national vvf project nigeria

evaluation report XVIII

2001

reprint

Special VVF-Center
B/KEBBI

Faridat Yakubu VVF Center
GUSAU

General Hospital
HADEJIA

Laure Fistula Center
KANO

Babbar Ruga Fistula Hospital
KATSINA

Maryam Abacha Hospital
SOKOTO

Kofan Gayan Hospital
ZARIA

Centre Hospitalier Départemental
MARADI

Maternité Centrale
ZINDER

kees waaldijk MD PhD
chief consultant fistula surgeon

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paris

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prevention of the obstetric fistula

prevention of the obstetric fistula in Africa is a utopia for another 100 years since a network of 75,000 to 100,000 fully equipped and well functioning obstetric units are needed evenly distributed throughout the inhabited parts of rural Africa to have half the coverage of the obstetric care in the industrialized world

?who is going to pay for them, who is going to establish them and who is going to run them?

actually **the obstetric fistula is on the rise** since the number of deliveries are increasing (population explosion) without a concurrent increase in health facilities

prevention of the woman from becoming an outcast

this is very well feasible by the immediate management of fresh obstetric fistulas by catheter and/or early closure as soon as the leakage of urine starts after childbirth
when there is still necrosis a catheter is inserted and the patient instructed to drink as much as possible; by this simple measure 15-20% of the patients will be cured if the catheter is inserted within 4-6 weeks after delivery
if the fistula is not healed and slough develops this should be excised and as soon as the fistula edge is clean an early surgical closure is performed

by the immediate management it is possible to close the fistula in some 95% of the patients at first attempt with a stress incontinence rate of 6-7% in the closed fistulas

the earlier this immediate management is started the better the chance of preventing the girl/woman from becoming an outcast in her own society, her friends and her family; also it will prevent the patient from downgrading medically, socially and mentally

this is very important as some 75-80% of the patients are 14-20 years old who have their whole adolescent/adult life in front of them

the general rule to wait at least 3 months is obsolete and ... malpractice

if the patient is sent away and told to come back after 3 months this is the first step into the direction of becoming an outcast; wasting valuable time

there is not a single surgeon telling a patient with fresh burn wounds (thermal necrosis) to go home and come back after 3 months; he would be sued immediately for malpractice

evaluation report XVIII

executive summary

As predicted a long time ago **the obstetric fistula is on the rise**, and in all the centers the number of fistula patients increased sharply during 2001 but especially in KANO where during the last half of the year some 30-40 new patients a week were seen.
However, as a result of the immediate management by catheter and/or early closure, as introduced, developed and perfected in this project to cope with this **major public health problem**, it was possible to prevent the girls/women with a fresh obstetric fistula from becoming an outcast.
By a continuous effort to increase the quantity and to impove the quality of our fistula service it was possible to increase the number of procedures from 89 VVF/RVF-repairs in 1984 up to 1,699 VVF/RVF-repairs in 2001; during these years the success rate as to closure and to continence increased steadily as well.
The strikes first by the doctors and then by the nurses which lasted 4-6 weeks in total disrupted the programme only partially. Luckily the petrol situation improved over the year.
The major event of the year was the visit of two federal ministers, the honorable Federal Minister for Women Affairs and the honorable Minister of State for Health who spent 4 days of their valuable time touring 4 of the 9 centers, viz. KANO, KATSINA, GUSAU and BIRNIN-KEBBI. We are highly impressed by their real interest and by their actions taken, and we hope that they are impressed as well.
Since we started a grand total of 15,855 procedures were performed. From 1984 thru 1991 as a part-time fistula service 2,933 operations were performed, or an average of 367 repairs per year. As a federal full-time project, from 1992 thru 2001, a total of 12,922 procedures were performed, on an average base 1,292 repairs per year. This clearly shows the need and the value of a professional approach.
On the research side a major breakthrough was achieved in developing a technique for postrepair stress incontinence by: urethralization and fasciocolposuspension. As well at last a simple classification was developed for rectovaginal fistulas.
A total of 124 doctors, 114 nurses and 15 paramedical staff attended our regular training programme in KANO and KATSINA whilst another 42 doctors and 41 nurses attended our workshops.
However, to cope with the increasing number of obstetric fistula patients we have to make a major effort to increase the quantity and the quality of our service in terms of VVF-repair centers, in terms of operations and in terms of training all kinds of (para)medical personnel.

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introduction

The obstetric fistula is a **major public health problem on the rise for which a solution has not yet been found**. Having survived the ordeal of long prolonged obstructed labor for the prize of a dead baby and a vesicovaginal fistula the real suffering starts since the woman is no longer acceptable in her own society and becomes an outcast. Since 75-80% of the girsl/women are younger than 20 years with their whole life in front there will be progressive downgrading medically, socially and mentally, if left on their own. The social consequences are even more miserable than the medical aspects. Since the best rehabilitation is a successful repair which means **surgery is the solution** we are running a **public health surgery programme** where instead of drugs we provide surgery.

This VVF-Project aims to have an impact upon this hopeless situation by providing a VVF-repair service, by establishing VVF-centers, by training all kinds of doctors, nurses and paramedical health personnel and by health education.

As it is an African problem which can only be solved by the Africans themselves under African conditions we need an African solution.

Therefore the intention is to provide a high-quality VVF-repair and VVF-training service which is simple, safe, effective, feasible , sustainable and payable under primitive conditions.

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.

The 9 established centers are capable of dealing with the obstetric fistula within a radius of 90-120 km.

However, far more are needed to have an overall coverage of Nigeria and the rest of Africa.

short-term objectives

To further upgrade the repair and training services in the existing VVF-centers and to start new VVF-repair centers.

BIRNIN KEBBI

The service is improving in quantity and quality.

GUSAU

Within due time this center will concentrate only on women and children and thus more on the obstetric fistula.

HADEJIA

Dr Said AHMED has been transferred to another center but still continues with his VVF work; no news about transferring the service to JAHUN.

KANO

The number of patients is increasing almost daily. Luckily the interest of the goverment is also increasing since the officials understand that this is a priority.

national training center

this is functiong though more doctors and nurses could be trained

KATSINA

Most research is being done in this center. Also the govermnent is highly cooperative.

international training center

this is functioning though more doctors and nurses could be trained

SOKOTO
Somehow we cannot get a proper grip on this very important center though the facilities are good; it must be possible to achieve more.
ZARIA
It needs a total structural face-lift since it has high potential for a major center
MARADI/ZINDER in République du Niger
Our activities are concentrated in ZINDER where next year the first VVF-center for République du Niger will be opened, insha Allah!
new centers
The next target is to establish a VVF-repair center in Eastern and Western Nigeria since the obstetric fistula is everywhere.

traveling rhythm
We increased our traveling by car to 1,200-1,500 km a week but the roads are rapidly disintegrading and it is an enormous stress.

activities
postgraduate training (see annexes)
this is a continuous process and needs coordination
Sofar, a total of **166 doctors, 156 nurses and 15 paramedical staff** have been trained or attended either in our regular programme or in our workshops; the hand-out for trainees was updated
workshops (see annexes)
The consultant surgeon co-facilitated a 2-wk workshop in DAR ES SALAAM in Tanzania
surgery (see annexes)
There is a steady increase in our fistula surgery; over the year a total of 1,699 procedures were performed in the 9 different centers making a
grand total of 15,855 operations: 14,556 VVF-repairs and 1,299 RVF-repairs

research
the intention is to make complicated things simple, safe, effective, feasible, sustainable and payable under primitive conditions
VVF-surgery
At last a breakthrough was achieved in severe postrepair stress incontinence by developing a new technique which is highly promising theoretically and practically: urethralization and fasciocolposuspension; it is still my belief that the solution to genuine stress incontinence will eventually come from research in the obstetric fistula with partial or total anatomic tissue loss of the continence mechanism.
A final evaluation was made of the immediate management by catheter and/or early closure. This means a **radical change from a passive nonmanagement** allowing the patient to become an outcast **towards an active immediate management** preventing the patient from becoming an outcast (see annexes)
RVF-surgery
A simple classification of rectovaginal fistulas was developed with consequences for operation technique; it is not clear yet if it has consequences for the results as well

funding
Basically the project is funded by the Federal Goverment and by the individual State Governments but this is not sufficient. Further funding came from the following organizations: the Nordic Women's Club, the Wereldwinkel in MAASTRICHT and several Dutch NGOs among which the SK Foundation in combination with the TTT Foundation are the most important.

conclusion

Though there is a continuous improvement in the quantity and quality of this project in terms of VVF-service, VVF-training and VVF-research and a lot has been achieved, it is nothing compared with what really has to be done to solve this major public health problem.

