb	vvf 408	live male at home
24.07.09	aisbd	rvf 53	live female per vaginam
23.10.09	sscd	vvf 424	live male on way to hospital
23.10.09	mgky	vvf 425	live male by cs
26.02.10	rmmd	vvf 427	live male by cs
19.03.10	hhik	vvf 437	live male by cs
15.05.10	raza	vvf 444	amenorrhea 3 mth
10.07.10	hstd	vvf 449	live male by cs
17.09.10	fbrk	vvf 455	amenorrhea 4 mth
19.03.11	mrzt	vvf 488	live female by cs
17.09.11	fmkg	rvf 70	live female by cs

immediate management obstetric fistula catheter protocol

kees waaldijk MD PhD

introduction
the management of the obstetric fistula should start the moment the leaking of urine is manifest, the earlier the better
to tell a patient she should come back after 3 months is malpractice
evidence-based practice revealed that catheter treatment within 2 months after delivery may promote the spontaneous healing of urine fistulas in 20-25% of the patients
if the interval is longer than 2 months that chance will become very low

catheter treatment protocol
there are two different regimens **a** settings **without** and **b** setting **with real fistula expertise including surgery**

if no real fistula expertise available

any patient who is leaking urine and reports within 2 months since delivery

no intravaginal examination

check on the outside if really urine from vagina

do not waste valuable time since the earlier a catheter is inserted the better the results

insert foley catheter ch 18 (or any other size available) immediately for 4 weeks

high oral fluid intake of 6-8 liters per day; water, tea, soup

ensure free urine drainage preferably open into pot

attend to her other needs

no routine antibiotics since it is pressure necrosis

antibiotics only on indication, e.g. puerperal sepsis

immediate mobilization of patient, if necessary with stick

oral hematinics like fersolate and folic acid; if necessary systemic like iron dextran

high protein diet

check for couple of days if patient is following instructions

and check if urine is following catheter

urine should be clear and without color like clean water

if so she can be treated on an outpatient base with once a week reporting, checking and instructions

if urine is not following catheter check if it is in place and/or blocked

if not in place insert it the right way

if blocked flush or change the catheter

if catheter is in place and not blocked and not draining at all remove catheter and refer patient to a real vvf center

if the patients leaks little it still can heal as long as the catheter is functioning well

remove catheter after 4 weeks and instruct her again about high oral fluid intake and regularly passing urine every 15 to 20 minutes

and ask/check the day after catheter removal if she is dry or still leaking

if she is dry: excellent since healed by catheter

if leaking little instruct her about oral fluids and regular passing urine and check one month later; if dry fine; if still leaking after one month refer to vvf center

if still leaking plenty refer straight away to vvf center

if real fistula expertise available

real expertise means the doctor has ample fistula surgery experience and facilities are available for fistula surgery

any patient who is leaking urine and reports within 2 months following delivery

if possible perform gentle vagina examination to assess the obstetric trauma

insert foley ch 18 catheter for 4 weeks

and follow the **same protocol with the following additions**

examine once a week vaginally to assess prospects of healing or surgery

if it seems healing leave catheter in situ and continue protocol

if definitely not healing remove catheter and prepare for early closure

then if necessary perform debridement of slough

and instruct patient about sitzbaths with detergent; a detergent like omo or ariel is freely

available in the market, cheap and highly effective and superior to expensive antisep tics; so I use it for me myself as well

