National VVF Project Nigeria

evaluation report XXIV

2007

state of the art surgery

evidence based results

ground breaking research

peer reviewed science

complete documentation

long-term follow-up

kees waaldijk **MD PhD**

chief consultant fistula surgeon

reprint

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National VVF Project Nigeria

evaluation report XXIV

2007

Nigeria

Ebonyi State University Teaching Hospital
ABAKALIKI

Special VVF Center
B_KEBBI

Faridat Yakubu VVF Hospital
GUSAU

General Hospitals
HADEJIA - JAHUN

Laure Fistula Center
KANO

Babbar Ruga Fistula Hospital
KATSINA

Specialist Hospital VVF Center
MAIDUGURI

Maryam Abacha Hospital
SOKOTO

Kofan Gayan Hospital
ZARIA

République du Niger

Centre Hospitalier Départemental
MARADI

Maternité Centrale
ZINDER

kees waaldijk MD PhD

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the (surgical) management of the obstetric fistula has to start the moment the leaking of urine becomes manifest

no need to become an outcast

the immediate management by catheter and/or early closure is highly successful and will prevent the woman from becoming an outcast

the best way to treat the whole patient is by closing the fistula

do not waste time, energy and money on things which make no sense

concentrate on the most important thing: close the fistula

prevention

only by building hospitals, roads and schools
lesson learned from history

in the USA 480,000 teenage deliveries during the year 2002
however, not a single obstetric fistula

executive summary

obstetric fistula surgery is highly complicated so it takes intensive training, dedication and expert skills; there are no identical fistulas and each fistula needs its own individual customized approach taking into account the enormous variety in **necrotic tissue loss**

the strength of the program is that everything is **evidence based** by meticulous documentation, prospective research, individual follow-up over years and consequent analysis of the results according to scientific parameters

though, after all those 24 long years of hard work, we have developed **feasible solutions** for all the problems involved in the surgical management of the obstetric fistula there is still room for perfection

the **highlight of the year** was the opening of the new high-quality 60-bed rehabilitation center in Katsina which was initiated and commissioned by Hajiya Turai Umaru Musa Yar' adua, the First Lady of the Federation of Nigeria

another important development was the foundation of the **I**nternational **S**ociety of **O**bstetric **F**istula **S**urgeons to take charge of our own affairs and to streamline our efforts without negative interference by other organizations

we have a close cooperation with the Hamlin fistula projects in Ethiopia, the national fistula project of République du Niger and the AMREF fistula project in East Africa; after a visit by a team from the Fistula Hospital in Addis Ababa; we would like to cooperate with more projects

during the year a total of 1,994 VVF/RVF-repairs were performed in the project, a total of 12 doctors and 7 nurses attended our regular training program whilst 2 workshops were executed making **a grand total of 26,944 repairs, a grand total of 699 trainees and a grand total of 17 workshops**

since there is international attention and lots of money available for the obstetric fistula there seems to be a trend for NGOs to pocket only the money by invading and claiming credit for existing projects and by vocal noise about what they have "achieved"

though the NGOs are supposed to improve the health of the obstetric fistula patients it is exactly the opposite their suffering is being abused by the NGOs to improve their own financial situation without any shame; the sad reality

therefore it is necessary to ask the following questions

for prevention: who is willing to build the first road, the first school and the first hospital in order to reach the ultimate goal in some 100 years from now: **a network of functioning obstetric care** so that there will be safe motherhood for any woman wherever she lives; not solely for the privileged in the industrialised world

for treatment of the hundred thousands of obstetric fistula patients: who is willing to provide the funds to strengthen the existing centers and to set up new centers and who is willing to fund the training of highly qualified personnel in the surgical management

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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 criplling the woman for life
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 (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
to concentrate on the repairable fistulas and especially on the immediate management as a priority considering the scarcity of human resources, finances and available infrastructure
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
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 150 million people.

individual VVF-repair and -training centers
Kaduna State
there is really comprehensive obstetric fistula care in Kofan Gayan Hospital in combination with the rehabilitation unit annex hostel; the number of obstetric fistula patients treated is increasing continuously and the results are excellent; it is the only place where a selective caesarean section is performed in subsequent deliveries after a successful repair; Rotary International and Family Care are doing a fine job