A major impact will have the immediate management by catheter and/or early closure with prevention of the young girls/women from becoming an outcast.

kees waaldijk MD PhD
chief consultant fistula surgeon

surgery 1984-2001

	B/KEBBI		GUSAU		HADEJIA*		KANO		KATSINA		SOKOTO		ZARIA		MARADI/ZINDER		
	VVF	RVF	VVF	RVF	VVF	RVF	VVF	RVF	VVF	RVF	VVF	RVF	VVF	RVF	VVF	RVF	grand 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	41	-	-	-	86	-	311	37	562	60	98	5	-	-	66	2	1,268
1997	107	2	-	-	211	4	295	38	513	55	181	14	-	-	33	2	1,455
1998	37	4	30	6	185	5	278	28	416	60	288	34	42	4	43	4	1,464
1999	80	5	64	3	30	3	280	36	441	62	238	12	37	3	49	2	1,345
2000	108	4	102	5	204	7	283	41	420	60	134	16	102	7	69	7	1,569
2001	98	4	65	5	170	5	415	41	515	55	157	9	80	1	74	5	1,699
total	**471**	**19**	**261**	**24**	**886**	**24**	**3,842**	**419**	**7,202**	**680**	**1,299**	**101**	**261**	**15**	**334**	**22**	**15,855**

***Dr Said AHMED**

total VVF-repairs and related operations: **14,556**

total RVF-repairs and related operations: **1,299**

success rate at VVF closure roughly **90%** per operation

success rate at RVF closure roughly **85%** per operation

success rate at **early closure** roughly **95%** per operation

healed by catheter only: **592**

wound infection rate: **< 0.5%**

postoperative mortality rate: **0.5-1%**

overall success rate (after one or more operations) at closure: **97-98%**

severe stress/urge incontinence rate after successful closure: **2-3%**

operations by chief consultant

	VVF	RVF	total
Nigeria			
BIRNIN KEBBI	71	10	81
GUSAU	145	16	161
HADEJIA	-	-	-
KANO	3,046	394	3,440
KATSINA	6,088	660	6,748
SOKOTO	607	88	695
ZARIA	125	13	138
République du Niger			
MARADI	72	6	78
ZINDER	104	9	113
Kenya			
MACHAKOS	13	2	15
Tanzania			
DAR ES SALAAM	25	2	27
total	**10,296**	**1,200**	**11,496**

known performance of trainees

Dr Said AHMED	over 1,350 repairs
Dr Idris HALLIRU	over 700 repairs
Dr Immam AMIR	over 600 repairs
Dr Ilyasu ZUBAIRU	over 550 repairs
Dr Yusha'u ARMIYA'U	over 400 repairs
Dr Aliyu SHETTIMA	over 400 repairs
Dr Bello Samaila	over 350 repairs
Dr Hassan WARA	over 350 repairs
Dr Jabir MOHAMMED	over 250 repairs
Dr Aminu SAFANA	over 150 repairs
Dr Abdulrasheed YUSUF	over 150 repairs
Dr Idris ABUBAKAR	over 100 repairs
Dr Isah I SHAFI'I	over 100 repairs
Dr Djangnikpo LUCIEN	over 100 repairs

no data are available for the other trainees

Special VVF Center

BIRNIN KEBBI

Kebbi State

report on VVF/RVF-repair

1996-2001

VVF-repairs: 471

RVF-repairs: 19

total **490 repairs**

success rate at VVF closure roughly 90% per operation

success rate at RVF closure roughly 85% per operation

wound infection rate: < 0.5%

postoperative mortality: 0

overall success rate (after 1 or more operations) at closure: 97-98%

severe stress/urge incontinence after successful closure 2-3%

HADEJIA

Jigawa State

report on VVF/RVF-repair

1996-2001

VVF-repairs: 886

RVF-repairs: 24

total **910 repairs**

success rate at VVF closure roughly 90% per operation

success rate at RVF closure roughly 85% per operation

wound infection rate: < 0.5%

postoperative mortality: 0.5-1%

overall success rate (after 1 or more operations) at closure: 97-98%

severe stress/urge incontinence after successful closure 2-3%

Laure Fistula Ward at Murtala Muhammad Specialist Hospital

KANO

Kano State

report on VVF/RVF-repair

1990-2001

VVF-repairs: 3,842

RVF-repairs: 419

total **4,261 repairs**

success rate at VVF closure roughly 90% per operation

success rate at RVF closure roughly 85% per operation

wound infection rate: < 0.5%

postoperative mortality: 0.5-1%

overall success rate (after 1 or more operations) at closure: 97-98%

severe stress/urge incontinence after successful closure 2-3%

Babbar Ruga Fistula Hospital

KATSINA

Katsina State

report on VVF/RVF-repair

1984-2001

VVF-repairs:	7,202
RVF-repairs:	680
total	**7,882 repairs**

success rate at VVF closure roughly 90% per operation

success rate at RVF closure roughly 85% per operation

wound infection rate:	< 0.5%
postoperative mortality:	0.5-1%

overall success rate (after 1 or more operations) at closure: 97-98%

severe stress/urge incontinence after successful closure 2-3%

Marayama Abacha Women and Children Hospital

SOKOTO

Sokoto State

report on VVF/RVF-repair

1994-2001

VVF-repairs: 1,299

RVF-repairs: 101

total **1,400 repairs**

success rate at VVF closure roughly 90% per operation

success rate at RVF closure roughly 85% per operation

wound infection rate: < 0.5%

postoperative mortality: 0.2%

overall success rate (after 1 or more operations) at closure: 97-98%

severe stress/urge incontinence after successful closure 2-3%

Kofan Gayan Hospital

ZARIA

Kaduna State

report on VVF/RVF-repair

1998-2001

VVF-repairs: 261

RVF-repairs: 15

total **276 repairs**

success rate at VVF closure roughly 90% per operation

success rate at RVF closure roughly 85% per operation

wound infection rate: < 0.5%

postoperative mortality: 0

overall success rate (after 1 or more operations) at closure: 97-98%

severe stress/urge incontinence after successful closure 2-3%

Maternité Central/Centre Hospitalier Départemental

ZINDER/MARADI

République du Niger

report on VVF/RVF-repair

1996-2001

VVF-repairs: 334

RVF-repairs: 22

total **356 repairs**

success rate at VVF closure roughly 90% per operation

success rate at RVF closure roughly 85% per operation

wound infection rate: < 0.5%

postoperative mortality: 0

overall success rate (after 1 or more operations) at closure: 97-98%

severe stress/urge incontinence after successful closure 2-3%

the obstetric fistula

short notes/checklist

hand-out to trainees

VesicoVaginal Fistula = VVF

RectoVaginal Fistula = RVF

kees waaldijk MD PhD
chief consultant surgeon

first edition January 1992

last edition September 2001

short notes/checklist on VVF/RVF

VVF: **V**esico**V**aginal **F**istula, an abnormal connection between the bladder and the vagina: a urine fistula

RVF: **R**ecto**V**aginal **F**istula, an abnormal connection between the rectum and the vagina: a stool fistula

causes:

a. obstetric-necrotic due to obstructed labor, the obstetric fistula
b. surgery: hysterectomy, colporrhaphy, cesarean section
c. malignancy
d. radiation, e.g. in cervix carcinoma
e. trauma
f. congenital malformation
i. infection

Though the obstetric fistula has disappeared from the industrialized world it is still very common in the developing world and accounts for over 85% of all the fistulas world-wide

symptoms:

VVF: continuous leaking of urine from the vagina which cannot be stopped or cleaned
RVF: intermittent leaking of stools from the vagina which can be stopped (unless diarrhea) and cleaned

social acceptance:

therefore the patient with a VVF is socially far less acceptable than the patient with a RVF

social implication:

in Africa it means that the VVF-patient is ostracized from her own society and community and has to live as an outcast

prevalence

a minimum of 2,000,000 still awaiting surgery world-wide of whom at least 80-90% are in Africa

treatment

only surgery by VVF/RVF-repair with different operation techniques

prognosis after operation

medically: good
socially: good
psychically: good

the obstetric fistula

incidence of obstetric fistula

a minimum of 2-3 per thousand deliveries where the mother survives in situations where there is no ready access to a functioning obstetric service; this means for Africa an annual incidence of some 100,000 to 150,000 new fistula patients

there is no relation to tribe, religion, culture, early marriage or anything else, except for early intervention by CS within 3 hours

prevalence

in Africa a minimum of 1,500,000 VVF/RVF-patients awaiting surgery

cause of obstetric fistula

obstructed labor (pressure necrosis) and/or cesarean section and/or primitive obstetric practices

mechanism of action in obstructed labor

the fetal head is too big or lies/presents abnormally and gets stuck inside the birth canal; then the soft tissues are compressed between the hard fetal skull and the hard maternal pelvic bones; if this is not relieved within 3 hours by a cesarean section, tissue necrosis (no blood supply!) occurs and a fistula develops

which structures are at risk

the anterior vagina wall/bladder are more at risk than the posterior vagina wall/rectum; also the lateral vagina walls and deeper intrapelvic structures are at risk

isolated VVF

this is the rule: 85% of the patients

combination VVF/RVF

the VVF is in some 15% combined with RVF

isolated RVF

very seldom except for 3rd degree tear

other intravaginal lesions due to obstructed labor

always some loss of anterior/posterior vagina wall
vagina stricture
vagina stenosis
vagina shortening
vagina atresia
seldomly (partial) loss of cervix/uterus
loss of labia minora
(partial) loss of pubococcygeus muscles resulting into bare bones
secondary amenorrhea due to endometrium trauma

other extravaginal lesions due to obstructed labor

peroneal nerve palsy due to compression of the sacral plexus of the sciatic nerve, affecting only the efferent motor fibers

other systemic/local lesions due to prolonged obstructed labor

poor general health and even cachexia due to the enormous trauma of unrelieved obstructed labor over days without help

pressure sores at sacrum, trochanter major, heel and scapula

secondary amenorrhea due to blood loss

the **enormous trauma of prolonged obstructed labor**

is such that over 95% of the infants die inside the nother; then the head (the largest circumference!) shrinks and the mother may be able to push the dead child out

many times the mother dies as well in the process; ?how often?

if the mother survives it is for the prize of a dead child and an obstetric fistula .. and then the real trouble starts

prevention

the lesson learned from history is that this is only possible by setting up a network of functioning obstetric units where at any time day and night an emergency cesarean section can be performed within one hour

for the inhabited parts of Africa this means a **network of 75,000 obstetric units** fully equipped and with highly trained personnel

preoperative, operative and postoperative treatment of VVF

the better the organization of the preoperative preparation, the better the organization of the operation theater and the better the organization of the postoperative care **the better the outcome of fistula surgery** in terms of closure and of continence
however, it cannot be stressed enough that the weakest point of fistula surgery in the developing world is the poor nursing care

preoperative preparation
oral hematinics and high-protein diet; **no** antibiotics
high oral fluid intake of at least 6-8 liters per day preoperatively!

laboratory
Hb/Ht and serum creatinine are recommended

X-rays
not indicated

examination
normal vaginal examination at first visit and day before operation
EUA (Examination Under Anesthesia) is nonsense if it is not followed up **immediately** by surgery **in the same session**

anesthesia
spinal anesthesia with a long-acting agent, e.g. (hyperbaric) bupivacaine 0.5%

assistance
only the surgeon and one instrumentating operation nurse
two instruments inside the vagina are already a crowd

special surgical instruments
sharply curved THOREK scissors, sharp aneurysm needle, self-retaining weighted AUVARD vagina speculum, long vaginal instruments

suturing material
polyglycolic acid and nylon; expensive atraumatic suturing material is not required

position on operation table
exaggerated lithotomy position with legs flexed and slightly abducted in stirrups

operation route
the vagina in type I through IIBb; exceptionally other routes are necessary

accessibility
by median, uni- or bilateral episiotomy

examination under anesthesia
this is done by any surgeon for whatever surgery **at the beginning of any operation**; the fistula is classified and a final decision taken how to tackle this specific fistula

classification of fistulas according to anatomic/physiologic location

- **I** not involving the closing mechanism
- **II** involving the 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 and other exceptional fistulas

further classification as to size

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

the operation becomes more complicated from type I through type IIBb and the prognosis as to closure and continence worsens progressively

operation

type I:	only closure
type IIAa:	closure and elevation of bladder neck
type IIAb:	circumferential repair by end-to-end vesicourethrostomy
type IIBa:	+ urethra reconstruction with urethra tissue
type IIBb:	+ urethra reconstruction from other tissue (bladder?)
type III:	ureter implantation or something else

indwelling bladder catheter for a minimum period of 2 weeks

FOLEY Ch 18 or 20

postoperative fluid intake

at least **6-8 liters per 24 hours** in order to get a good urine flow with a urine output of at least 4000 ml per 24 hours

antibiotics

only on strict indications

prognosis as to closure/continence

progressively worse from type I through type IIBb; type III is not common

main postoperative problem when the fistula is closed

stress and/or urge incontinence

so already at first operation make sure the right technic is performed

UV stricture with overflow

postoperative stress incontinence

urethralization, urethrorhaphy and anterior fasciocolposuspension

postoperative urge incontinence

only strict bladder drill

UV-stricture with overflow

daily gentle dilatation H3 thru H8 for 2 weeks; anterior UV-tomy

social rehabilitation

only by a successful repair; then it takes place spontaneously

future pregnancies/deliveries

regular antenatal care with delivery in hospital by cesarean section as labor assistance is very poor in most instances

dye test

whenever in doubt (fistula?, incontinence?, which type of incontinence?) instill 20-200 ml gentian violet into the bladder under the motto <u>the dye no lie</u>

do not waste time on things that make no sense such as EUA, first treating the urine dermatitis, intravenous pyelography, urine examination, waiting 3 months after delivery before surgery etc.

concentrate on **the most important thing**

close the fistula

urine incontinence

make sure to get the right diagnosis for the 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

urge incontinence
urine loss not related to intraabdominal pressure but to involuntary detrusor activity; small bladder capacity

overflow incontinence
a. UV-stricture with outflow obstruction
b. atonic bladder; large bladder capacity, bladder overfilled

bladder capacity
the bladder capacity may play a role in the outcome of the repair as to continence
on one hand, if the bladder capacity is small urge incontinence may develop
on the other hand, if it is increased stress or overflow incontinence may be expected
the bladder capacity can be estimated according to the **longitudinal bladder diameter** as:
a. small ≤ 4 cm
b. moderate 5-6 cm
c. normal 7-12 cm
d. increased > 12 cm
the longitudinal bladder diameter is calculated as: the distance from external urethra opening to bladder wall (as measured by a calibrated metal sound) minus distance from external urethra opening to balloon of FOLEY catheter (urethra length)

as long as the pressure that keeps the urethra closed/sealed is higher than the intravesical pressure, there is no urine leakage, i.e. if there is no fistula

once the intravesical pressure exceeds the closing pressure of the urethra there will be urine flow from the bladder through the urethra towards the outside

(post-repair) urine stress incontinence

one of the major problems in obstetric fistula surgery is the occurrence of severe postrepair urine stress incontinence grade II or III
for the patient it is terrible, since she and her community do not consider her(self) healed, so she remains an outcast
for the surgeon it is frustrating because he did do a good job, however not good enough: repair successful but patient leaking

continence mechanism:

I intrinsic urethra sphincter mechanism for mucosa seal/coaptation
- a urethra mucosa
- b submucosal cavernous plexus
- c elastic and connective tissue of urethra wall
- d smooth muscle fibers in urethra wall

these structures are estrogen influenced

II extrinsic urethra sphincter mechanism
- a slow-twitch circular striated muscle fibers
- b fast-twitch striated muscle fibers of pubococcygeus muscle

III anatomic support of urethra, UV-junction and bladder neck sothat the proximal urethra is **against** the posterior symphysis and **within** abdominal pressure transmission

IV intact innervation of these components

V length of urethra; if it is less than 1.5 cm there is little chance of being continent; however, position is more important than length

VI caliber of urethra; law of physics: the smaller the curve of a tube-like structure the stronger the centripetal forces