as soon as wound clean perform early closure

mobilize patient at all times

attend to the other needs of the patient

discussion

This treatment regimen is based on a personal experience in over 20,000 fistula patients, out of whom 6,000 (kano and katsina) were treated within 75 days after labor either by catheter or by catheter followed by operation or straight away by operation.
It is the beginning of an immediate active management of any woman who starts leaking urine after childbirth. If successful, and that is in at least 20-25% of the patients, it will prevent the woman from being ostracized from her own family and community. If not successful, she has to be referred to a VVF-center for further surgical management. If upon vaginal examination the fistula is too big or the balloon is inside the fistula, the catheter should be removed, and the patient referred to a fistula surgeon.
The indwelling FOLEY catheter will decompress the bladder so that the wound edges are coming together and stay together, at least in the smaller fistulas. As such this will promote spontaneous healing of the smaller fistulas. Also it may prevent urine dermatitis to develop. Open draining of the catheter into a pot or a plastic bowl is better than closed draining into a urine bag, when one sees how the patients handle their urine bag. Therefore the author fixes an infusion giving set to the catheter to allow the patient free mobility. There should be free drainage at all times, and the patient has to be instructed not to block the catheter or to lie upon the catheter when she sleeps. If the catheter gets blocked, it should be flushed or changed for another immediately, and the patient should be urged to drink.
The importance of a high oral fluid intake cannot be stressed enough. The consequent high urine output will prevent blockage of the catheter and will prevent any ascending urinary tract infection. Urinary tract infection will only develop with a low urine output and/or outflow obstruction. If the urine is not clear and colorless and odorless like water she is not drinking enough.
The indiscriminate use of antibiotics in necrotic lesions is against basic surgical principles. In burn wounds, thermal necrosis, where the necrotic trauma is far more extensive routine antibiotics are even considered to be malpractice. The best would be to excise the slough and as soon as the wounds are clean to perform early closure ((2)). However, this requires ample experience in VVF-surgery and is beyond the scope of this article.
If the leaking extends beyond 3 mth after childbirth nothing can be expected anymore from catheterization.
In order to reduce the incidence of postpartum urine leakage, any woman with obstructed labor should have already an indwelling bladder catheter inserted as soon as obstructed labor has been diagnosed; and if it develops it should be continued as outlined above.

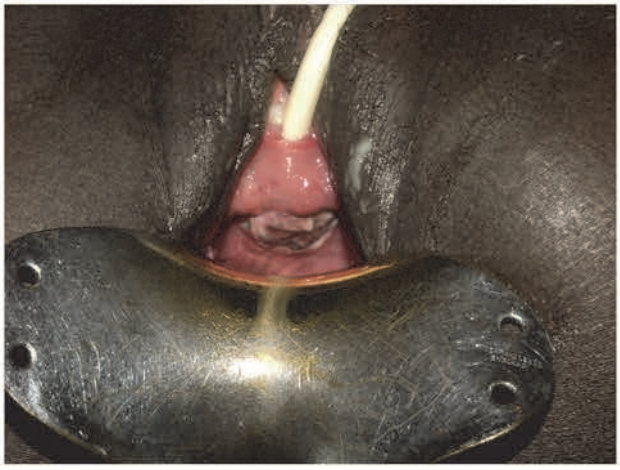
conclusion

Any woman who starts leaking urine post partum should have an indwelling bladder catheter for a period of at least 4-6 weeks. And then she has to take 5-6 liters of oral fluids a day to produce a minimum of 4-6 liters of urine per 24 hours.
If by **mass campaign** this regimen would be installed all over the developing world it will

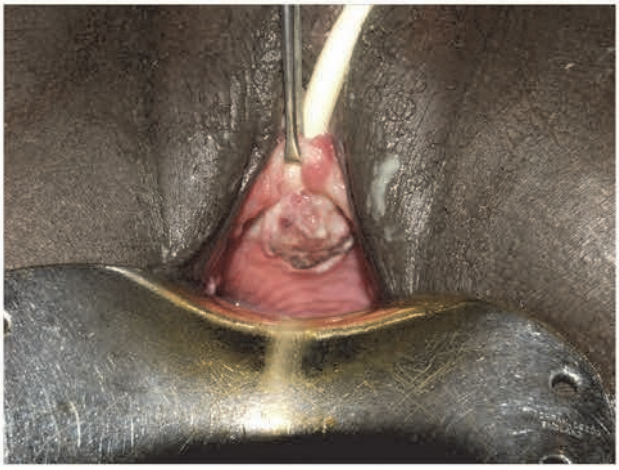
prevent/heal the obstetric fistula in at least 20-25% of the patients and that is more than all fistula surgeons combined are operating at the moment; for a fraction of the costs; however, the patient has to be instructed and monitored very carefully..
Though the obstetric fistula will remain a major public health problem for at least 50 years coming ((3)), immediate bladder catheterization will have a **major** impact.

