National VVF Project Nigeria

largest obstetric fistula project in the world

evaluation report XXIII

2006

state of the art surgery

evidence based results

ground breaking research

peer reviewed science

complete documentation

kees waaldijk **MD PhD**

chief consultant fistula surgeon

reprint

sponsored and financed by:
waha-international
paris

National VVF Project Nigeria
evaluation report XXIII

2006

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

table of contents

foreword	4
executive summary	5
evaluation report	7
surgery	10
training	11
training module	12
documentation and research	13
scientific classification	14
katsina state	23
kano state	24
sokoto state	25
jigawa state	26
kebbi state	27
kaduna state	28
zamfara state	29
ebonyi state	30
république du niger	32
operations by chief consultant	33
performance of trainees	34
scientific work	35

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 approach taking into account the enormous variety in **necrotic tissue loss**; there are no simple repairs; it only looks simple in the hands of the few expert fistula surgeons

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

therefore, after all those 23 long years of hard work, we can announce now that we have developed **feasible solutions** for all the problems involved in the surgical management of the obstetric fistula; anybody is welcome to see for her- or himself

slowly, the things developed over the years in this program, like classification, immediate management, postrepair incontinence surgery, no routine antibiotics, no grafting etc are gaining ground

the **immediate management** though ridiculed by some hypocritical verbal (without any personal expertise) American surgeons is our best contribution since its **evidence-based success rate is 95%** and prevents the woman from becoming an outcast in the first place

during the year a total of 1,674 VVF/RVF-repairs were performed in the centers whilst a total of 23 doctors and 31 nurses attended our regular training program making **a grand total of 24,853 repairs, a grand total of 680 trainees and a grand total of 15 workshops**

based upon our extensive and intensive experience with training a **training module** has been developed

the Federal Ministry of Health together with UNFPA organized a workshop for surgeons, nurses and social workers to develop a **standard national curriculum** for treatment, training and rehabilitation; a major step forward

it is hard to accept for the major organizations like UNFPA, FIGO, AMDD, WHO and others which have become involved in the initiative against fistula that the prevention and the treatment of the obstetric fistula can only be dealt with by high-quality surgery in secondary and tertiary health institutions; talking and discussing about **the obstetric fistula as a major public health problem** is not of much help if this is not followed up by action

for prevention this means: 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 this means: 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

unfortunately, most organizations are busy to reinvent the “wheel” all over again, not willing to cooperate but only interested in their own program and have not learned from their failure in safe motherhood; **l’histoire se repète**

safe motherhood

evaluation report XXIII

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
so, despite the vocal claims by verbal surgeons .. and little knowledge is dangerous, obstetric fistula surgery is highly complicated and requires thorough theoretical knowledge of and ample practical experience in the obstetric fistula and profound understanding of the urine continence/closing mechanism in the female together with expert intravaginal surgical skills
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 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
also 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
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

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 was a major move forward: the total structural renovation of Kofan Gayan Hospital has been finished, Rotary International equipped the new twin operating theater up to standard and funded the training of doctors/nurses whilst Family Care built a rehabilitation unit annex hostel; so now everything is in place for comprehensive obstetric fistula care
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 is also committed to establish a VVF-repair center in another town Wudil but not much progress was made

national training center

the training of doctors is functioning well but we could handle more nurses

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 reconstruction of a new and very beautiful and large rehabilitation center has been completed and is already functioning though we are waiting for the official opening; 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 functioning and there is money available but 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

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

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

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 1,674 procedures were performed in the 10 different centers making a

grand total of 24,853 operations: 22,748 VVF-repairs and 2,105 RVF-repairs

postgraduate training

over the year a total of 23 doctors and 31 nurses were trained making a

grand total of 680 persons: 296 doctors, 314 nurses and 70 other persons

workshops

the consultant surgeon + team did not participate in any workshop so it remains a

grand total of 15 workshops

rehabilitation
in the three state Kaduna, Kano and Katsina there are **major** rehabilitation centers especially designed to alphabetize the patients and to teach them occupational skills where patients can take home their sewing machine which they use during their training

separation of repair and rehabilitation but close cooperation
since a professional surgeon is not a professional social worker and visa versa

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 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; UNFPA is helping with equipment and training
further funding came from the Scandinavian Society Nigeria and from several Dutch NGOs among which the SK Foundation in combination with the TTT Foundation are the most important; were are also grateful to the Wereldwinkel Maastricht
it must be said that 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

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
UNFPA continues to coordinate strategies for the obstetric fistula prevention and treatment
Rotary International is sponsoring the obstetric fistula work in Kaduna and Kano State
Family Care continues its commitment to rehabilitate the obstetric fistula patients back into their community

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

kees waaldijk MD PhD 31st of December 2006

fistula surgery 1984-2006

	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	-		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	-	-	79	6	1,914
2006	10	2	5	-	65	19	368	91	508	83	156	5	176	17	-	-	161	8	1,674
total	**94**	**9**	**1,945**	**113**	**499**	**46**	**5,967**	**683**	**9,659**	**966**	**1,109**	**38**	**2,192**	**160**	**360**	**26**	**827**	**50**	**24,743**

total VVF-repairs and related operations: **22,652** **+** in workshops 96 **=** **22,748**

total RVF-repairs and related operations: **2,091** **+** in workshops 14 **=** **2,105**

grand total 24,853

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

success rate at RVF closure: 85% per operation

healed by catheter only: 891 patients

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 1989-2006

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 680 doctors, nurses/midwives, other highly educated persons and para-medical staff were trained/attended our training program:

a total of **296 doctors**
- 120 general doctors with 3 years of surgical experience
- 142 consultant gynecologists/surgeons/urologists
- 32 senior registrars in gynecology/obstetrics
- 2 senior registrars in anesthesia

a total of **314 nurses/midwives**
- 230 pre- and postoperative nurses/midwives
- 68 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 1984-2006