Only four out of this complex of factors can be approached surgically at the moment:

a) proximal lengthening of urethra

b) narrowing the diameter of existing urethra

c) tightening of endopelvic fascia for better support

d) positioning (proximal) urethra against posterior symphysis

operation technique:

urethralization and anterior fasciocolposuspension

immediate management of fresh obstetric fistulas

catheter

any patient who starts leaking following childbirth should have an indwelling bladder catheter whatever the cause:
fistula, stress incontinence or overflow incontinence (UV-stricture; atonic bladder)
by catheter treatment for 4-6 weeks stress/overflow incontinence will heal as well as some 40-60% of the smaller fistulas (up to 2 cm 0 in size)

no antibiotics

as the fistula is caused by pressure necrosis and not by infection systemic antibiotics are not indicated routinely just as in bedsores (also pressure necrosis) and burnwounds (thermal necrosis); in burns it is even considered to be malpractice
only on specific indication, such as pneumonia or puerperal sepsis, antibiotics have to be given

fluid intake

a **minimum of 6-8 liters per day** to keep the catheter open and to prevent ascending urinary tract infection

oral hematinics

fersolate and folic acid

high-protein diet

to speed up recovery from the enormous trauma of prolonged obstructed labor

slough/necrosis of larger fistulas

debridement of the slough as soon as possible like in other types of pressure necrosis (bedsores) or thermal necrosis (burnwounds); this is sound surgical practice of all types of necrosis

early closure

as soon as the fistula edge is clean the larger fistulas (and those fistulas not healed by catheter) should be repaired immediately; this is also sound surgical practice as it falls exactly within the time of the physiologic wound healing processes

advantages

excellent success rate as to closure and to continence and thus preventing the patient from becoming an outcast

the sooner the management is started the better the chance of complete cure

the importance of high oral fluid intake

the patients are highly intelligent and notice that when they drink plenty they will leak plenty and when they drink little they will leak little

so after some time, but especially when they have long-standing fistula or long-standing (postrepair) stress incontinence, most of them will restrict their oral fluid intake to the minimum

however, that is one of the worst things than can happen since: urine output will be minimal and the urine concentrated resulting in:

a. recurrent urinary tract infections with in the end a shrunken bladder
b. stone formation
c. severe urine dermatitis
d. offensive odour
e. more social outcast
f. they give up hope since it is difficult to get cured

to operate the patients in this stage is associated with problems and bad results, such as high percentage of breakdown, cystitis, UV-strictures etc

therefore it is of utmost importance to rehabilitate the patients to start drinking . and **abundant drinking** . already before any repair is undertaken

they first have to leak more before they can be cured and this requires **patient compliance**; ultimately the patient is responsible for her own health and not the surgeon; **it is not possible to cure an uncooperative patient!**

so the first thing in the management of the obstetric fistula is to explain and instruct the patient to drink at least 6-8 liters per day and make her understand that if she is **not drinking** there will be **no operation**

this will also help in the patient complying to drink postoperatively since she is already used to it

during operation it might help to identify the ureters

it is easy to check as one only have the patient to stand for a couple of minutes and if no leakage tell her to come back if drinking; it will select the cooperative patients from the uncooperative patients

if the patient is uncooperative do not operate: it is asking for trouble!

preoperative, operative and postoperative treatment of RVF

the better the organization of the preoperative preparation, the better the organization of the operation theater and the better the organization of the postoperative care **the better the outcome of fistula surgery**

preoperative preparation
: oral hematinics and high-protein diet; **no** antibiotics

laboratory
: Hb/Ht are recommended

X-rays
: not indicated

examination
: normal vaginal examination at first visit and day before operation;
EUA (Examination Under Anesthesia) is nonsense if it is not followed up **immediately** by surgery **in the same session**

anesthesia
: spinal anesthesia with a long-acting agent, e.g. (hyperbaric) bupivacaine 0.5%

assistance
: only the surgeon and one instrumentating operation nurse
two instruments inside the vagina are already a crowd

special surgical instruments
: sharply curved THOREK scissors, self-retaining weighted AUVARD vagina speculum, long vaginal instruments

suturing material
: polyglycolic acid and nylon; expensive atraumatic suturing material is not required

position on operation table
: exaggerated lithotomy position with legs flexed and slightly abducted in stirrups

operation route
: the vagina in type Ia through IIIb; exceptionally as in type IV other routes are necessary

accessibility
: by median, uni- or bilateral episiotomy

examination under anesthesia
: this is done by any surgeon for whatever surgery **at the beginning of any operation**; the fistula is classified and a final decision taken how to tackle this specific fistula

classification of fistulas according to anatomic/physiologic location

I proximal fistulas
- **a** without rectum stricture
- **b** with rectum stricture
- **c** with circumferential defect — very seldom

II midvaginal fistulas
- **a** without rectum stricture
- **b** with rectum stricture — very seldom

III distal fistulas
- **a** without sphincter ani involvement
- **b** with sphincter ani involvement

IV miscellaneous

further classification as to size

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

operation

type Ia	transverse closure of rectum
type Ib	with disruption of rectum stricture
type Ic	(abdomino)vaginal approach with end-to-end anastomosis/colostomy
type IIa	transverse or longitudinal closure
type IIb	with disruption of rectum stricture
type IIIa	longitudinal closure of rectum
type IIIb	with sphincter ani/perineal body repair
type IV	depending upon the situation

perioperative antibiotics

tinidazole 2 g per os and one shot of broad-spectrum antibiotics i.m. at the beginning of the operation

colostomy

this is not curative but a help; only if it can be guaranteed that 2 weeks after colostomy the RVF is repaired and that 4 weeks after successful RVF-repair the colostomy is closed

postoperative instructions

anorectal tube

for 5-7 days to avoid distension of rectum by gas

no solid food for 10 days
in order to have soft stools

liquid paraffin
no straining on defecation

high fluid intake

no antibiotics
only on strict indications

no sitzbaths
specifically when the sphincter ani has been repaired

prognosis as to closure
there is no relation to type of fistula and closure

social rehabilitation
only by a successful repair; then it takes place spontaneously

future pregnancies/deliveries
regular antenatal care with delivery in hospital by cesarean section as labor assistance is very poor in most instances

do not waste time on things that make no sense such as EUA, first treating the urine dermatitis, intravenous pyelography, urine examination, waiting 3 months after delivery before surgery etc.

concentrate on **the most important thing**
close the fistula

anesthesia in obstetric fistula repair

introduction

In developing countries there are many problems with the anesthesia due to lack of personnel, training, equipment, materials, drugs and money. Many times the surgeon himself is responsible for the anesthesia.
Regional anesthesia does not require special equipment, is easy to learn, does not need intensive intra- and/or postoperative monitoring, is as effective as general anesthesia, does not require electricity, and is safe and cheap.
Therefore spinal anesthesia with a long-acting anesthetic drug seems to be the method of choice.

methods

No premedication is given in order not to lower the blood pressure before the anesthesia. The blood pressure is measured with the patient lying on her back on the operation table which is elevated at the head end. The patient is instructed to sit on the operation table with the legs straight and to bend forwards holding both feet with her hands. The patient's lower back and the surgeon's hands are disinfected with methylated spirit. A spinal needle 25G is introduced between the lumber vertebrae L4/L5 through the yellow ligament, then turned 90 degress in order not to pierce but to split the fibers and inserted into the dural sac. To check if the needle opening is inside the dural sac, the needle is turned back 90 degrees and the stylet removed. If cerebrospinal fluid is coming out 4 ml hyperbaric bupivacaine 0.5% is slowly injected from a 5-ml glass syringe fixing the needle with the left hand sothat it cannot move; after each ml it is checked if the needle is still inside the dural sac by releasing the pressure on the plunjer. Only if cerebrospinal fluid is flowing into the syringe the anesthetic fluid is further injected. The needle is left in for 10 more seconds (to prevent immediate leakage of the anesthetic agent out of the dural sac). Then it is removed and a spirit-soaked gauze applied onto the injection mark.
The patient is positioned flat on her back with a cushion under her head to maximally flex the cervical spinal column and with the table slightly elevated at the head end.
The blood pressure is monitored after 5 and 10 min all the time speaking to the patient to make her feel comfortable.
If after 10 min she cannot lift her legs and the systolic blood pressure is at least 90 mm Hg the anesthesia is set and the operation is proceeded.
Only if the blood pressure drops below 90 mm Hg intravenous fluids are given.
If the patient develops severe bradycardia as seen in patients over 50 years old 0.6 mg atropine sulfate is given i.v.
If after 10 min the patient still can lift her legs another spinal anesthesia is given with the full (or half the) dose, preferably at a lower level, but if this is not possible at a higher level. If the second instillation is not succesful the operation is postponed.

Intraoperative monitoring of the condition of the patient is being done by regularly speaking with the patient.
At the end of the operation her blood pressure is taken, and only if the blood pressure is below 80 mm Hg with insufficient urine flow intravenous fluids are given.

complications

There are only 3 major complications, viz. total spinal block, shock and postspinal meningitis.
Total spinal block needs intubation and artificial ventilation until the drug effect has worn out.