necrotic fistula day 8

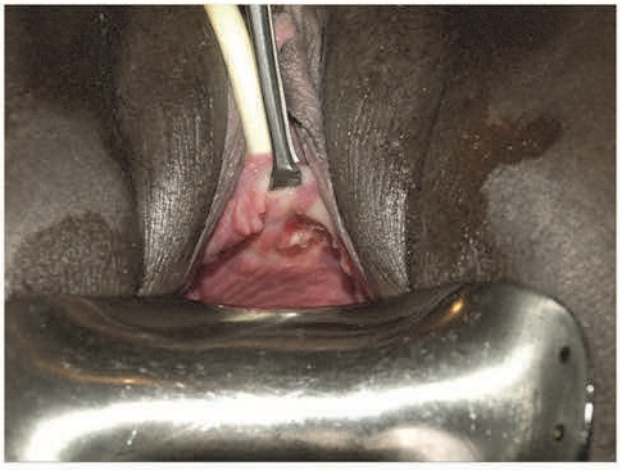
with atonic bladder



day 15



day 15



day 28

healed day 54

catheter treatment

incurable fistula patients

characteristics and how to behave

introduction

how capable the surgeon may be there are always patients in whom the trauma is right from the beginning or has become during surgical intervention(s) **incurable**

what is incurable

incurable means that
either
the surgeon is no longer able to operate anymore
or
the patient will not benefit anymore from an operation
or
the operation would endanger her health and/or her life

who will encounter it

for the inexperienced surgeon it comes at an early stage and for the experienced surgeon it comes at a later stage
however, any surgeon, whatever his experience and skills, will encounter patients who are beyond repair

characteristics

absolute

valid for any surgeon whatever his experience
no tissue left to reconstruct like (sub)total bladder/urethra loss
everything fibrotic/fixed so the tissue cannot be mobilized

relative

depending upon the surgeon's experience
severe vagina stenosis
severe mutilation either obstetric or iatrogenic
extensive obstetric trauma like in type **IIBb**
repair "possible" with predictable resulting total incontinence if closed
total post **IIAb/IIBb** intrinsic incontinence
procedures which would take more than 2-3 hours
severe obesity with fistula deep inside
old age with long-lasting urine leaking

aetiology

minority due to extensive obstetric trauma and/or procedures by experienced fistula surgeons

majority due to mutilating procedures by (in)experienced (fistula) surgeons who do not understand the obstetric trauma and/or pelvis anatomy due to lack of training and/or self-arrogance

perils of obstetric fistula surgey
the surgical management of the obstetric fistula surgery will bring down any surgeon from whatever background, training, race or country down to the earth with both feet planted solidly on the ground since anybody (even the blind) can see (or smell) the mis fortunes however much the surgeon is boasting about his performance
and
then even in highly competent hands: operation successful, patient leaking

main problem
not the fistula itself; since closure rate is up to 97-98% but how to ensure/secure social continence in order for her to live a “normal” life whatever that may be

how to behave in order to prevent iatrogenic mutilation
any surgeon whatever his experience should ask him/herself
a will the patient benefit from my surgery
b can I handle it safely
c how do I obtain quality in my surgery
d can I handle it myself or do I refer to a more competent surgeon
e is it not shameful to do something I know deep inside I cannot handle

who/how to determine incurable
the most experienced fistula surgeon in a certain area is the one who should determine “incurable”
however, since the obstetric and/or surgical trauma is so complex this can only be done by: an examination under (spinal) anesthesia and
then the surgeon should proceed if possible or stop if really incurable and
document what is found for himself and others