Kano State
all facilities of Laure Fistula Center were functioning smoothly to cope with the many patients in Kano State; the majority of the patients come from **within** Kano municipality demonstrating that the system is not functioning even in a major town like Kano; there is still a backlog
there is good collaboration with the rehabilitation unit annex hostel based in Kwalli as run by the Ministry of Womens`Affairs
Rotary International established a VVF-repair center in another town Wudil but due to organizational problems not much progress was made
national training center
more doctors and nurses could be handled
Katsina State
Babbar Ruga Hospital still remains the base of all our many activities, and the authorities are highly committed
though there is **no backlog** anymore in Katsina State we do not notice yet a reduction in the number of patients coming from République du Niger, the same Hausa/Fulani community
the new and very beautiful and large rehabilitation center has been commissioned and is already functioning; located just opposite the repair center exactly how we wanted it for close cooperation but separated
international training center
the training of doctors is functioning well but we could handle more nurses; since the center becomes more and more known the interest is rising
Kebbi State
the new major Special VVF Hospital is functioning well, the medical director Dr Al Moustapha is doing a fine job but more doctors and nurses have to be trained
Sokoto State
Maryama Abacha Women and Children Hospital is not functioning as it should despite the fact that ACQUIRE is taking an interest; far more could and should be done since there are many patients; its full potential is not being used, mainly since it is difficult to find a suitable surgeon; many doctors from the state were trained but none of them stayed on; still, it has everything to become a major repair and training center; more doctors and nurses have to be trained
Borno State
one doctor and two nurses from the new VVF center were trained in the basic principles of the (surgical) management of the obstetric fistula; the center was visited once by the surgical team but since then no news
Ebonyi State
there are no funds for the obstetric fistula service, so patients have to pay for their treatment In Ebonyi State University Teaching Hospital; it would be better to shift the center to the Specialist Hospital since the service is free of charge there; it may need a total re-thinking
Jigawa State
the VVF center in Jahun itself needs upgrading of the facilities, but the major problem is that continuity is lacking; no funds could be made available to train the new medical director so the service came more or less to a standstill; it seems that Médicine Sans Frontières is taking an interest which would be a nice development
Zamfara State
since the center has been converted into a general hospital, the only one in Gusau the work has come to a standstill due to organizational problems; once the new VVF Center has been completed the VVF work can continue; since ACQUIRE has this on its priority list we are waiting for new developments
Maradi/Niamey/Zinder in République due Niger
the new VVF center in Zinder is functioning well under the direction of Dr Lucien Djangnikpo; in Niamey Dr Abdoulaye Idrisaa continued the service but in Maradi it has to be restarted

traveling rhythm
in order to maintain our state-of-the-art standard, to help with the highly complicated surgery and to supply on-the-job training for doctors and nurses we continue our weekly tours of 1,200-1,500 km on the extremely dangerous and long roads of Nigeria

activities (see annexes)
surgery
over the year a total of 1,994 procedures were performed in the 10 different centers making a
grand total of 26,944 operations: 24,594 VVF-repairs and 2,350 RVF-repairs
postgraduate training
over the year a total of 12 doctors and 7 nurses were trained making a
grand total of 699 persons: 308 doctors, 321 nurses and 70 other persons
workshops
the consultant surgeon + team participated in 2 workshops in Jahun and Zaria making a
grand total of 17 workshops

rehabilitation
in Kaduna, Kano and Katsina State there are **major** functioning rehabilitation centers

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
… and we were able to develop **evidence-based solutions for each and every problem**

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
the **principles of septic surgery** cannot be overvalued since the vagina is not sterile: water-tight closure of the bladder, air-tight closure of the rectum whilst the anterior/posterior vagina walls are only adapted, half closed or left open

funding
basically the project is funded by the Federal Government and by the individual State Govern ments but this is not sufficient
further funding came from the Scandinavian Society Nigeria, Stat Oil, the SK Foundation, the TTT Foundation and the Hon-Da-Tsi Foundation
without the financial help of the SK Foundation this project could not have come off ground and would have never reached its present dimensions and importance; unfortunately, they will stop by the end of 2007 and we desperately need a new major sponsor

new nation-wide development
the Federal Ministry of Health, the Federal Ministry of Women Affairs and the individual State Governments are becoming more and more involved in the project; a national strategy to treat and eradicate the obstetric fistulas has been finalized
cooperation with UNFPA came to a standstill but we hope it will continue after some time
Rotary International is sponsoring the obstetric fistula work in Kaduna and Kano State
Family Care continues its commitment to rehabilitate the obstetric fistula patients in Kaduna; Kano and Katsina State

new world-wide "development"
the obstetric fistula has become extremely politicized so the word is more important than the deed; unfortunately, **talking has never healed an obstetric fistula**
the major organizations are either not able or not willing to understand what is needed, with the few exceptions as mentioned earlier under funding

conclusion
though there is continuous improvement in the quantity and quality of this project in terms of service, training and research there is a long and difficult road in front of us

fistula surgery 1984-2007

	ebonyi		jigawa		kaduna		kano		katsina		kebbi		sokoto		zamfara		rép niger		
	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 1,268	-		86	-	-		311	37	562	60	41	-	98	5	-		66	2	
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	45	3	79	6	1,962
2006	10	2	5	-	65	19	368	91	508	83	156	5	176	17	47	2	161	8	1,723
2007	11	1	61	3	114	4	510	97	602	117	170	6	90	5	45	2	150	5	1,994
total	**105**	**10**	**2,006**	**116**	**613**	**50**	**6,477**	**780**	**10,261**	**1,083**	**1,279**	**44**	**2,282**	**165**	**497**	**33**	**977**	**55**	**26,834**

total VVF-repairs and related operations: **24,498** **+** in workshops 96 **=** **24,594**

total RVF-repairs and related operations: **2,336** **+** in workshops 14 **=** **2,350**

grand total 26,944

success rate at VVF closure: 90% per operation at early closure: 95% per operation