Shock needs intravenous fluids fast, and postspinal meningitis needs antibiotics.
There are 3 minor complications, viz. bradycardia, nausea and postspinal headache.
For severe bradycardia 0.6 mg atropine sulfate is given i.v. Nausea during operation disappears spontaneously after 5-10 min and needs no medication.
Postspinal headache with a 25G needle is not a common complaint, is treated with analgesics and disappears spontaneously after 3-5 days.

conclusion
Because it is simple, effective, safe and cheap **spinal anesthesia** with a long-acting agent such as hyperbaric bupivacaine 0.5% **is the anesthesia of choice** in developing countries for operations of the lower half of the body including VVF-surgery.

classification of vesicovaginal fistulas

by

Kees WAALDIJK

classification of fistulas according to anatomic/physiologic location

I not involving the closing mechanism

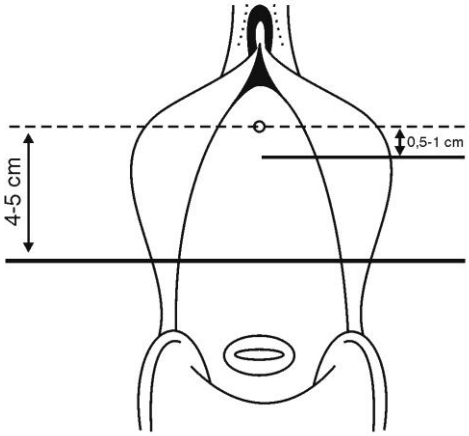
II involving the closing mechanism
- **A** without (sub)total urethra involvement
  - **a** without circumferential defect
  - **b** with circumferential defect
- **B** with (sub)total urethra involvement
  - **a** without circumferential defect
  - **b** with circumferential defect

III ureter fistulas and other exceptional fistulas

further classification as to size

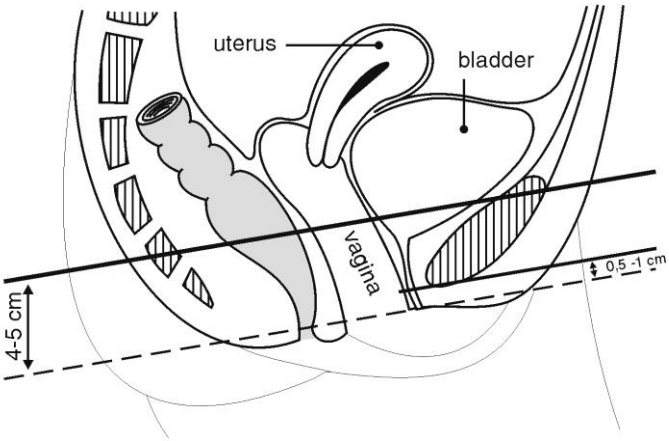
small	< 2 cm
medium	2-3 cm
large	4-5 cm
extensive	≥ 6 cm

figure 1



continence/closing mechanism: frontal

figure 2



continence/closing mechanism: sagittal

history taking in fistula patients

how many deliveries:

how many are alive:

how long leaking urine: days/months/years

when did it start following labor: immediately or how many days later

how many days in labor:

where did you deliver: at home or in hospital

cesarean section: yes/no

sex of infant: boy or girl

condition of infant: stillborn, alive and died later, or alive

how long married: months/years

where did you start menstruating: at your parents/husband home

living with husband on same compound: yes/no

still menstruating: yes/no

drop foot: yes/no

which side: R and/or L

for how long: months/years

leaking stools as well: yes/no

how many times operated:

grading of drop foot according to MRC scale

0	no function whatsoever
1	just a muscle twitch
2	minimal muscle movement
3	muscle movement if gravity is excluded
4	only slight muscle weakness
5	normal

postoperative instructions and follow-up

postoperative ward

a. check blood pressure and pulse every 30 min for 4 hours

b. encorage oral fluids, at least 5-6 liters a day

c. check catheter drainage, and if blocked flush it or if this is not successful change the catheter

d. urine should be at least 4000 ml per 24 hours and completely clear

e. no antibiotics, unless specifically ordered

f. fersolate, one tablet ods

g. pack to be removed after 1 day, carefully (otherwise pat will start bleeding)

h. episiotomy/graft sutures to be removed after 7 days

i. catheter to be removed after 14 days in the theater

after removal of the catheter the patient is discharged from the postoperative ward back to the hostel. She has to be instructed to continue drinking and to pass urine every 10 to 15 minutes.

postoperative follow-up

intravaginal sutures to be removed 1 week after catheter removal

then 2 weeks later check-up

then 1 month later check-up

then 2 months later check-up

then 2-3 months later last check-up; pat can resume sexual activities

at each check-up please ask for the following:

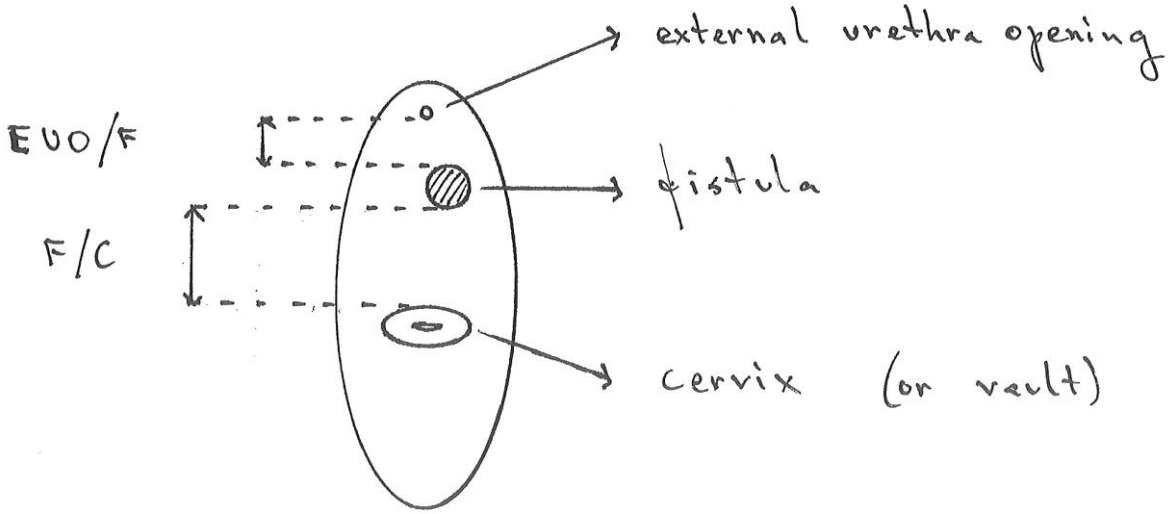
leaking yes/no; incontinence yes/no; normal micturition yes/no

then check for the following:

healed yes/no; stress incontinence yes/no; elevation good/moderate/bad

whatever you do please write it down on operation report for documentation!

documentation of fistula



EUO/F in cm

location/size of fistula in cm

F/C in cm

EUO/F = distance from external urethra opening to fistula

F/C = distance from fistula to cervix (or vagina vault)

first national vvf workshop tanzania

ccbrt hospital

and

muhimbili medical center

dar es salaam

from monday 2nd thru thursday 12th of december 2001

kees waaldijk MD PhD
chief consultant fistula surgeon

first national vvf workshop for tanzania in dar es salam

from monday 2nd through thursday 12th of april 2001
CCBRT Hospital and Muhimbili Medical Center

report

summary
since the obstetric fistula is prevalent throughout Africa, a VVF workshop for consultant obstetricians/gynecologists was initiated/organized in Tanzania by Dr Tom RAASSEN, consultant surgeon at AMREF
Dr Kees WAALDIJK, the consultant fistula surgeon for the Federal Government of Nigeria, was invited to cofacillitate the workshop
this was a real professional workshop, organized for and by professionals, without politics; exactly how we want it
it was a combination of practical sessions and theoretical lectures:
the practical sessions were meant to demonstrate simple solutions for complicated problems; according to basic surgical principles; we started with simple repairs and ended up with extremely difficult ones: in total 51 procedures in 50 patients; and
by lectures the background of the problem was highlighted and the theoretical knowledge of the participants was updated, but also very practical tips were given
the workshop was well organized and we were impressed by the interest shown by all the participants
however, now the doctors with their operating/postoperative nurses have to come forward for further training in Babbar Ruga Hospital in Nigeria