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 (p. 38; though later claimed by S Arrowsmith), male:female sex rate of (stillborn) infants of 2:1 (p. 15 + 20; though claimed by L Wall) etc etc were presented; but later on, only in a prospective way

and believe it, 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

classification of the obstetric urine fistula
as based on tissue loss, operation technique and prognosis

kees waaldijk MD PhD

introduction

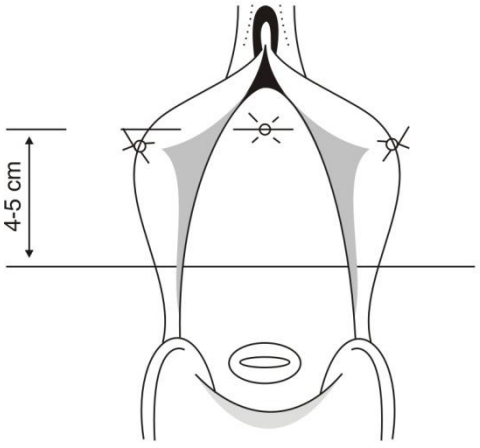
The variety of the complex trauma of the obstetric fistula is immense, from a minute urine fistula with minimal tissue loss to a cloaca in an empty pelvis with extensive intravaginal lesions and (sub)total loss of the intrapelvic soft tissues, neurologic lesions such as drop foot, extravaginal lesions such as bedsores and loss of labia, urine-induced ammonia dermatitis and stones, and systemic lesions such as severe anemia and even cachexia.
The lesions are due to intravaginal pressure necrosis, intrapelvic compression of deep structures, immobilization, continuous urine leakage, blood loss and the amount of metabolic energy consumed during prolonged obstructed labor which may last from 2 to 7 days or even more. Added to this may be the trauma of spontaneous (assisted) delivery, harmful practices by the traditional birth attendant or harmful practices by professionals such as craniotomy, vacuum delivery, forceps delivery and cesarean section.
Therefore the repair of an obstetric urine fistula may be simple, difficult, highly complicated or even impossible, and requires thorough theoretical knowledge of and ample practical experience in the obstetric fistula and profound understanding of the urine continence/closing mechanism in the female together with expert intravaginal surgical skills (Ref 1-10).
In order to plan and execute the fistula repair according to the principles of reconstructive surgery and to compare the results and different operation techniques it is important to have a simple though scientific classification which makes sense.
Based on a retrospective analysis in 775 consecutive patients a scientific classification was developed and recommended in a PhD thesis (Ref 11). This classification has been used prospectively and refined by the author in over 16,500 personal fistula repairs and related operations during a 22-year period of (surgical) management of the obstetric fistula mainly in Nigeria, but also in Niger, Burkina Faso, Kenya and Tanzania from 1984 up till today.

classification

The following classification is presented according to the anatomic/physiologic location with consequences for operation technique and prognosis: type **I** fistulas not involving the continence/closing mechanism, type **II** fistulas involving the continence/closing mechanism and type **III** miscellaneous, see Figures 1-2 and Table I.

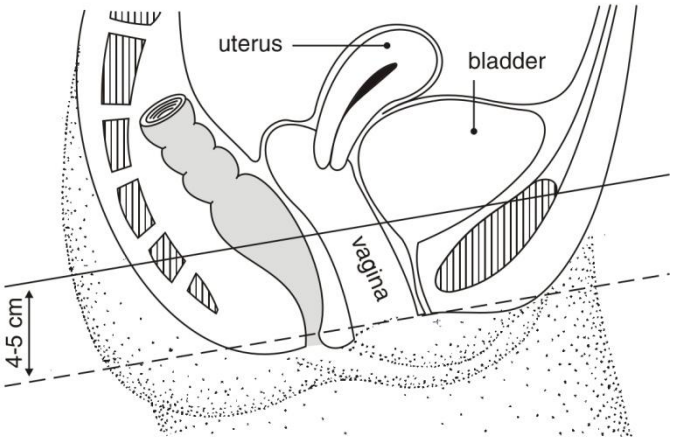
Figures 1 and 2

figure 1



continence/closing mechanism: frontal

figure 2



continence/closing mechanism: sagittal

Table I

classification of fistulas according to anatomic/physiologic location

I fistulas not involving the continence/closing mechanism

II fistulas involving the continence/closing mechanism
- **A** without (sub)total urethra involvement
  - **a** without circumferential defect
  - **b** with circumferential defect
- **B** with (sub)total urethra involvement
  - **a** without circumferential defect
  - **b** with circumferential defect

III miscellaneous, e.g. ureter fistulas and other exceptional fistulas

This classification is based on the progressive quantitative and qualitative amount of tissue loss of the continence/closing mechanism:
In **type I** fistulas there is only tissue loss of the bladder, pubocervical fascia and anterior vagina wall and/or cervix and/or uterus with an **intact** continence/closing mechanism.
In **type IIAa** fistulas there is tissue loss of the bladder, urethrovesical junction/trigonal ring, detrusor loops, proximal_(mid) urethra, pubocervical fascia and anterior vagina wall (and cervix and/or uterus) with **minor** involvement of the continence/closing mechanism.
In **type IIAb** fistulas there is circumferential tissue loss of the bladder neck, urethrovesical junction/trigonal ring, detrusor loops, proximal_(mid) urethra and tissue loss of posterior pubourethral ligaments, pubocervical fascia, anterior vagina wall (and cervix and/or uterus), pubococcygeus muscles, iliococcygeus muscles and ischiococcygeus muscles; also trauma to the arcus tendineus fasciae, the arcus tendineus of levator ani muscles and even to the internal obturator muscles with loss of pubic bone periost and pubic symphysis cartilage with **moderate to major** involvement of the continence/closing mechanism.
In **type IIBa** fistulas there is major tissue loss of the urethra and tissue loss of the urethrovesical junction/trigonal ring, detrusor loops, bladder, pubocervical fascia and anterior vagina wall (and cervix and/or uterus) with **major** involvement of the continence/closing mechanism.
In **type IIBb** fistulas there is (sub)total circumferential tissue loss of the urethra, urethrovesical junction/trigonal ring, bladder neck, detrusor loops and tissue loss of the intermediate and posterior pubourethral ligaments, pubocervical fascia, anterior vagina wall (and cervix and/or uterus), pubococcygeus muscles, iliococcygeus muscles, ischiococcygeus muscles; also trauma to the arcus tendineus fasciae, to the arcus tendineus of levator ani muscles and even to the internal obturator muscles with loss of pubic bone periost and pubic symphysis cartilage with **extensive** involvement of the continence/closing mechanism.
In type IIAb and type IIBb fistulas there may be additional tissue loss of the broad, cardinal and sacrouterine ligaments resulting in cervix/uterus prolapse with an empty pelvis.
The **type III** fistulas are a class of its own, e.g. ureter fistulas or fistulas between the bladder and bowels or between the bladder and skin.
An additional classification is presented according to the fistula size: small, medium, large and extensive, see Table II.