success rate at RVF closure: 85% per operation

wound infection rate: < 0.5%

postoperative mortality rate: 0.5-1%

final success rate (after one or more operations): > 97%

final severe **incontinence rate** after successful closure: 2-3%

obstetric fistula training 1989-2007

this is one of the only two training centers in the world where formal training is being practiced and has become a corner stone in the project

however, training is energy intensive and time consuming; **2-3 operations less a day** are performed

the objectives of the training are to demonstrate/learn the complex trauma of the obstetric fistula and the noble art of its (surgical) management under primitive African conditions; spinal anesthesia is included in the training and each trainee is given a hand-out

a grand total of 699 doctors, nurses/midwives, other highly educated persons and para-medical staff were trained/attended our training program:

a total of **308 doctors**
- 125 general doctors with 3 years of surgical experience
- 149 consultant gynecologists/surgeons/urologists
- 32 senior registrars in gynecology/obstetrics
- 2 senior registrars in anesthesia

a total of **321 nurses/midwives**
- 230 pre- and postoperative nurses/midwives
- 75 operating theater nurses
- 16 anesthetic nurses

a total of **3 other academic persons**
- 1 anthropologist
- 1 physiotherapist
- 1 sociologist

a total of **7 medical students**

a total of **20 paramedical persons**

a total of **40 social workers**

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

the training of doctors is **totally individually in a slow step-by-step process** since the variety of the obstetric fistula is immense, there is real tissue loss, the anatomy and physiology complicated, the access to the operation field limited and the hand-ling of instruments difficult; the trainee doctor can only be taught the basic principles of this type of reconstructive surgery

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 few dedicated fistula surgeons

training module

evidence-based as practiced in the national vvf project nigeria

first
selection of an **obstetric fistula management team** consisting of a doctor, an operation theatre nurse, an anesthesia nurse and two pre- and postoperative nurses who are interested and willing to provide a service for the obstetric fistula patients

second
training of the complete team in an **established obstetric fistula training center** with a high turn-over of patients and a high number of repairs
for the doctor 6-8 weeks initially
for the nurses 4 weeks

third
organizing a 5-day workshop to operate a large number of patients in combination with lectures as co-facilitated by the consultant trainer + team for advocacy_publicity that something can be done and to start the obstetric fistula service in that area

fourth
the team starts working on its own with the simple fistulas which they must be able to handle themselves **confidently** after their initial training

fifth
the consultant trainer + team come from time to time for **on the job training** and to handle the more complicated fistulas and to select more staff for training

sixth
after 50-100 personal repairs, the doctor should come for advanced training to the obstetric fistula training center for 4-6 weeks in order to boost his expertise

seventh
the doctor continues his own surgical program and the consultant trainer + team come from time to time for further on the job training, to assess the service and to handle the difficult fistulas

eight
at any time the doctor comes for further training of 2-4 weeks whenever he thinks he needs more training

ninth
after 350-400 repairs and if feasible and if there is a need, the doctor should come to the training center for further **advanced training** to become a **future trainer**

tenth
at any time, be (s)he a doctor or already a trainer, whenever there is a need, (s)he should appeal and come for further training to the established training center

workshops have low value for the initial training but high value for (more) experienced fistula surgeons on specific topics such as postrepair incontinence and definitely value in advocacy and helping large numbers of patients within a short time.

documentation + fistula research 1984-2007

documentation
the strength of the project is the complete systematic meticulous documentation by over 16,500 individual computerized comprehensive reports of history, findings, ope-ration procedures 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 40,000 full-color slides and 25,000 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 patient gets her own card in a plastic map with date and type of operation 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 some 150-200 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

the documentation is time consuming and takes stamina but without documentation there is no feedback and no proof

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 way

only by clinical research we came far and found **scientific, theoretic and practical** solutions for each and every problem encountered

it resulted 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 vesicoure- throstomy 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 drop foot

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

urine continence mechanism

in the female

it is good to realize that the most important part of the urine continence mechanism is located within the urethra whilst the continence potential is from the proximal urethra and trigonal ring thru the distal urethra and 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 extending bilaterally into urethrovesicopelvic ligaments; for stabilization and hinge-like compression; actually the pubocervical fascia is part of the **endopelvic fascia**
  - **b** pubococcygeus musculature

IV intact innervation of these components

since there is **no sphincter muscle** and since the posterior urethra is firmly attached to the elastic pubocervical fascia there is no circular closure of the urethra but **coaptation of the anterior urethra against the posterior urethra** whilst additionally the elastic pubocervical fascia **compresses the urethra** against the posterior symphysis with a maximum against the caudad third of the posterior symphysis (hinge effect); the bladder neck keeps the urethra at full length and the urethrovesical junction closed; the nervous system is the coordinator
the pubocervical fascia secures and stabilizes the urethra in its anatomic position so that it can exert its physiologic function ensuring full continence