how to behave if incurable
the situation has to be explained to the patients (and her relatives) in so far as she is able to understand it
she has to be instructed in personal hygiene and drinking
she has to be taught skills to look after herself;
she has to come once a year for check-up and to see if new techniques are available since ultimately the patient herself is responsible for her own life

do not lock her up in a fistularium not even in a golden prison

is incurable incurable forever
incurable does not **as a rule** mean incurable for ever since
the responsible surgeon may gain the additional expertise
new insights with new techniques may become available with time

personal experience
after over 23.750 repairs the author still faces incurable patients in 0.5-1% with an upward trend since more and more patients are referred and more and more inexperi enced “surgeons” operate
in the very beginning the patients were told to come back after 1 year and with more experience most of them were operated successfully
now we are in the process of reviewing them all one by one to execute the final last resort assessment of possibilities
with promising results since we developed new techniques for post-repair incontinence

upward trend of incurability
since the obstetric fistula became all of a sudden sexy around the year 2000 more doctors and more organizations became interested
however, they are interested more in quantity than in quality for short-term show-off in order to raise funds; how can one train 120 doctors surgically in only 80 patients
this resulted in an increase of ill-trained “surgeons” with mutilating techniques

conclusion
since fistula surgery is highly complicated, the majority are the result of poor surgery by incompetent (and arrogant) surgeons; one “repair” can spoil the patient’s life forever

any surgeon should know his limits and restricts him/herself to things (s)he is sure (s) he can handle

too many doctors are ill trained and as such do not have the slightest clue about the obstetric fistula and pelvis anatomy; they are only trying to copy a trick

we should all aim at quality and not at quantity

half knowledge is extremely dangerous

one repair by an incompetent surgeon
may change the prospect of the fistula

from operable into inoperable
with devastating life-long consequences
for the patient

pt 3977 kano vvf 4761
pt 674 **extensive total circumferential; inoperable IIBb + Ib** rvf 790

sidg (kano) female 38 yr 16.07.13

surgeon: kees waaldijk

assistant: zainab yusuf

diagnosis: PX (5 alive), **inoperable extensive** ± 6 cm 0 urethrovesicovaginal fistula with circumferential defect type **IIBb**, **"operable"** 1 cm 0 rectovaginal fistula type **I**, leaking urine/passing stool pv for 1.5 yr that started immedia tely following obstructed last labor for 1 day, in hospital sb male, married 24 yr ago post(menarche 1 yr earlier), not living with husband, no menstru ation, drop foot R (grade 2-3) and L (grade 2), no yankan gishiri, no h/o eclampsia; normal ap diameter/narrow pubic arch 70°, ar pos, extensive bilateral atf/atl + pc_io_ilc_iscm loss + ssl_pm trauma, "cervix" fixed, total avw/fascia losss, severe vagina stenosis/shortening, operated 2x (d-bat) euo/f 0 cm, f/c 0 cm, ab/au 6 cm a/f 5 cm; f/c 0 cm, i/v 6 cm 155 cm

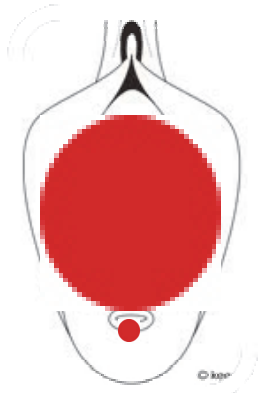
operation: assessment

duration: 5 min healing continence

anesthesia: spinal by staff

no tissue left for uvvf-repair, everything fixed, direct longitudinal bladder diameter 6 cm so **inoperable IIBb fistula**
"operable" rvf but it will bring nothing, only risk of major complications considering the amount of scarring/fibrosis
counseling on personal hygiene is the only thing she might benefit from but from the findings she does it already no smell, no ammonia dermatitis