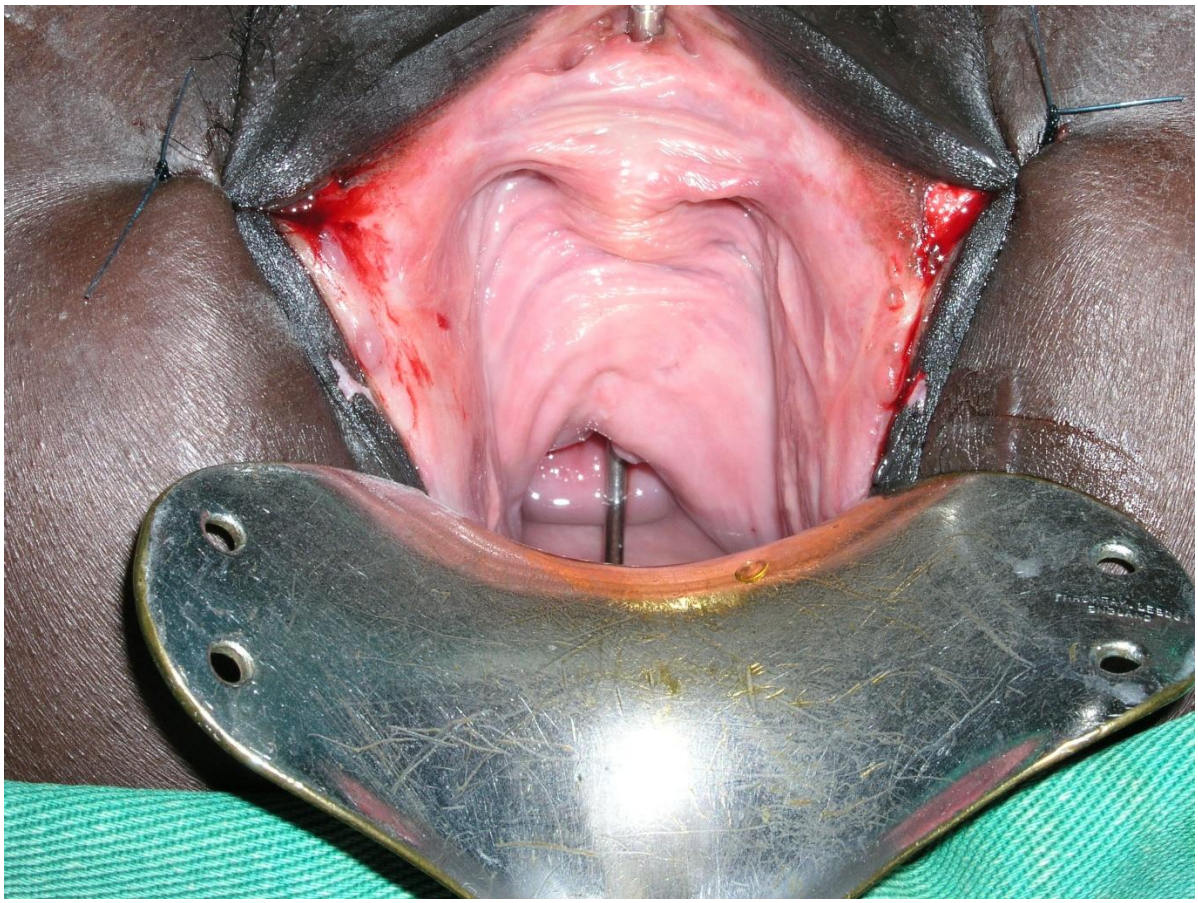
Table II

classification of fistulas according to size

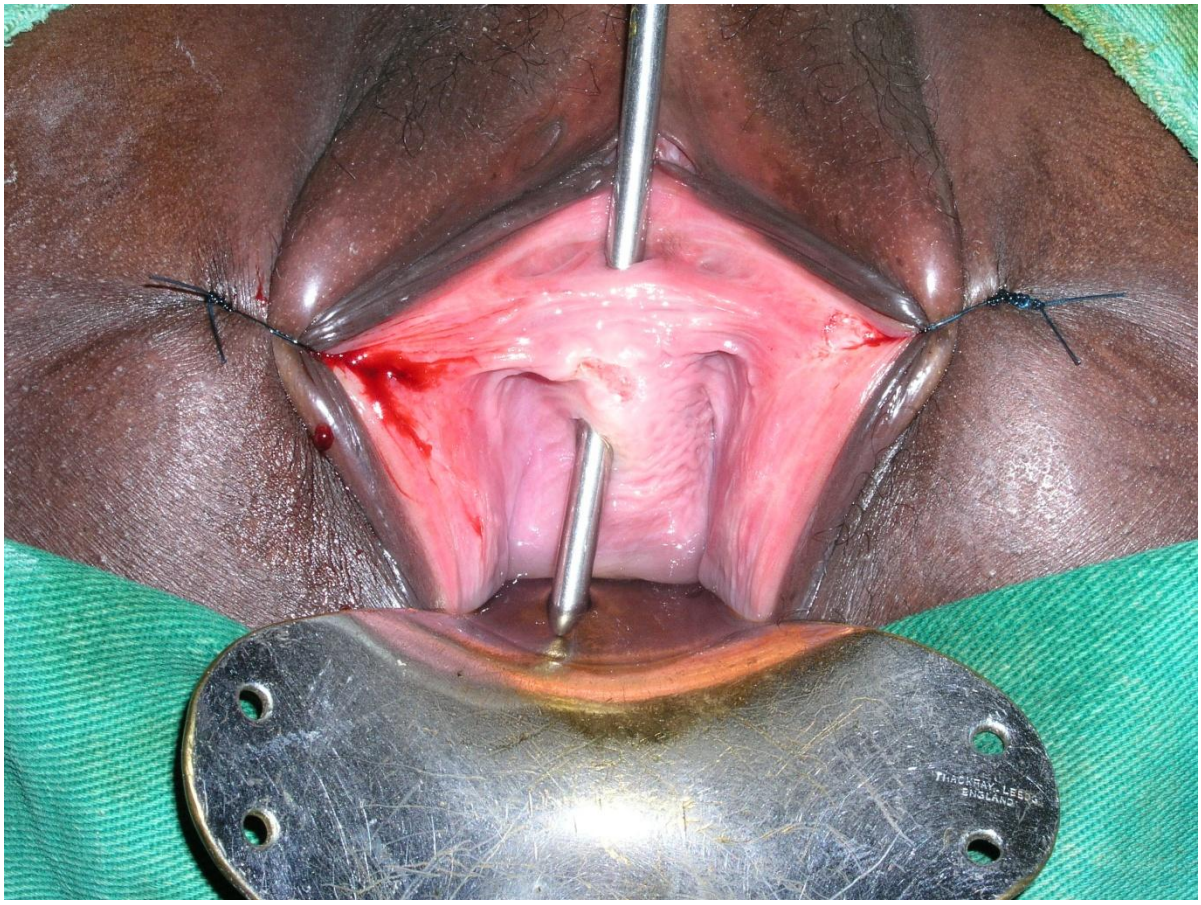
small	< 2 cm
medium	2-3 cm
large	4-5 cm
extensive	≥ 6 cm