biophysiomechanics

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

at rest during the filling phase of the bladder these mechanisms maintain closure of urethro-vesical 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 with stretching of the pubocervical fascia and contraction of the fast-twitch striated muscle fibers of the urethra 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 contraction of the fast-twitch muscle fibers and stretching of the pubocervical fascia maintaining the urethra stretched whilst its compression against the posterior pubic symphysis increases (hinge effect); this takes place a few milliseconds before there is an increase in intravesical pressure since first the diaphragm, the anterior abdominal musculature and the pubococcygeus 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 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

there is no sphincter and pressure transmission is not involved

closure is by anterior to posterior coaptation and by compression

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

urine incontinence

make sure to get the right diagnosis for a proper plan of action

true incontinence

fistula, ectopic ureters

stress incontinence

urine loss at intraabdominal pressure rise (cough, standing up etc.) from grade I (minor degree) to grade III (total incontinence); normal bladder capacity

intrinsic incontinence

total urine incontinence whilst lying/sitting//standing/walking as if there were a fistula since the intrinsic physiologic continence function of the urethra has been lost completely; normal bladder capacity

urge incontinence

urine loss not related to intraabdominal pressure rise but to involuntary detrusor contractions; small bladder capacity

overflow incontinence

a UV-stricture with outflow obstruction

b atonic bladder; large bladder capacity, bladder overfilled

bladder capacity may play a role in the outcome of the repair as to continence

on the one hand, if the bladder capacity is small urge incontinence may develop

on the other hand, if the bladder capacity is increased stress or overflow incontinence may be expected

the bladder capacity can be estimated according to the **longitudinal bladder diameter** as:

small	≤ 4 cm
moderate	5-6 cm
normal	7-12 cm
increased	> 12 cm

the longitudinal bladder diameter is calculated as: the distance from the external urethra opening to the bladder wall (as measured by a calibrated metal sound) minus the distance from the external urethra opening to the balloon of the FOLEY catheter (urethra length)

though measuring the bladder capacity in this way is not an absolute parameter, it will give a good impression of the bladder capacity; in addition metal sounding before the operation is started will detect bladder stones as well

as long as the forces which keep the urethra closed/sealed are higher than the intravesical pressure, there is no urine leakage, i.e. if there is no fistula

once the intravesical pressure exceeds the forces which close/seal the urethra there will be urine flow from the bladder through the urethra towards the outside

mechanism of intrinsic/stress incontinence

deficient pubocervical fascia is

no longer securing/stabilizing the urethra in its

anatomic position

resulting in distortion of the

urethra intrinsic continence mechanism anatomy

with loss of its physiologic function

total (post-repair) urine intrinsic/stress incontinence

urethralization by repair and/or (re)fixation of pubocervical fascia

introduction

One of the major problems in obstetric fistula surgery is the occurrence of total postrepair urine intrinsic/stress incontinence. Though the fistula has been closed the patient continues to leak urine whilst lying, sitting, standing and walking as if there still were a fistula since the intrinsic continence mechanism and the stress continence mechanism are not functioning. For the patient it is terrible since she and her community do not consider her as healed and she remains an outcast. For the surgeon it is frustrating since (s)he did a good job, however not good enough: repair successful but patient leaking.

The treatment of postrepair incontinence is even more complicated than that of genuine incontinence, since there is anatomic tissue loss of the intrinsic and stress continence mechanism. This tissue loss may involve the bladder neck, urethra, pubocervical fascia, pubourethral ligaments, trigonal ring, detrusor loops, pubococcygeus muscles, iliococcygeus muscles, ischiococcygeus muscles, arcus tendineus fasciae, the arcus tendineus of the levator ani muscles, and even the internal obturator muscles and the broad, cardinal and sacrouterine ligaments; it may be partial or total and can occur in complete combination. Added to the original trauma of pressure necrosis is the surgical trauma of the repair(s). Especially when what is left of the urethra is too short, i.e. $\leq$ 1.5 cm, it is difficult to provide a solution; and this short urethra is often wide open as well.

There are a complex of many factors (see: **urine continence mechanism in the female**) which determine if a woman is continent or not. However, there are only four factors which can be approached surgically at the moment: **a)** length of urethra, **b)** diameter of urethra, **c)** support of urethra and **d)** position of urethra in relation to the posterior pubic symphysis.

This operation technique aims to correct these four factors at the same time and in a physiologic way

mechanism of incontinence

Normally the anterior urethra is secured by the anterior pubourethral ligaments whilst the posterior urethra is secured by the intact pubocervical fascia. When the pubocervical fascia becomes deficient the posterior urethra wall is pulled inside whilst the urethra is anteriorly still secured resulting in distortion of the urethra muscular arrangement, the urethra opens up with opening of the trigonal ring whereby the proximal urethra becomes part of the bladder, i.e. vesicalization of the proximal urethra and then the urethra looses its physiologic continence/closing function.

operation technique

Under spinal anesthesia and in the exaggerated lithotomy position a FOLEY Ch 18 catheter is inserted, the bladder drained and the urethra length measured in cm by taking the distance from the external urethra opening to the balloon.