day-to-day report of workshop

monday 2nd
after registration of the participants the workshop was opened by representatives from AMREF, **C**omprehensive **C**ommunity **B**ased **R**ehabilation in **T**anzania and the Netherlands Embassy
questionaire for self-assessment of the participants at the beginning of workshop
history taking, examination and selection of patients
lectures: - introduction to the obstetric fistula

tuesday 3rd
surgery: seven operations, all VVF-repairs; 4 of them easy, the other 3 difficult; whilst 1 ureter was catheterized
lectures: - review of surgery; questions and answers about the procedures
- classicification of VVF
wardround

wednesday 4th
wardround
surgery: eight operations, 5 VVF-repairs and 2 RVF-repairs including a difficult minute fistula repair, early closure, a complicated circumferential repair, urethra reconstruction and a RVF-repair with a severe rectum stricture; after the clean surgery 1x incision & drainage of abdominal abscess in R lower quadrant (with a fistula) was performed
lectures: - review of surgery; questions and answers about the procedures
- technical aspects of VVF surgery
wardround

thursday 5th
wardround
surgery: seven operations, all VVF-repairs including 2x circumferential repair; in 1 patient the vaginal approach was converted into an abdominal one; whilst 3 ureters were catheterized
lectures: - review of surgery; questions and answers about the procedures
wardround

friday 6th
wardround
surgery: six operations, all VVF-repairs including 2x circumferential repair; whilst 7 ureters were catheterized
lectures: - review of surgery; questions and answers about the procedures
- immediate management of the obstetric fistula
wardround

saturday 7th
wardround
surgery: two operations in Muhimbili Medical Center (Dr Tom RAASSEN + team) all VVF-repairs, one vaginally and the other abdominally_transvesically; whilst 1 ureter was catheterized

sunday 8th
wardround

monday 9th
wardround
surgery: seven operations, 5 VVF-repair and 2 RVF-repairs including a patient leaking for 37 yr in whom 40 operations had been perfromed; whilst 3 ureters were catheterized
lectures: - review of surgery; questions and answers about the procedures
- spinal anesthesia

tuesday 10th
wardround
surgery: six operations, all VVF-repairs including a ureter implantation L by the abdominal approach
lectures: - review of surgery; questions and answers about the procedures
- intra- and postoperative complications
wardround

wednesday 11th
wardround
surgery: five operations, all VVF-repairs including 3 very extensive fistulas
lectures; - review of surgery; questions and answers about the procedures
- urine incontinence and ist treatment
Wardround

thursday 12th
wardround
surgery: two operations, all VVF-repairs including a mutilated very extensive fistula (4 fistulas! in one patient); whilst 1 ureter was catheterized
lectures: - review of surgery; questions and answers about the procedures

full discussion of the questionaire for self-assessment
handing out of the certificates to all participants
end-evaluation by participants and facilitators
a follow-up VVF workshop is planned next year in MWANZA in Tanzania
further training at Babbar Ruga Hospital in KATSINA, in Nigeria, was offered to all participants provided they would find their own sponsoring
official closure
wardround

conclusion
it was a fine workshop, well organized with a high turn-up of patients and a high output of repairs combined with theoretical lectures
all participants expressed that they had seen and learned a lot during this workshop and wished to participate in the follow-up VVF workshop

Kees WAALDIJK, MD PhD
chief consultant fistula surgeon i/c
National VVF Project
Babbar Ruga Hospital
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KATSINA
N i g e r i a

participants

consultant gynecologists		
Dr Fiona BURSLEM	visiting consultant	GLASGOW, Scotland
Dr Marietta MAHENDEKA	Bugando Medical Center	MWANZA
Dr Gaudens KOMBA	Peramiho Mission Hospital	SONGEA
Dr August MANYANGA	Mwananyamala Hospital	DAR ES SALAAM
Dr Giliad MASENGA	KCMC	MOSHI
Dr Charles SWEKE	Selian Lutheran Hospital	ARUSHA
Dr Miriam M MGONJA	Muhimbili Medical Center	DAR ES SALAAM
consultant surgeons		
Dr Janis PERIALIS	KCMC	MOSHI
doctors		
Dr Meryl NICOL	CCBRT Hospital	DAR ES SALAAM
operation theater nurses		
Neema DAVIDS	CCBRT Hospital	DAR ES SALAAM
George GONKI	CCBRT Hospital	DAR ES SALAAM
Joyce JOSEPH	CCBRT Hospital	DAR ES SALAAM
Elly MATERA	CCBRT Hospital	DAR ES SALAAM
Christina MBUNDA	CCBRT Hospital	DAR ES SALAAM
Lucy MSANGI	CCBRT Hospital	DAR ES SALAAM

facilitators

Dr Tom RAASSEN	consultant surgeon	NAIROBI, Kenya
Dr Kees WAALDIJK	consultant fistula surgeon	KATSINA, Nigeria
Dr Meryl NICOL	CCBRT Hospital	DAR ES SALAAM

lecturers and their topics

Dr Fiona BURSLEM	spinal anesthesia
Dr Tom RAASSEN	review of surgery; Q & A
	technical aspects of VVF-surgery
	intra- and postoperative complications
Dr Kees WAALDIJK	review of surgery; Q & A
	introduction to the obstetric fistula
	immediate management: catheter/early closure
	classification of VVF
	urine incontinence and its treatment

surgery

surgery (**step-by-step demonstration/instruction of techniques**) was performed from 9.00 to 17.00 hr followed by a review of the surgical procedures and by lectures

a total of **51 procedures were performed in 50 patients**, all because of fistula or fistula-related conditions: 44 VVF-repairs, 4 RVF-repairs, 1 urethra reconstruction, 1 ureter reimplantation and 1 incision & drainage of abdominal abscess; 17 ureters were catheterized during operation in 12 patients whilst 3 ureters were found blocked; in 1 patient 600 ml methylene blue had to be instilled into the bladder before the fistula could be demonstrated intraoperatively

the facilitators demonstrated their technique(s) in 32 operations whilst the other 19 operations were perfromed by the participants under close supervision depending upon their expertise

anesthesia
spinal anesthesia is the anesthesia of choice; only the 3 abdominal repairs were performed under general anesthesia whilst the other 49 operations were performed under spinal anesthesia
since spinal anesthesia was included in the training, only 2x spinal anesthesia was given by the facilitators, the rest by the participants; in 1 patient oxygen had to be administered since the anesthesia went a bit high

some epidemiologic patient data
the majority (47) of the patients had an obstetric fistula, 2 patients had a posthysterectomy vault fistula and 1 patient a congenital rectoperineal fistula
it was interesting to note that the patients developed their obstetric fistula far later in life than in Northern Nigeria demonstrating the fact that early marriage/pregnancy has **nothing** to do with the obstetric fistula
in a large proportion (over 70%) of the patients a cesarean section (hysterectomy) had been performed for **obstructed labor with a dead infant!** at the delivery where the patients had developed their fistula
the duration of leakage at operation varied from only 22 days to 37 yr (patient who had been operated 40! times)

multiple choice questionaire
at the beginning of the workshop and the same at the end for self-assessment; with a full discussion of all the questions at the end of the workshop

venue
CCBRT Disability Hospital (Dr Tom RAASSEN & Dr Kees WAALDIJK) for practical sessions and theoretical lectures for 9 days
Muhimbili Medical Center (Dr Tom RAASSEN) for practical sessions for 2 days

actual time of workshop
9 days of roughly 10 hours making 90 hours without traveling
plus 1 saturday of 6 hours in Muhimbili Medical Center (Dr Tom RAASSEN + team)

sponsors

AMREF	DAR ES SALAAM
Netherlands Embassy	DAR ES SALAAM
SK_Foundation	Holland
TTT_Foundation	Holland

special thanks to
Dr Meryl NICOL for her smooth organization, the management of CCBRT Hospital for their interest and all the staff of CCBRT Hospital for their excellent help and support

the immediate management of fresh obstetric fistulas according to basic surgical principles (with prevention pf the patient from becoming an outcast)

kees waaldijk MD PhD
Babbar Ruga Hospital, KATSINA, Nigeria

summary

background It has been a general rule to wait with the repair of an obstetric fistula for a minimum period of 3 months allowing the patient to become an outcast. As well heavy doses of antibiotics are prescribed. In a prospective way the immediate management was studied and antibiotics were not used, all according to basic surgical principles.

methods A total of 1,716 patients with a fistula duration of 3-75 days after delivery were treated immediately upon presentation by catheter and/or early closure. Instead of antibiotics a high oral fluid regimen was instituted. The fistulas were classified according to anatomic and physiologic location in types I, IIAa, IIAb, IIBa and IIBb, and according to size in small, medium, large and extensive. The operation became progressively more complicated from type I through type IIBb and from small through extensive.