principles of surgical technique(s)
The vaginal approach is the route of choice with or without unilateral, median or bilateral episiotomies, spinal anesthesia is the anesthesia of choice and the (exaggerated) lithotomy position is the position of choice for type I thru type IIBb fistulas.

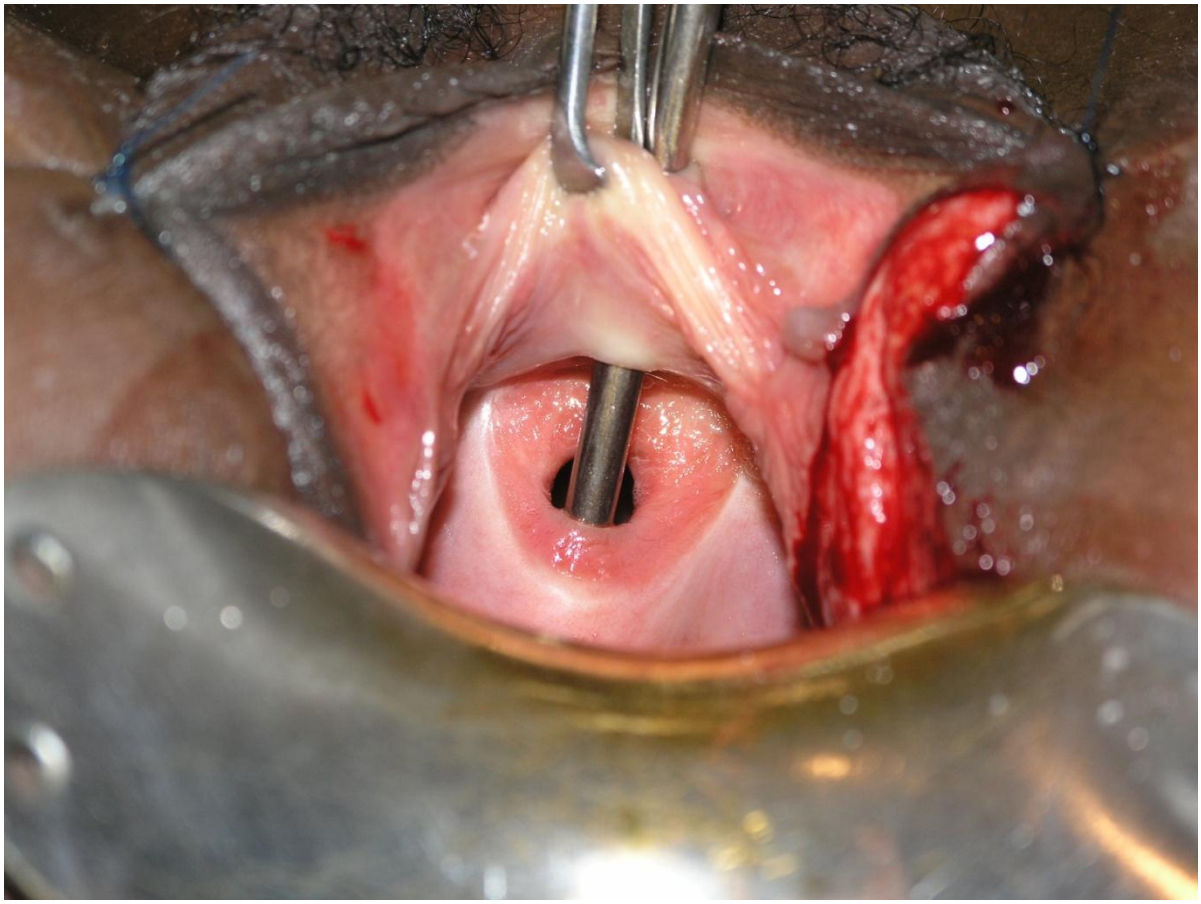
Though the author never uses another route, another anesthesia or another position, type III fistulas need a different approach.
The classification of the fistula is made by inspection and examination under spinal anesthesia just before the surgery is started and a final decision taken how to handle that specific fistula.
An incision is made at the fistula edge, in the large(r) fistulas an effort has to be made to identify and catheterize the ureters, a dissection of the bladder and/or urethra performed and the bladder/urethra closed without tension by one layer of inverting polyglycolic acid sutures taking good bites; common sense dictates the direction of closure: longitudinal, transverse or oblique. A FOLEY Ch 18 catheter is inserted and, after checking watertight closure, the anterior vagina wall is only adapted or half closed to allow free spontaneous evacuation of small blood clots and bacteria according to the principles of septic surgery.
In type I fistulas this is the straightforward procedure, though in the vesicocervicovaginal fistulas and vesicouterovaginal fistulas the bladder has to be dissected from the cervix and/or uterus. Once the fistula has healed the patient will be continent as well since the continence/ closing mechanism is not involved, unless she was already incontinent before she developed the fistula. It has the best chance of healing and continence.
In the type II fistulas also something has to be done about (reinforcing) the continence/closing mechanism, preferably during the repair or later if the patient develops incontinence. The circumferential fistulas need a circumferential dissection, advancement of the bladder and circumferential repair by an end-to-end vesicourethrostomy.
In type IIAa fistulas the anterior vagina wall is dissected from the bladder and urethra, and an effort made to restore the urethrovesical junction; additionally the bladder can be sutured to the pubic symphysis periost whilst care has to be taken to repair the pubocervical fascia as hammock for good urethra support. Since the continence/closing mechanism is involved there is a slight chance the patient will become incontinent after successful closure depending upon the amount of tissue loss.
In type IIAb fistulas there is total disruption of the traumatized urethra from the bladder (neck). In order to perform a complete (circumferential) restoration of the urethrovesical junction, it is necessary to dissect the bladder circumferentially from the anterior vagina wall, pubic bones and posterior pubic symphysis and if necessary also from the anterior abdominal wall. Then the bladder is advanced and the anterior and anteriolateral bladder walls are anchored onto the caudad posterior symphysis and distal anterior urethra by 3-5 polyglycolic acid sutures. The operation is further completed as an end-to-end vesicourethrostomy followed by bilateral refixation of the pubocervical fascia onto the paraurethral symphysis where the lost arcus tendineus used to be. Since there is circumferential tissue loss, circumferential dissection and circumferential repair the closure rate and the continence rate are slightly worse than in type IIAa fistulas.
In type IIB fistulas (part of) the urethra has to be reconstructed (in addition to bladder closure in large fistulas), preferably during the first repair or if that is not possible as a second stage. Since the most important part of the continence/closing mechanism is situated in the urethra the chance of becoming incontinent after successful closure is higher than in type IIA fistulas.
In type IIBa fistulas the urethra is reconstructed longitudinally by a single layer of combined interrupted/continuous polyglycolic acid; urethra tissue has retracted bilaterally and this (para)urethra tissue is used for the reconstruction. Then the pubocervical fascia has to be repaired and the neourethra covered by a flap from the anterior vagina wall or from the labia. Therefore the closure rate is slightly worse than in type IIA fistulas; as well as the continence rate. However, functional urethra tissue is used for the reconstruction.
In type IIBb fistulas there is often extensive tissue loss with (sub)total tissue loss of the urethra. Therefore the urethra is reconstructed from non-urethra tissue: either by paraurethra tissue (bulbocavernosus muscle) if available, or by scar tissue or by bladder tissue; as well the bladder has to be dissected circumferentially and anchored to the caudad posterior pubic symphysis with an end-to-end anastomosis onto the neourethra; and then the pubocervical fascia has to be refixed to the paraurethral “arcus tendineus fasciae” and the whole repair covered by a flap from the anterior vagina wall or labia. Many times a two-stage approach is necessary. As first stage the bladder is advanced and anchored caudally onto the pubic symphysis and as second stage the urethra is reconstructed. There is a fair chance of breakdown and a 40-50% chance of developing intrinsic/stress incontinence if the repair has been successful.