A transverse curved incision is made in the ruga folds with the tip at 1.5-2 cm from the external urethra opening, and the anterior vagina wall dissected from the underlying pubocervical fascia. A plication (rhaphy) of the urethra and pubocervical fascia is performed at 1.5-4 cm from the external urethra opening by interrupted polyglycolic acid sutures. The rhaphy is technically performed by multiple small superficial bites to avoid the ureters and the underlying urethra/detrusor muscle. If necessary the external urethra opening can be plicated by 1 polyglycolic acid suture as well. Then the pubocervical facia is (re)fixed onto the paraurethra arcus tendineus fasciae and onto the paraurethra periurethral fascia by 2x polyglycolic acid sutures (with tightening of the fascia) in order to stabilize and secure the urethra in its anatomic position. The result should be a proximal functional lengthening of the urethra by urethralization of the bladder neck, a narrow or normal-width urethra, a good fascia “plate” and a urethra secured and stabilized in its anatomic position.

The bladder is filled by 150 ml of normal saline, the FOLEY catheter removed and the functional urethra length measured. Then it is checked if urine comes out of the external urethra opening at rest (instrinsic continence mechanism) and at cough with suprapubic pressure (stress continence mechanism). The FOLEY catheter is reinserted and fixed without ballooning.
The principles of the operation technique are demonstrated in Figures **I-VIII**.

postoperative care and check-ups
The FOLEY catheter is left in situ for 2 wk and the patient instructed to drink to get an oral fluid intake of 6-8 liters per day in order to produce at least 4,000-6,000 ml urine per 24 hr to keep the catheter open and to prevent ascending urinary tract infection. Antibiotics are not indicated unless the patient should develop a specific infection such as pneumonia. The patient is fully mobilized the day after operation.
Once the catheter is removed the patient is instructed to continue drinking and to pass urine every 10-15 min under supervision for 7 days.
At discharge from the hospital the patient is instructed to continue drinking and passing urine regularly, to refrain from sexual intercourse for 4-6 mth, to come regularly for check-ups and to come for removal of the nylon sutures after 6 mth at which time a final examination is made. She is also instructed to come at 3-mth amenorrhea and to go to the hospital as soon as labor pains start.

results
In Northern Nigeria out of some 450 patients operated so far, 85% were totally dry, in 10% there was sometimes slight urine leakage whilst standing and walking which did not bother them seriously, and 5% were still leaking continuously whilst lying, sitting, standing and walking.

discussion
Urethralization by rhaphy and/or (re)fixation of the pubocervical fascia has become the standard technique in Northern Nigeria for total urine instrinsic/stress incontinence. At the beginning of the operation a meticulous evaluation has to be executed of what exactly is the problem: a loose defective fascia, no connection of the fascia onto the paraurethra arcus tendienus fasciae or both. According to the findings the whole technique or part of the technique has to be performed, It has highly promising theoretical and practical potentials. Even as a last resort it can be applied and if this fails then urinary diversion should be contemplated.

Babbar Ruga Fistula Hospital

KATSINA

Katsina State

report on VVF/RVF repairs

1984-2007

VVF-repairs:	10,261
RVF-repairs:	1,083
total	**11,334 repairs**

there are three main services within the hospital as obstetric fistula center, referral center for leprosy and referral center for tuberculosis

the very fine hostel annex rehabilitation center just opposite the hospital was initiated and commissioned by Hajia Turai Umaru Yar'adua, the First Lady of the Federation of Nigeria

both the Ministry of Health and the Ministry of Women Affairs and Social Welfare are highly committed, as are the Governor and his wife

since started from scrap in January 1984 it has become an important comprehensive obstetric fistula repair, (inter)national training, research and rehabilitation center with good infrastructure and was instrumental in giving thousands of destitute patients a second chance in life

also some fistula surgery is being performed in Funtua General Hospital, Katsina Maternity Hospital, Daura General Hospital, Kankiya General Hospital and Malumfashi Hospital; all the doctors have been trained within the National VVF Project

Family Care continued their support by providing the means and the materials to alphabetize and rehabilitate the patients

ACQUIRE executed a workshop

more staff, doctors and nurses, have to be trained

surgeons: Dr Yusha'u Armiya'u, Dr Shehu Bala, Dr Halliru Idris, Dr Jabir Mohammed, Dr Aminu Safana, Dr Isah Shafi'i, Dr Abdulrasheed Yusuf, Dr Moses I Sunday-Adeoye, Dr Sa'ad Idris, Dr Aliyu M El-Ladan chief consultant and others

Laure Fistula Center Murtala Muhammad Hospital

KANO

Kano State

report on VVF/RVF repairs

1990-2007

VVF-repairs:	6,477
RVF-repairs:	780
total	**7,257 repairs**

the obstetric fistula service within Kano State should be a model for the other states since the rehabilitation center annex hostel is outside but near the hospital and managed by the Ministry of Social Welfare; so there is no conflict of interest; the cooperation is fine

both the Ministry of Health and the Ministry of Women Affairs and Social Welfare are highly committed

there is still a backlog in Kano State despite all the efforts made; although obstetric services are free of charge in the state the system is not functioning, not even in the capital since the majority of our new patients come from within Kano municipality

there was a setback as all the theater nurses were transferred to other units within Murtala Muhammad Specialist Hospital; luckily, the nurses replacing them had been trained and had some experience during the UNFPA fistula fortnight last year

some VVF-repairs are performed in Danbatta (forward project: about 50-60 repairs), Aminu Kano Teaching Hospital, Nassarawa Specialist Hospital, Sheikh Jiddah Hospital and other hospitals; all the doctors have been trained within the National VVF Project