findings At first attempt 1,633 fistulas (95.3%) were closed and another 57 could be closed at further attempt(s) accounting for a final closure in 1,690 patients (98.5%). Out of these 1,690 patients with a closed fistula 1,575 (93.2%) were continent and 115 (6.8%) were incontinent. After a continence operation another 44 patients became continent; finally 71 patients (4.2%) still had severe postrepair incontinence. The results as to closure and to continence became progressively worse from type I through type IIBb and from small through extensive. Postoperative wound infection was not noted.

interpretation This immediate management proves highly effective in terms of closure and continence and will prevent the patient from becoming an outcast with progressive downgrading medically, socially and mentally. This is important since prevention of the obstetric fistula in Africa is a utopia for another 100 years, with an annual incidence of at least 100,000 new obstetric fistula patients.

introduction

It has been a generally accepted rule to wait with the repair of an obstetric vesicovaginal fistula (VVF) for a minimum period of 3 months until all the tissue reactions have subsided ((Ref 1-4)). And this passive non-management is the first step into the direction of becoming an outcast with progressive downgrading medically, socially and mentally. Also during this waiting period heavy doses of antibiotics are given routinely. However, this seems to be in sharp contrast with the established management of other necrotic lesions such as bedsores (also pressure necrosis) and burnwounds (thermal necrosis). Here routine antibiotics are considered to be malpractice and the wounds are immediately attended to, first by repeated debridement and then by covering or closure as soon as the wounds are clean. So why should the obstetric fistula be treated differently?

Over the years 1984 to 1992 an immediate management of fresh obstetric fistulas was developed according to basic surgical principles: decompression of the bladder by catheter, debridement, early closure, high oral fluid intake and no antibiotics.

A prospective study was started in August 1992, and after a preliminary report ((Ref 5)) this is a final up-to-date evaluation.

materials and methods

During the 9-year period August 1992 to August 2001, a total of 1,716 patients with an obstetric fistula of less than 3-month duration were treated according to these principles in the centers Katsina an Kano in Northern Nigeria.

At first presentation of the patient an extensive history was taken and a vaginal examination performed together with an assessment of her general condition and of other lesions due to obstructed labor.

The age of the patients varied from 14 to 41 yr, the parity varied from I to XVIII. It was interesting to note that 728 patients (42.4%) were younger than 16 years and that 937 patients (54.6%) were para I. Though less common 211 patients (12.3%) had an obstetric rectovaginal fistula (RVF) as well. A total of 1,389 patients (80.9%) had signs of an obstetric uni- or bilateral peroneal nerve motor trauma whilst other lesions such as vagina stenosis, shortening and/or stricture as well as (partial) pubococcygeus muscle loss were frequently encountered.

The duration of leakage at catheter insertion if healed by catheter only or at early closure if not healed by catheter ranged from 3 up 75 days, see Table 1.

Table 1
duration of leakage in days at catheter/surgery

	0-15	**16-30**	**31-45**	**46-60**	**61-75**	**total**
no	234	509	422	343	208	1,716
in %	13.6%	29.7%	24.6%	20.0%	12.1%	100%

The fistulas were divided into 6 types according to the following classification as used by the author in all vesicovaginal fistulas ((Ref 6)), see Table 2.

Table 2
classification of fistulasaccording to anatomic/physiologic location

	I	**IIAa**	**IIAb**	**IIBa**	**IIBb**	**III**	**total**
no	243	888	366	87	132	-	1,716
in %	14.2%	51.7%	21.3%	5.1%	7.7%	-	100%

type **I**: fistulas not involving the closing mechanism; type **II**: fistulas involving the 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; type **III**: miscellaneous, e.g. ureter and other exceptional fistulas

The size of the fistulas, as measured between fully relaxed and fully stretched, varied from 0.1 cm to 8 cm, as presented in Table 3.

Table 3
fistula size

	small < 2 cm	**medium** 2-3 cm	**large** 4-5 cm	**extensive** ≥ 6 cm	**total**
no	685	481	168	382	1,716
in %	39.9%	28.0%	9.8%	22.3%	100%

methods

When there was still necrosis, a FOLEY catheter Ch 18 was inserted and the patient instructed to drink as much as possible. The patient was examined further once a week to determine the prospects of spontaneous healing or surgery.

If there was no spontaneous healing and slough developed this was excised to speed up the cleaning and healing process. As soon as the fistula edge was clean even with some inflammation, the patients was considered to be a candidate for early surgical closure.

The patient was placed upon the operation table in the exaggerated lithotomy position with the legs flexed and abducted in stirrups. An AUVARD weighted speculum was inserted into the vagina, and a careful examination made and a classification done. The fistula edge was freshened and a dissection of the anterior vagina wall from bladder/urethra performed. The bladder/urethra was closed, most of the time transversely, with a single layer of inverting polyglycolic acid 0. In type I fistulas only simple closure was performed; in type IIAa fistulas an effort was made to restore the urethrovesical junction and its position; in type IIAb fistulas a circumferential dissection was performed followed by a circumferential repair as end-to-end vesicourethrostomy; in type IIBa and IIBb fistulas the aim was to close the fistula as a first stage and to do something about the continence in a second stage whilst type IIBb fistulas needed a circumferential dissection and circumferential repair. The bladder capacity was measured and a FOLEY balloon catheter size Ch 18 inserted. Also the elevation of the bladder neck and urethra was estimated. The anterior vagina wall was only adapted or half closed by interrupted everting nylon 0 taking very good bites, and if applicable the episiotomies were closed. A loose vagina pack soaked in acriflavine was applied for 24 hours, the procedure ended and the patient transferred to the postoperative ward.

The patient was instructed to drink as much as possible to produce a minimum of 4,000 to 6,000 ml of urine per 24 hr, and to report immediately when the catheter got blocked. If this occurred the catheter was flushed or changed for another. No uroseptics or antibiotics were ordered, either pre-, intra- or postoperatively unless when generalized sepsis or a specific infection should develop. After 14 days she was transferred to the hostel and instructed to continue drinking to sustain a high urine output. She had to report once a week as to leakage and then she was instructed again to drink.

After 4 weeks the catheter was removed and the patient instructed to pass urine immediately and frequently, and to continue drinking. One week later the intravaginal nylon sutures were removed, and a careful examination performed as to healing and continence. If the fistula had healed she had to report regularly for check-up up to 6 months postoperatively before she was allowed to resume sexual activities. At each check-up the patient was asked systematically about leakage, (in)continence and miction. Then she was examined vaginally for healing, (in)continence and elevation of the bladder neck/urethra. In any patient with persistent incontinence for more than 4 mth also a dye test was performed to exclude a minute fistula or to determine the type of incontinence.

If it had not healed she was prepared for another VVF-repair under spinal anesthesia. If it had healed with stress incontinence an operation was performed to do something about it, either by elevation of the blader neck/ urethra or as in type IIBa and IIBb fistulas by urethra reconstruction with elevation as second stage since in these patients the external urethra opening had been pulled inside the vagina with a too short nonfunctioning "urethra".

results

The results at first attempt, either by catheter or by repair, the results at more attempts, the continence rate of the closed fistulas and the final results have been compiled in table 4.