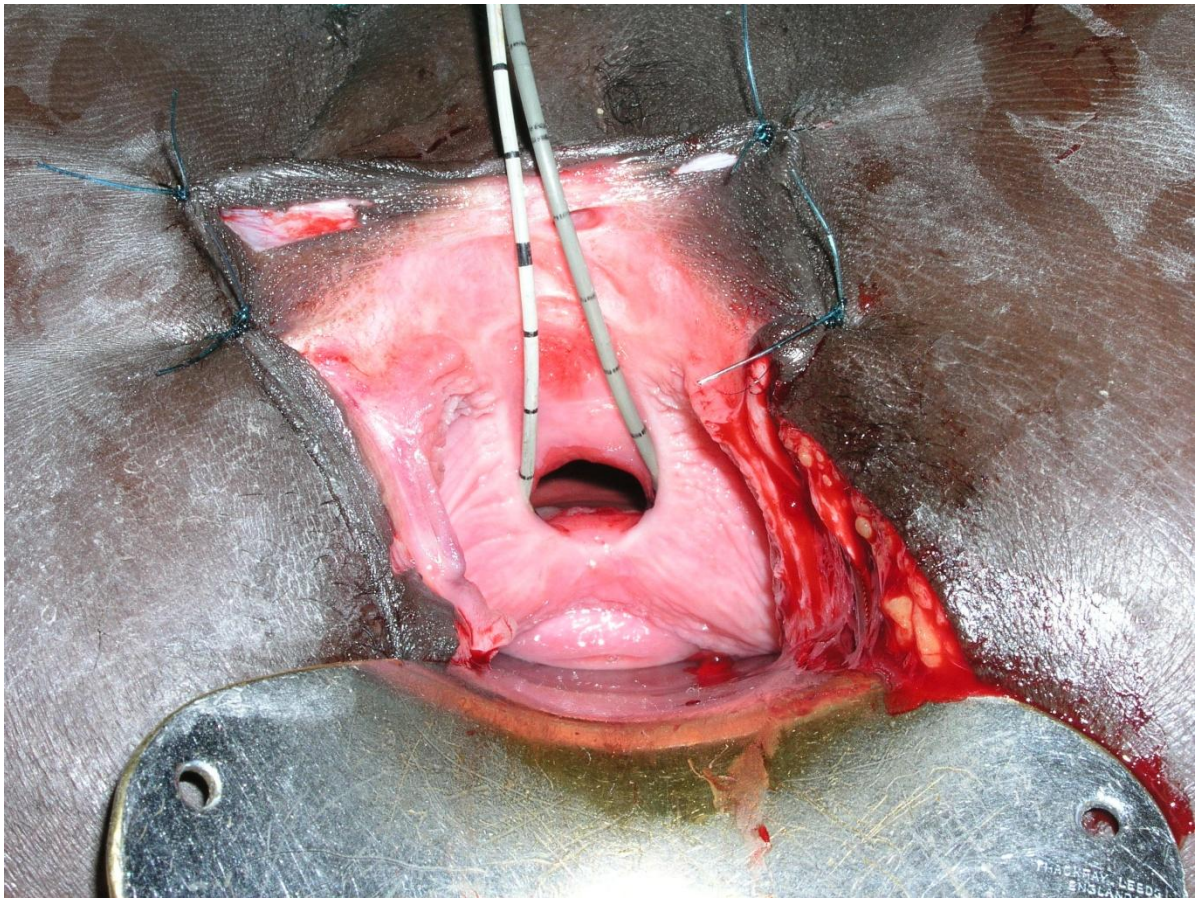
type I



type IIAa

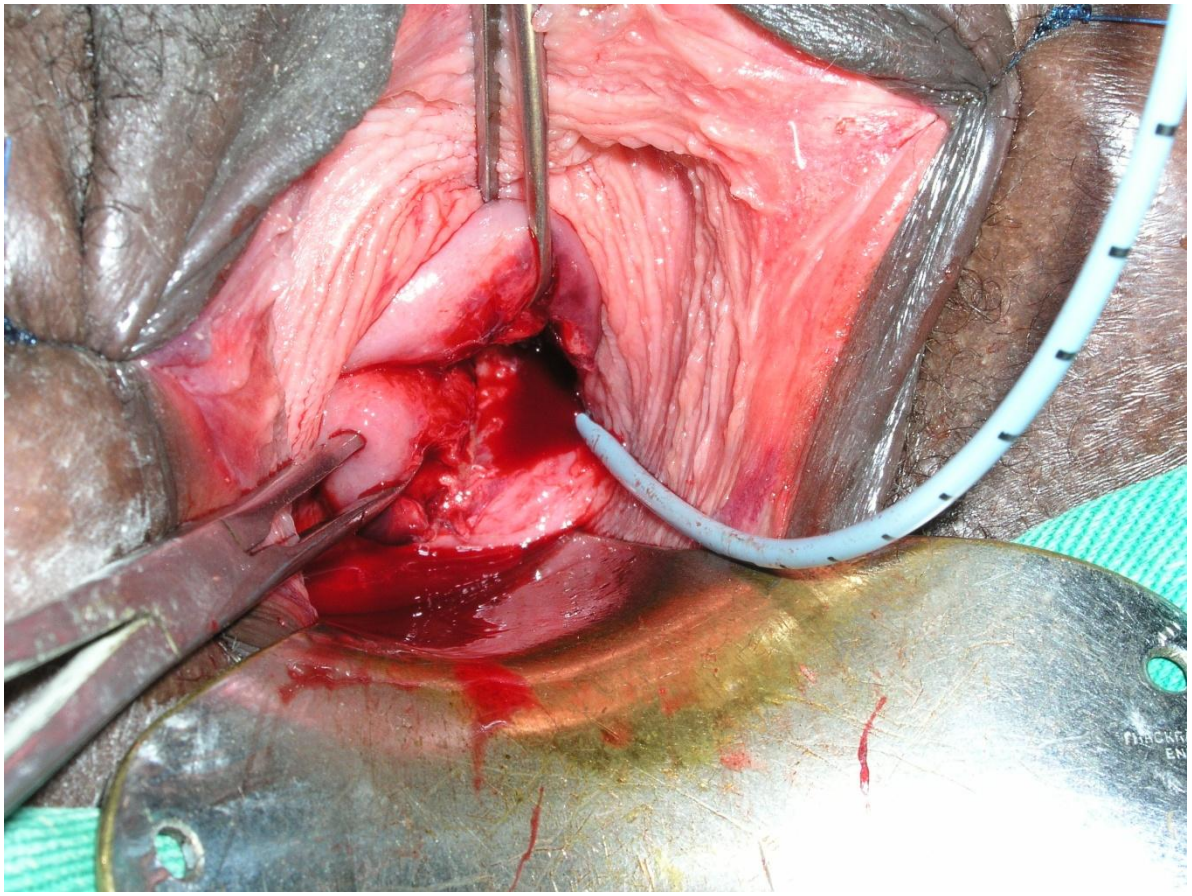


type IIAb



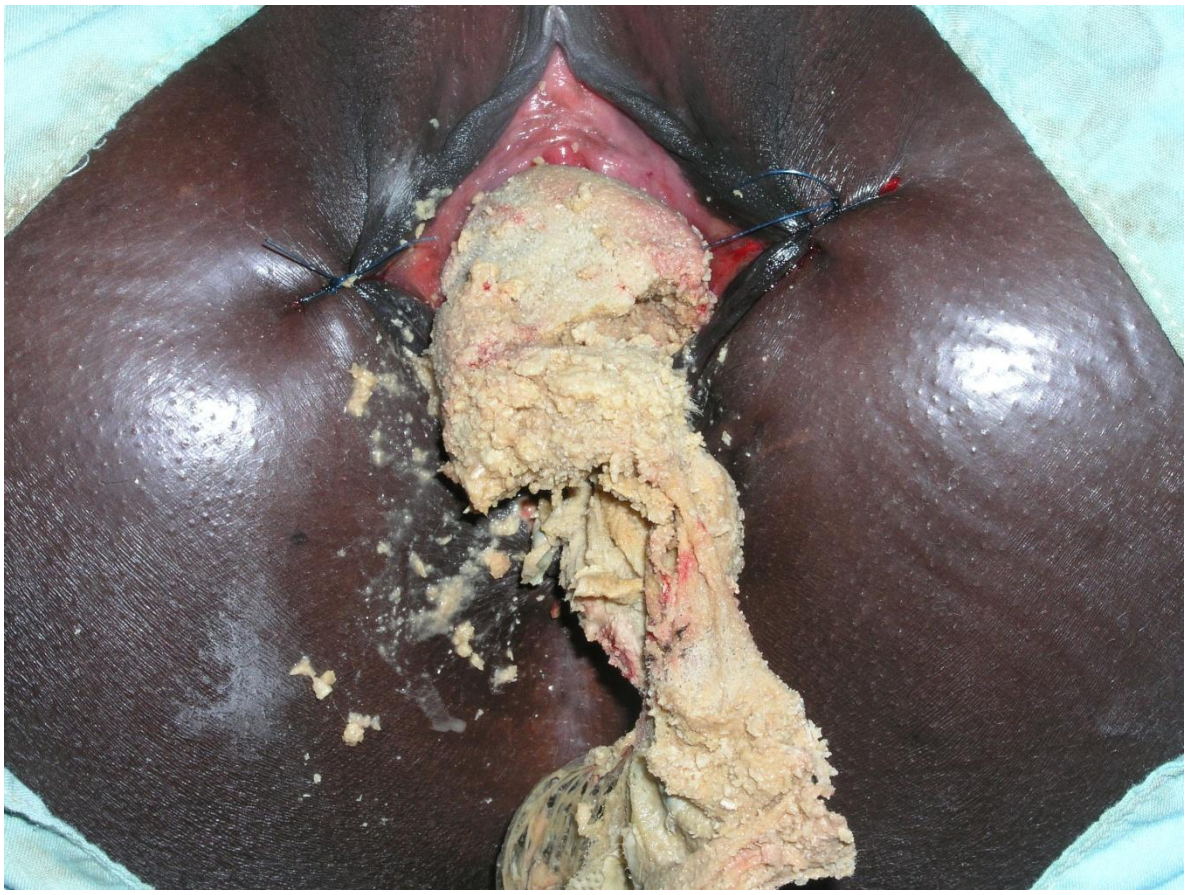
type IIBa

type IIBb



ureter fistula

stone formation around …



plastic bag … to stop the leaking

With reference to postrepair stress incontinence it is of utmost importance to keep in mind that in type IIAb and type IIBb the anterior part of the pubocervical = endopelvic fascia is completely lost together with the paraurethral part of the arcus tendineus fasciae and arcus tendineus of the levator ani muscle; this has to be repaired meticulously to prevent this from occurring.
Type III fistulas are a class of its own and need their own specific approach, e.g. ureter implantation into the bladder.
In principle there is progressively more tissue loss in fistulas from small thru extensive; however, there are extensive fistulas which have become small due to scarring, and this should be taken into account; so there are extensive small fistulas. Dissection becomes progressively more extensive, the operation progressively more complicated, and the results progressively worse from small thru extensive.
If the fistula repair breaks down, this residual fistula has to be operated according to the same principles as if it were the first attempt.

results
In a prospective study about the immediate management of the obstetric fistula in 1,716 consecutive patients the following could be demonstrated (Ref 12).
The results as to fistula healing at first attempt according to fistula type declined progressively from type I thru type IIBb fistulas since the failure rate was 1.6% in type I fistulas, 2.3% in type IIAa fistulas, 7.4% in type IIAb fistulas, 8.0% in type IIBa fistulas and 13.6% in type IIBb fistulas.
The results as to fistula healing at first attempt according to fistula size declined progressively since the failure rate was 1.3% in small fistulas, 4.4% in medium fistulas, 6.0% in large fistulas and 9.4% in extensive fistulas.
If there was a residual fistula, they were operated again though 14 patients defaulted at 2-3 months after first attempt.
A final check-up after first and/or final attempt was performed 5-6 months postoperatively. The patients were asked systematically about leaking, (in)continence and micturition and then vaginally examined for healing and continence. Then the final results were analyzed whereby the incontinence rate was calculated as part of the healed fistulas and not as part of the total number of patients.