Rotary International is highly interested but only slight progress was made within the VVF unit in Wudil General Hospital

ACQUIRE executed a workshop

more staff, doctors and nurses, have to be trained

surgeons: Dr Imam Amir, Dr Said Ahmed, Dr Zubairu Iliyasu, Dr Kabiru Abubakar, Dr Idris Abubakar Dr Hauwa Abdullahi, Dr Muktar Hamza, Dr Habib Gabari, Dr Hadiza Galadima, Dr Halliru Idris. Dr Abdulrasheed Yusuf, Dr Umaru Dikko, chief consultant and others

Maryama Abacha Women and Children Hospital

SOKOTO

Sokoto State

report on VVF/RVF repairs

1994-2007

VVF-repairs:	2,282
RVF-repairs:	165
total	**2,447 repairs**

it is a very important center with good facilities and a high-quality service where many patients present for surgery; it needs further development with regards to manpower in order to perform the 300-400 repairs a year needed

the hospital is under authority of the Ministry of Women Affairs whilst the staff comes under the Ministry of Health; both ministries are committed to improve things

though we have been lobbying hard for many years there is still no permanent doctor on ground for the obstetric fistula care

many doctors were trained but somehow nobody stayed on; an effort has to be made to select and train a young doctor to perform the simple repairs

once the problem of the fistula doctor has been solved, then we can move forward to develop this center further not only into a major repair center but also into a training center

the team from Babbar Ruga Hospital could not operate here during the whole year due to political problems; and the number of operations halved

ACQUIRE executed a workshop

more staff, many doctors and many nurses, have to be trained

surgeons: Dr Abdullahi Gada, Dr Zubairu Iliyasu, Dr Bello Tsafe, Dr Abdulrasheed Yusuf, Dr Halliru Idris, Dr Abdulkarim Garba Mairiga, Dr Idris Abubakar, Dr Paul Hilton, Dr Abba Wali, Dr Bello Lawal and chief consultant

Fistula Units

B_KUDU, HADEJIA and JAHUN

Jigawa State

report on VVF/RVF repairs

1996-2007

This is mostly the work of Dr Said AHMED who is involved in the VVF/RVF-repair since 1991. Unfortunately he left the government service

VVF-repairs:	2,006
RVF-repairs:	116
total	**2,122 repairs**

the fistula surgery is concentrated now in JAHUN General Hospital which definitely is in need of upgrading

since dr Said AHMED left the service as the most experienced Nigerian fistula surgeon (4,000 repairs!), other doctors took over from him; however, they are highly inexperienced and the place is not attractive for them and the turnover of doctors is high

in March a workshop was executed where 27 operations were performed

for the rest of the year Dr Kabir Abubakar from Kano State performed operations on a regular base; with good results

it seems Médicine Sans Frontières is interested in reviving the activities

surgeons: Dr Said Ahmed, Dr Kabir Abubakar, Dr Isah Adamu, Dr Imam Amir, Dr Salisu Babura, Dr Sunday Lengmang, Dr Sunday-Adeoye, chief consul tant and others

Special Fistula Center

B_KEBBI

Kebbi State

report on VVF/RVF repairs

1996-2007

VVF-repairs:	1,279
RVF-repairs:	44
total	**1,323 repairs**

there is a large backlog in Kebbi State especially of patients with highly complicated fistulas

slowly, the center is coming off ground, and the medical director Dr Lawal al Moustapha is doing a fine job; somewhere next year he has to come for another training period

the hospital is run under the Ministry of Women Affairs whilst the staff comes under the Ministry of Health; both ministries are highly committed

the facilities are alright but there is need for a high-quality operating table and good operation lights; otherwise the very difficult repairs cannot be performed

in principle, this new hospital has all the potential to become a major repair center

also needed is a rehabilitation unit annex hostel to provide a comprehensive obstetric fistula service for the state

the team from Babbar Ruga Hospital makes a major effort (700 km from Katsina) to come regularly for surgery of the complicated fistulas

ACQUIRE executed a workshop

definitely, more staff, doctors and nurses, have to be (re)trained

fistula surgeons: Dr Hassan Wara, Dr Lawal al Moustapha, Dr Oladapu Shittu, Prof Oladosu Ojengbede and chief consultant

Kofan Gayan Hospital

ZARIA

Kaduna State

report on VVF/RVF repairs

1998-2007

VVF-repairs:	613
RVF-repairs:	50
total	**663 repairs**

after the complete structural reconstruction of the hospital and the construction of a fine rehabilitation unit annex hostel, Kofan Gayan Hospital has become a comprehensive fistula repair and rehabilitation center; what a change!

it is the only hospital where systematically a caesarean section is performed in subsequent deliveries following a successful repair