Table 4
results as to closure and continence

	no	closed	continent	incontinent	fistula	mortality
first attempt						
catheter	265	264	257	7	-	1
operation	1,451	1,369	1,270	99	76	6
total	**1,716**	**1,633**	**1,527**	**106**	**76**	**7**
in %		**95.2%**	**93.5%**	**6.5%**	**4.4%**	**0.4%**
more attempts	62	57	48	9	5	-
total		**1,690**	**1,575**	**115**	**19**	**7**
in%		**98.5%**	**93.2%**	**6.8%**	**1.1%**	**0.4%**
continence op		59	44	15	-	-
final total	**1,716**	**1,690**	**1,619**	**71**	**19**	**7**
in %	**100%**	**98.5%**	**95.8%**	**4.2%**	**1.1%**	**0.4%**

a total of 14 patients with a residual fistula and 56 patients with stress incontinence defaulted 4-7 months after first attempt resp. after the fistula had been closed

Analysis of the 76 patients with a residual fistula after first attempt according to fistula size was as follows: 9 (1.3%) of the 685 small fistulas, 21 (4.4%) of the 481 medium fistulas, 10 (6.0%) of the 168 large fistulas and 36 (9.4%) of the 132 extensive fistulas.
Analysis of these 76 patients according to fistula type gave the following results: 4 (1.6%) of the 243 type I fistulas, 20 (2.3%) of the 888 type IIAa fistulas, 27 (7.4%) of the 366 type IIAb fistulas, 7 (8.0%) of the 87 type IIBa fistulas and 18 (13.6%) of the 132 type IIBb fistulas.
Among these 76 patients there were 21 (27.6%) who had an obstetric rectovaginal fistula as well.
The final closure rate according to fistula size was: 684 (99.9%) of the 685 small fistulas, 473 (98.3%) of the 481 medium fistulas (mortality in 4), 167 (99.4%) of the 168 large fistulas and 366 (95.8%) of the 382 extensive fistulas (mortality in 3).
The final closure rate according to fistula type was: 242 (99.6%) of the 243 type I fistulas (mortality in 1), 888 (100%) of the 888 type IIAa fistulas, 353 (96.4%) of the 366 type IIAb fistulas (mortality in 6), 86 (98.8%) of the 87 type IIBa fistulas and 121 (91.7%) of the 132 type IIBb fistulas.
The 115 patients with severe postrepair stress incontinence were analysed according to fistula size as well with the following results: 3 (0.4%) of the 684 small fistulas, 35 (7.4%) of the 473 medium fistulas, 14 (8.4%) of the 167 large fistulas and 63 (17.2%) of the 366 extensive fistulas.
Analysis of these 115 patients according to fistula type showed the following: 1 (0.4%) of the 242 type I fistulas, 11 (1.2%) of the 888 type IIAa fistulas, 30 (8.5%) of the 353 type IIAb fistulas, 14 (16.3%) of the 86 type IIBa fistulas and 59 (48.8%) of the 121 type IIBb fistulas. The only patient with type I fistula was a para VII who defaulted at 4 months postoperatively.
The distance from the external opening to the fistula was $\leq$ 1.5 cm in 93 (80.9%) an even $\leq$ 1 cm in 74 (64.3%) of these 115 patients.
Out of the 115 patients with severe postrepair stress incontinence 7 showed signs of severe detrusor instability as well; these patients had a diminished blader capacity.

There were 27 patients with mild postrepair stress incontinence at 4-6 mth postoperatively which did not disturb them; they were treated by bladder drill an did not return for further treatment.
Postoperative wound infection was not noted and all the episiotomies were healed at suture removal 7-10 days after repair.
The cause of postoperative/postcatheter mortality was: use of native drugs resulting into abdominal distension with hepatorenal failure in 3 patients, severe gastroenteritis in 2 patients, cerebral malaria in 1 patients and sudden unexpected death (pulmonary thromboembolism) in 1 patient. Fifteen patients with very poor general condition in whom a catheter was inserted died within 1-3 days of admission before anything else could be undertaken, and were excluded from this study.

discussion

This is the first time a systematic prospective study has been made of immediate (surgical) intervention in fresh obstetric fistulas. It means a radical change from a passive attitude of waiting 3 months allowing the patient to become an outcast to an active surgical strategy, immediately when a patients start leaking urine post partum, the earlier the better.
Its main advantage is not only the high success rate, but especially the prevention of the girl/woman from being ostacized from her own society, her friends an even her family.
The importance of immediate bladder catheterization cannot be stressed enough since this will cure 15-20% of the patients if done within the first 4-6 weeks after delivery ((Ref 7)).
The use of antibiotics seems to be illogical as the fistula is caused by necrosis and not by infection; also the high urine output will prevent ascending urinary tract infection.
A circumferential fistula or the combination with a RVF is no contraindication though it may influence the outcome as to closure and continence.
The high success rate is comparable to, though slightly better than, that of other VVF-repairs at first or more attempts by the same surgeon in the same hospitals (sofar some 12,500 procedures). Even if the catheter cures are excluded the success rate at closure at first attempt is still high, viz. 1,369 (94.3%) out of 1,451 patients.
The dissection an operation become progressively more complicated from type I through type IIBb; the same applies to fistula size from small through extensive.
The results as to closure and to continence become progressively worse from type I through type IIBb; the same applies to fistula size from small through extensive.
Theoretically, it falls within the time of the physiologic wound healing processes, before fibrosis and scarring develop. This might account for the low rate of severe postrepair stress incontinence. The critical urethra length from continence seems to be 1.5-2 cm; if it is $\leq$ 1.5 cm there is little chance of becoming continent once the fistula has been closed.
The only exception to this management is when the fistula is complicated and the general health of the patient too poor for anesthesia.
The prevention of the obstetric fistula in Africa is a utopia for at least another 100 years since a network of 75,000 to 100,000 fully equipped and well functioning obstetric units are needed, evenly distributed throughout the inhabited part of rural Africa; who is going to pay for them, who is going to establish them and who is going to run them?
However, the prevention of the woman with an obstetric fistula from becoming an outcast is very well feasible as has been demonstrated in this study.

conclusion

The immediate management of the obstetric fistula proves highly effective in terms of closure and continence. If successful it will prevent the woman from becoming an outcast in her society and her family and will prevent her from progressive downgrading medically, socially and mentally.

This management is simple, fast, safe, effective, easy to learn and cheap, and can be applied under primitive conditions. That is exactly what is needed in developing Africa with an annual incidence of at least 100,000 new obstetric fistula patients.

recommendation

Any woman who develops an obstetric fistula should have an indwelling bladder catheter, immediately when she starts leaking urine. Then as soon as the slough has disappeared or a debridement has been done and the fistula is clean an early repair should be performed unless the fistula has healed already by catheterization.

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list of trainees

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pilot interstate workshop in KATSINA Nigeria

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Fidelia AYOK	ABU Teaching Hospital	ZARIA
Aishatu AHMED	Kofan Gayan Hospital	ZARIA
Hafsatu SULEIMAN	Rural Hospital	MAIGANA
Fatima A UMAR	Kofan Gayan Hospital	ZARIA
Abdullahi ALIYU	Kofan Gayan Hospital	ZARIA
Kabir JUMARE	Kofan Gayan Hospital	ZARIA
Kabir LUKMAN	Kofan Gayan Hospital	ZARIA
Aminu ABDULLAHI	Kofan Gayan Hospital	ZARIA
anesthetic nurse		
Abdu ALIYU	Kofan Gayan Hospital	ZARIA
theater nurses		
Aliyu ABBAS	Kofan Gayan Hospital	ZARIA
Kabir K LAWAL	Babbar Ruga Hospital	KATSINA
attendants		
Isa ADAMU	Kofan Gayan Hospital	ZARIA
Umaru YUSHA'U	Kofan Gayan Hospital	ZARIA
Ahamadu ABDU	Kofan Gayan Hospital	ZARIA
logistics		
Abdullahi HARUNA	ACNO Babbar Ruga Hospital	KATSINA
facilitators		
Dr Lawal KHALID	ABU Teaching Hospital	ZARIA
Dr Abdulrasheed YUSUF	Babbar Ruga Hospital	KATSINA
Aliyu ABBAS	Kofan Gayan Hospital	ZARIA
Kabir K LAWAL	Babbar Ruga Hospital	KATSINA
Kees WAALDIJK, MD PhD	Babbar Ruga Hospital	KATSINA

first VVF workshop in DAR ES SALAAM Tanzania

consultant gynecologists		
Dr Fiona BURSLEM	visiting consultant	GLASGOW, Scotland
Dr Marietta MAHENDEKA	Bugando Med Center	MWANZA
Dr Gaudens KOMBA	Peramiho Mission Hosp	PERAMIHO_SONGEA
Dr August MANYANGA	Mwananyamala Hospital	DAR ES SALAAM
Dr Giliad MASENGA	KCMC	MOSHI
Dr Charles SWEKE	Selian Lutheran Hosp	ARUSHA
Dr Miriam M MGONJA	Muhimbili Med Center	DAR ES SALAAM
consultant surgeon		
Dr Janis PERIALIS	KCMC	MOSHI
doctors		
Dr Meryl NICOL	CCBRT Hospital	DAR ES SALAAM
operation theater nurses		
Neema DAVID	CCBRT Hospital	DAR ES SALAAM
George GONKI	CCBRT Hospital	DAR ES SALAAM
Joyce JOSEPH	CCBRT Hospital	DAR ES SALAAM
Elly MATERA	CCBRT Hospital	DAR ES SALAAM
Christina MBUNDA	CCBRT Hospital	DAR ES SALAAM
Lucy MSANGI	CCBRT Hospital	DAR ES SALAAM
facilitators		
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