The continence rate of the healed fistulas declined progressively from type I thru type IIBb since 0.4% of the patients with a type I fistula, 1.2% of the patients with a type IIAa fistula, 8.5% of the patients with a type IIAb fistula, 16.3% of the patients with a type IIBa fistula and 48.8% of the patients with a type IBb fistula were incontinent. The only patient with a type I fistula who became incontinent was a para 7 who defaulted at 4 months postoperatively.
The continence rate of the healed fistulas declined progressively from small thru extensive fistulas since 0.4% of the patients with a small fistula, 7.4% of the patients with a medium fistula, 8.4% of the patients with a large fistula and 17.2% of the patients with an extensive fistula were incontinent.

comments
This scientific classification is based on a systematic analysis of the enormous variety of pressure necrosis tissue loss due to prolonged obstructed labor with special emphasis on the progressive involvement of the continence/closing mechanism. It requires thorough theoretical knowledge of and ample practical experience in the complex trauma of the obstetric fistula, an exact knowledge of the (intra)pelvic anatomy and profound understanding of all the factors involved in the female continence/closing mechanism.
So far it is the only classification where the amount of qualitative and quantitative tissue loss is related to operation technique and outcome.
It is the first time that all the different anatomic structures involved are individually specified.
It is also the first time that a surgical plan of action for each type is presented together with the results as to healing and as to continence for each specific type in a large number of 1,716 consecutive patients.
All these patients have been classified and operated by the author himself under the same conditions with an overall closure rate of 95.2% (1,633 patients) at first attempt and a final overall closure rate of 98.5% (1,690 patients); the postoperative check-ups with auditing of the results as to healing and as to continence have been done by highly qualified staff who do not know the classification and who refer only the failures back to the surgeon.