Rotary International supports the obstetric fistula service by donating equipment and by sponsoring the training of doctors and nurses and by mobilizing community staff for the preventive aspects; from all the centers now it has the best operating facilities;

Rotary International also executed a workshop with very good results

Dr Ado Zakari and Dr Husaina Adamu participate actively in the obstetric fistula service

in principle the team from Babbar Ruga Hospital comes once every 2-4 weeks to perform the “difficult” surgery and for on the job training; only the very difficult surgery is referred to Katsina; distance from Katsina 250 km and via Kano 400 km

also some VVF-repairs are performed in Kaduna Nursing Home by consultants trained within the National VVF Project: figures are not available

Family Care continues to provide all kinds of materials to alphabetize and rehabilitate the patients

surgeons: Dr Ado ZAKARI,Dr Halliru IDRIS, Dr Abdulrasheed YUSUF, Dr Joel ADZE, Dr Julius GAJERE, Dr Husaina ADAMU and chief consultant

Faridat Yakubu VVF Hospital

GUSAU

Zamfara State

report on VVF/RVF repairs

1998-2007

VVF-repairs:	497
RVF-repairs:	33
total	**530 repairs**

the existing general hospital has become a federal center and then this hospital has become a general hospital, and the VVF work slowed down

however, despite all the problems Dr Sa'ad Idris showed his high commitment, and continued throughout the years to perform VVF-surgery on a regular base

ACQUIRE seems to be highly interested in reviving the service in the state and executed 2 workshops

the chielf consultant and his team could not come due to organizational problems as this is the only general hospital in Gusau

now the many obstetric fistula patients have to come either to Katsina or to Sokoto for their surgery; unfortunately, the majority stay somewhere unattended

once the construction of the new general hospital has been completed this hospital will be reconverted back to its original destination

surgeons: Dr Halliru Idris, Dr Abdulrasheed Yusuf, Dr Sa'ad Idris, Dr Imam Amir, Dr Hassan Wara and chief consultant

Special Fistula Unit

Ebonyi State University Teaching Hospital

ABAKALIKI

report on VVF/RVF repairs

2002-2007

VVF-repairs:	106
RVF-repairs:	10
total	**116 repairs**

this unit was set up during 2002-03 by Dr Moses I Sunday-Adeoye from the Department of Obstetrics and Gynecology who still is i/c

since the money allocated for obstetric fistula repair was exhausted the patients have to pay for their surgery

it is better to transfer the service to the Specialist Hospital where treatment is free of charge

we wish Dr Moses I Sunday-Adeoye lots of success in his continuing efforts to bring the problem under the attention of the authorities

surgeon: Dr Moses I Sunday-Adoye; once in a while chief consultant

Hopital National /Centre Hospitalier/Maternité Centrale Départemental

NIAMEY/MARADI/ZINDER

République du Niger

report on VVF/RVF repairs

1996-2007

VVF-repairs:	977
RVF-repairs:	55
total	**1,032 repairs**

the obstetric fistula service in Zinder is functioning well under the direction of Dr Lucien Djangnikpo; with fine results

the team from Babbar Ruga Hospital makes an effort (275 km from Katsina) to come once every 2-3 months

since his transfer from Agadez Dr Abdoullahi Idrissa continues his work in the VVF-repair center in Niamey with the help of John Hopkins University; and with good results

Dr Moustapha Diallo from Toua was trained for 3 mth, and we wish him success in his future VVF-work

major progress has been made in establishing a national programme

surgeons: Dr Lucien Djangnikpo, Dr Akpaki Faustin, Dr Halliru Idris, Dr Tijjani Mamman Hina, Dr Abdoullahi Idrissa, Dr Moustapha Diallo, Dr Madeleine Garba and chief consultant

operations chief consultant 1984-2007

	VVF	RVF	total
Nigeria			
ebonyi	17	5	22
jigawa	27	4	31
kaduna	373	62	435
kano	4,851	778	5,629
katsina	8,416	1,040	9,456
kebbi	162	22	184
sokoto	980	137	1,117
zamfara	204	20	224
République du Niger			
maradi	72	6	78
niamey	57	9	66
zinder	202	22	224
Kenya			
machakos	13	2	15
Tanzania			
dar es salaam	51	7	58
mwanza	14	2	16
Burkina Faso			
dori	18	3	21
Holland	3	1	4
total	**15,460**	**2,120**	**17,580**

performance of trainees 1984-2006

the statement that the trainee doctors are not doing anything after their training cannot be confirmed though we have lost contact with most of them