11.08 + 15.09 + 18.12.13 idem



inoperable IIBb/Ia

RR
preanesthesia: mm Hg
5':
10':
postoperation:

pt 6791 katsina vvf 8607

second now post IIBb leakage vvf 2631/2721/3442

hakd (katsina) female 54 yr 28.05.13

surgeon: kees waaldijk

assistant: kabir lawal

diagnosis: PX (5 alive), total post **IIBb** delivery intrinsic incontinence III, leaking urine for 12 yr which started immediately following cs bco last obstructed labor for 2 days, live male, married 41 yr ago (menarche 5 mth later), still living with husband, menopause 8 yr ago foot drop R (grade 4-5) and L (grade 3-4) both with gm_sm_at contracture up to 90°/0°, no rvf, no yankan no h/o gishiri, eclampsia; ?ap diameter?/normal pubic arch 85°, ar pos, cervix fixed, large pc fascia defect, severe funnel-shape vagina stenosis/ shortening normal-width urethra_euo in antomic position
completely ok after multiple repairs delivery IX until PX 6 yr later
euo/c 4 cm, i/v 5 cm no compliance 158.0 cm

operation: **assessment inoperable post IIBb delivery intrinsic incontinence**

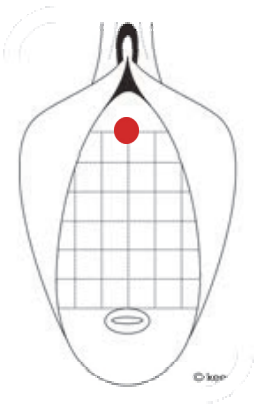
duration: 5 min pt did **not report** with new leakage till now

anesthesia: spinal L4/L5 with 3 ml bupivacaine 0.5%

objective intrinsic incontinence, euo/bw 7 cm, good elevation (whole neourethra fixed onto symphysis, euo/bw 2.4 cm nicely healed **IIBb** repair
small bladder capacity (longitudinal diameter 7-2.4 = 4.5 cm)
good position of uv-junction against middle third of symphysis
normal-width 2.5 cm medium–quality urethra_euo in anatomic position
fibrosis, small bladder capacity (shrunken bladder) no compliance/not drinking

26.06.13 not leaking at all cath removed bladder drill

23.11.13 leaking & no miction no compliance only bladder drill



RR
preanesthesia: 140/90 mm Hg
5': 140/90
10': 140/90
postoperation: 140/90

intellectual property
to whom and where it belongs

intellectual property is a hard-earned thing for which a person has invested time, money and energy; and for which he deserves the credit

specifically in the industrialized countries, governments and organizations are pressing that this should be protected/respected by all especially in the developing countries

however, the same governments and organizations are violating the intellectual property rights of the developing world at will due to their arrogance to believe that they are superior and therefore it is their right to claim everything as their own

since I started in december 1983 and my work became a bit known around 1990 indivi uals and organizations from the industrialized world but especially from the usa came to steal my data and my achievements

so, the individuals started to publish my ideas and my work as their own in so-called peer-reviewed international journals and the “peers” (you peer me I peer you) and the public were so naive to believe them or so arrogant; **the latest in 2011 was a dr med thesis in germany**

and the big organizations started to invade (no other word for) my programme even trying to prevent me from doing my job and boasted that they had operated so and so many patients, initiated so and so many repair centers and trained so and so many doctors and nurses; all with the intention to secure funds for their real hidden agenda: family planning; and the sponsors were so naive to believe them or also so arrogant

however, these organizations are not and will never be able to do that, simply because they do have neither the expertise nor the skills and are not really interested; still they make a lot of money as based upon the work of others exploiting the suffering of the poor women for their own benefit

it was me with my team who did all this by investing the best part of my life for a price few people are willing to pay; however, I enjoy(ed) it and feel privileged

some of the smaller organization, like sk foundation, waha and fistula care, behave(d) far better and just provide(d) funds for me to do my work for which I am very grateful on behalf of the obstetric fistula patients

so I had to find out all these things the hard way and consider them as my intellectual property which I am not going to surrender to the verbal obstetric fistula surgeons and agencies

therefore this report carries an official isbn/ean no and functions as a scientific paper

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