Right from the beginning the whole management has been pain-stakingly documented by over 16,500 computerized operation reports including history and drawings complete with intermediate and final postoperative check-ups of each patient and some 60,000 full color slides and digital photo's pre-, intra- and postoperatively; for each patients some 100-150 relevant data are available to support the continuous prospective research.
The principal objectives of obstetric fistula surgery are first to close the fistula and second to make the patient continent. If these two objectives have been fulfilled the patient will rehabilitate and resocialize herself almost immediately into her own family and community. Since obstetric fistula surgery is reconstructive surgery in order to overcome highly variable amounts of anatomic tissue loss, the more accurate the quantitative and qualitative amount of tissue loss is assessed at the beginning of the operation the more effective surgery can be executed. Each fistula is a separate unique entity and needs its own specific approach, and that is exactly what makes obstetric fistula surgery so intriguing and challenging since there are no identical obstetric fistulas.
The classification as to fistula type is the most important since each type has its own specific surgical principles for repair with definite consequences for healing and continence.
The classification as to fistula size should be considered as additional and overlapping since it has no consequences for a specific surgical technique, only for extent of operation, healing and continence, and a majority of type IIBa and IIBb fistulas are already large or extensive.
In principle, the operation technique becomes progressively more complicated from type I thru type IIBb; the same applies to the fistula size from small thru extensive.
The results as to closure and as to continence become progressively worse from type I thru type IIBb; the same applies to the fistula size from small thru extensive.
Type III fistulas are a class of its own with a different surgical approach though normally with excellent results as to closure and continence.
With this classification it is possible to plan and execute the fistula repair according to the principles of reconstructive surgery and to compare the results and operation techniques in a scientific way.