Dr Said Ahmed	4,000 repairs
Dr Immam Amir	1,500 repairs
Dr Marietta Mahendeka	1,500 repairs
Dr Halliru Idris	1,200 repairs
Dr Kabiru Abubakar	900 repairs
Dr Hassan Wara	850 repairs
Dr Abdulrasheed Yusuf	750 repairs
Dr Zubairu Iliyasu	750 repairs
Dr Lucien Djangnikpo	600 repairs
Dr Khisa Wakasiaka	500 repairs
Dr Aliyu Shettima	450 repairs
Dr Idris Abubakar	450 repairs
Dr Lawal al Moustapha	400 repairs
Dr Abdoulaye Idrissa	400 repairs
Dr Meryl Nicol	400 repairs
Dr Jabir Mohammed	300 repairs
Dr Aminu Safana	150 repairs
Dr Isah Shafi'i	150 repairs
Dr Fred Kirya	150 repairs
Dr Moses ADEOYE	250 repairs
Dr Odong Emintone	100 repairs
Dr Julius KIIRU	70 repairs

other trainees:no data available

peer-reviewed scientific work

scientific papers

k waaldijk — the (surgical) management of bladder fistula in 775 women in Northern Nigeria; PhD thesis University of Utrecht, 1989

k waaldijk — a classification of vesicovaginal fistulas according to its anatomic location with regards to operation technic and prognosis; a personal experience in 1,250 patients. IXth Congress European Association of Urologists, 1990 in Amsterdam. Europ Urol J 1990, 18/S1: 33

k waaldijk — plan for a VVF-service for (northern) Nigeria and (west) Africa, 1990

k waaldijk — clinical and epidemiologic baseline data of 2,500 VVF/RVF patients with special emphasis on the obstetric fistula, 1992

k waaldijk and y armiya'u — the obstetric fistula as a major public health problem still unsolved; Int Urogynecol J 1993; 4: 126-128

k waaldijk — step-by-step surgery of vesicovaginal fistulas. Campion press, 1994

k waaldijk — the immediate surgical management of fresh obstetric fistulas with catheter and/or early closure. Int J Gynaecol Obstet 1994; 45: 11-6

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k waaldijk — immediate indwelling bladder catheterization at postpartum urine leakage. Trop Doct 1997; 27: 227-8

k waaldijk — the surgical management of the obstetric fistula. Guest speaker at Annual Meeting of International Urogynecologic Association, 1997 in Amsterdam. Int Urogynecol J 1997

k waaldijk — the immediate management of fresh obstetric fistulas. Amer J Obstet Gynecol; 2004, 191, 795-9

papers presented at congress/meeting

k waaldijk — plan for a VVF-service for (Northern) Nigeria and (West) Africa.1990; presented to UNFPA, WHO, Nigerian Government, Dutch Government, National Task Force on VVF and other organizations

k waaldijk — surgical aspects of vesicovaginal fistulas. First National Workshop on VVF, Kano. July 1990

k waaldijk — preliminary incidence of the obstetric fistula in (Northern) Nigeria. Meeting of National Task Force on VVF. April 1992

k waaldijk — prevalence of the obstetric fistula in (Northern) Nigeria. Meeting of National Task Force on VVF. April 1992

k waaldijk — evaluation of the National VVF Project Nigeria. 1993. National Task Force on VVF

k waaldijk — evaluation and plan of continuing action. Seminar on VesicoVaginal Fistula. Daula Hotel, Kano. January 1994

k waaldijk — progress made sofar in the (surgical) management of the obstetric fistula. National Workshop on Counseling VVF Patients, Katsina. June 1994

k waaldijk — immediate management of fresh obstetric fistulae according to basic surgical principles. National Workshop on VesicaVaginal Fistulae, Zaria. 1995

k waaldijk — VVF-service in (Northern) Nigeria. Annual Meeting of Association of General and Private Medical Practitioners of Nigeria, Jos. 1996

k waaldijk — evaluation report 1984-97; surgical developments, database, docu mentation and plans for the near/distant future. Strategies in Preven tion of VVF in Nigeria, Jos. February 1997

k waaldijk — new developments in the (surgical) management of the obstetric fistula International Workshop on VesicoVaginal Fistula, Abuja. March 1998

k waaldijk — immediate (surgical) management of the obstetric fistula: an evaluation of 1,350 patients. 50th Anniversary of Association of Surgeons of East Africa and PanAfrican Association of Surgeons 3rd General Assembly, Nairobi. December 1999

k waaldijk — urethralization and anterior fasciocolposuspension in (post-repair) urine stress incontinence with a too short urethra. Urogynecology Meeting, Overvecht Mesos Ziekenhuis, Utrecht. April 2002

k waaldijk — the obstetric fistula. Africa Regional Congress of International Federa tion of Women Lawyers, Abuja. May 2002

k waaldijk — complex trauma of the obstetric fistula. Annual Congress of Dutch Association of Surgeons, Bussum. November 2003

k waaldijk — the obstetric fistula: management, pre-, intra- and postoperative care, spinal anesthesia, training, surgical techniques etc. WHO meeting of expert fistula surgeons, Geneva. December 2003

k waaldijk management of the obstetric fistula. UNFPA meeting, Accra. July 2004

k waaldijk training: introduction, trainees and trainers, curriculum, training module, vvf repair center, vvf training center, vvf rehabilitation center, nation-wide vvf service. UNFPA meeting on training, Niamey. April 2005

k waaldijk standardization of treatment, training and rehabilitation of obstetric fistu la patients. Workshop by FMOH and UNFPA, Abuja. November 2006

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k waaldijk how to set up a VVF-repair servicer. 37th Annual Meeting International Continence Society, Rotterdam. August 2007

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