references

1. Van Roonhuyse H; Heel-konstige aanmerkkingen betreffende de gebreekken der vrouwen. 1663
2. Sims JM: On the treatment of vesico-vaginal fistula. Amer J Med Sci.1852; 23: 59-82
3. Mahfouz BN: Urinary fistulae in women. J Obstet Gynaecol Br Emp. 1957; 64: 23-34
4. Moir JC: Vesicovaginal fistula: thoughts on treatment of 350 cases. Proc Roy Soc Med. 1965; 59: 1019-1022
5. Ward A: genito-urinary fistulae: a report on 1789 cases. Proc 2nd Int Congress Obstet Gynaecol in Lagos. 1980
6. Hamlin RHJ and Nicholson EC in: Obstetric Fistula by RF Zacharin. Springer Verlag Wien. 1988; pp 145-228
7. Lister U in: Obstetric fistula by RF Zacharin. Springer Verlag Wien.1988; 109
8. Lawson JB: Vesico-vaginal fistula – a tropical disease. Transact Royal Soc Trop Med Hyg. 1989; 454-456
9. Waaldijk K: Step-by-step surgery of vesicovaginal fistulas. Campion Press. Edinburgh.1994
10. Waaldijk K and Elkins T: The obstetric fistula and peroneal nerve injury: an analysis of 947 consecutive patients. Int Urogynecol J. 1994; 12-14
11. Waaldijk K: The (surgical) management of 775 patients with bladder fistula in northern Nigeria. PhD thesis University of Utrecht. Benda, 1989
12. Waaldijk K: The immediate management of fresh obstetric fistulas. Amer J Obstet Gyn ecol. 2004; 191: 795-799

January 2006

Babbar Ruga Fistula Hospital

KATSINA

Katsina State

report on VVF/RVF repairs

1984-2006

VVF-repairs:	9,659
RVF-repairs:	966
total	**10,625 repairs**

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

the construction of a very fine hostel annex rehabilitation center was completed just opposite the hospital; the first patients had their training but the commissioning has to wait till next year

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

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

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, chief consultant and others

Laure Fistula Center Murtala Muhammad Hospital

KANO

Kano State

report on VVF/RVF repairs

1990-2006

VVF-repairs:	5,967
RVF-repairs:	683
total	**6,650 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

it is an excellent place for training nurses and other health personnel, and plays a major role in the training of doctors

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 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 no progress was made with setting up a VVF unit in Wudil General Hospital as planned

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

1994-2006

VVF-repairs:	2,192
RVF-repairs:	160
total	**2,352 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 makes a major effort (550 km from Katsina) to come every 2 weeks for 2-3 days of surgery

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

1996-2006

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:	1,940
RVF-repairs:	113
total	**2,053 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 (3,200 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

though we made an effort by training a total of 7 doctors from the state the fistula work has come almost to a standstill

we proposed the new medical director to be re-trained but no funds were available for whatever reasons

this is a pity since there are many obstetric fistula patients in Jigawa State

definitely, it needs more commitment of the authorities

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

1996-2006

VVF-repairs:	1,109
RVF-repairs:	38
total	**1,147 repairs**

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

slowly, the center is coming off ground, and after his initial training 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 every 2-4 weeks for only 1 day surgery of the complicated fistulas

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

1998-2006

VVF-repairs:	499
RVF-repairs:	46
total	**545 repairs**

things are moving into the right direction: from a low-level unit into a comprehensive fistula repair and rehabilitation center

the complete structural reconstruction of the hospital has been finalized; 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

Dr Ado Zakari and Dr Husaina Adamu started to participate actively in the obstetric fistula repairs after their training

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 built a rehabilitation unit annex hostel and 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

1998-2006

VVF-repairs:	360
RVF-repairs:	26
total	**386 repairs**

the existing general hospital has become a federal center and then this hospital has become a general hospital, and the VVF work has come almost to a standstill

several doctors have been trained but they left and went abroad for further training

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 other separate hospital for women and children has been completed an effort has to be made to restart the VVF service

however, the main problem is the lack of commitment by the authorities

surgeons: Dr Halliru Idris, Dr Abdulrasheed Yusuf, Dr Sa'ad Idris and chief consultant

Special Fistula Unit

Ebonyi State University Teaching Hospital

ABAKALIKI

report on VVF/RVF repairs

2002-2006

VVF-repairs:	94
RVF-repairs:	9
total	**103 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

more staff, doctors and nurses, have to be trained

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

water for …

bladder drill

Hopital National /Centre Hospitalier/Maternité Centrale Départemental

NIAMEY/MARADI/ZINDER

République du Niger

report on VVF/RVF repairs

1996-2006

VVF-repairs:	827
RVF-repairs:	50
total	**877 repairs**

the obstetric fistula service in Zinder is functioning well under the direction of Dr Lucien Djangnikpo

it has all the requirements to become in the near future the fistula training center for République du Niger

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

UNFPA has committed itself to support the training of doctors and nurses

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 1984-2006

	VVF	RVF	total
Nigeria			
ebonyi	17	5	22
jigawa	18	1	19
kaduna	308	39	347
kano	4,578	675	5,253
katsina	7,989	945	8,934
kebbi	143	19	162
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	1	1	2
total	**14,665**	**1,893**	**16,558**

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	3,200 repairs
Dr Immam Amir	1,500 repairs
Dr Marietta Mahendeka	1,200 repairs
Dr Halliru Idris	1,000 repairs
Dr Hassan Wara	750 repairs
Dr Abdulrasheed Yusuf	750 repairs
Dr Zubairu Iliyasu	750 repairs
Dr Kabiru Abubakar	500 repairs
Dr Lucien Djangnikpo	500 repairs
Dr Aliyu Shettima	450 repairs
Dr Idris Abubakar	450 repairs
Dr Khisa Wakasiaka	400 repairs
Dr Meryl Nicol	400 repairs
Dr Jabir Mohammed	300 repairs
Dr Lawal al Moustapha	200 repairs
Dr Aminu Safana	150 repairs
Dr Isah Shafi'i	150 repairs
Dr Fred Kirya	150 repairs
Dr Moses ADEOYE	150 repairs
Dr Odong Emintone	100 repairs
Dr Abdoulaye Idrissa	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; Benda 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 — 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

K Waaldijk and TE Elkins — the obstetric fistula and peroneal nerve injury: an analysis of 947 con secutive patients. Int Urogynecol J 1994; 5: 12-14

K Waaldijk — a surgical classification of obstetric fistulas. Int J Gynaecol Obstet 1995; 49: 161-163

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 fistula patients. Workshop by FMOH and UNFPA, Abuja. November 2006

printed by:

Printmarkt.eu
DE REGIONALE ONLINE DRUKKERIJ EN COPYSHOP!

info@printmarkt.eu
www.printmarkt.eu