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
national vvf project nigeria

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kees waaldijk  MD PhD
chief consultant fistula surgeon
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the general rule to wait at least 3 months is obsolete and ...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 improve 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 fascio-colposuspension. 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.
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 girls/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 government is also increasing since the officials understand that this is a priority.

national training center
this is functioning though more doctors and nurses could be trained

KATSINA
Most research is being done in this center. Also the government 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 disintegrating 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
### annex II
surgery 1984-2001

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</table>

*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

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known performance of trainees

Dr Said AHMED
Dr Idris HALLIRU
Dr Immam AMIR
Dr Ilyasu ZUBAIRU
Dr Yusha’u ARMIYA’U
Dr Aliyu SHETTIMA
Dr Bello Samaila
Dr Hassan WARA
Dr Jabir MOHAMMED
Dr Aminu SAFANA
Dr Abdulrasheed YUSUF
Dr Idris ABUBAKAR
Dr Isah I SHAFI’I
Dr Djangnikpo LUCIEN

over 1,350 repairs
over 700 repairs
over 600 repairs
over 550 repairs
over 400 repairs
over 400 repairs
over 350 repairs
over 350 repairs
over 250 repairs
over 150 repairs
over 150 repairs
over 100 repairs
over 100 repairs
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

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first edition January 1992

last edition September 2001
short notes/checklist on VVF/RVF

VVF: **VesicoVaginal Fistula**, an abnormal connection between the bladder and the vagina: a urine fistula

RVF: **RectoVaginal Fistula**, 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
seldonly (partial) loss of cervix/uterus
loss of labia minora
(partial) loss of pubococygeus 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 mother; 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 AUVRAND 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 IIa:  closure and elevation of bladder neck
   type IIb:  circumferential repair by end-to-end vesicourethrostomy
   type IIb:  + 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 the dye no lie

**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 $\leq 4$ 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
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 so that 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 hematinsics

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  

II  midvaginal fistulas  
   a  without rectum stricture  
   b  with rectum stricture  

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 degrees 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 so that it cannot move; after each ml it is checked if the needle is still inside the dural sac by releasing the pressure on the plunger. 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

continence/closing mechanism: sagittal

figure 2

utorus

bladder

© kees

© kees
**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. encourage 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

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 Salaam
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 cofacilitate 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, Comprehensive Community Based Rehabilitation in Tanzania 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.
- Classification of VVF.

Wednesday 4th
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

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

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 performed; 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

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

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 questionnaire 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
P.O.Box 5
KATSINA
Nigeria
participants

consultant gynecologists
Dr Fiona BURSLEM visiting consultant GLASGOW, Scotland
Dr Marietta MAHENDEKA Bugando Medical Center MWANZA
Dr Gaudens KOMBA Peramiho Mission HospitalSONGEA
Dr August MANYANGA Mwananyamala Hospital DAR ES SALAAM
Dr Giliad MASENGA KCMC MOSHI
Dr Charles SWEKE Selian Lutheran Hospital ARUSHA
Dr Miriam M MГОNJA 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 anesthesis
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 (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 performed 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 questionnaire
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 of 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>
<thead>
<tr>
<th>duration of leakage in days at catheter/surgery</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-15</td>
</tr>
<tr>
<td>no</td>
</tr>
<tr>
<td>in %</td>
</tr>
</tbody>
</table>

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>
<thead>
<tr>
<th>classification of fistulas according to anatomic/physiologic location</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
</tr>
<tr>
<td>no</td>
</tr>
<tr>
<td>in %</td>
</tr>
</tbody>
</table>
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>
<thead>
<tr>
<th>fistula size</th>
</tr>
</thead>
<tbody>
<tr>
<td>small</td>
</tr>
<tr>
<td>&lt; 2 cm</td>
</tr>
<tr>
<td>no</td>
</tr>
<tr>
<td>in %</td>
</tr>
</tbody>
</table>
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 IIa 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 bladder 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

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

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 ≤ 1.5 cm in 93 (80.9%) an even ≤ 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 and 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 patient 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 patient starts 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 and 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 IIb; 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 IIb; 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 < 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.

**references**
5 Waaldijk K: the immediate surgical management of fresh obstetric fistulas with catheter and/or early closure. Int J Gynecol Obstet 45: 11-16, 1994
independent consultant gynecologists
Dr Said AHMED VVF Center, HADEFIA
Dr Djangnikpo LUCIEN Maternité Centrale, ZINDER

present deputy surgeons
Dr Hassan Ladan WARA VVF Center, B/KEBBI
Dr Immam AMIR Laure Fistula Center, KANO
Dr Abdulrasheed YUSUF Babbar Ruga Fistula Hospital, KATSINA

past deputy surgeons
Dr Yusha'u ARMIYA'U Babbar Ruga Fistula Hospital, KATSINA
Dr Shehu BALA
Dr Idris HALLIRU
Dr Jabir MOHAMMED
Dr Aminu SAFANA
Dr Isah Ibrahim SHAFI'I
Dr Idris S ABUBAKAR Laure Fistula Center, KANO
Dr Said AHMED
Dr Mohammed Mukhtar HAMZA
Dr Iliyasu ZUBAIRU
Dr Bello Samaila CHAFE Jummai Fistula Center, SOKOTO
Dr Sa'ad IDRIS Federal Medical Center, GUSAU

general doctors with at least 3 yr surgical experience
Dr (Mrs) Hauwa M ABDULLAHI Kano State
Dr Garba Mairiga ABDULKARIM Borno State
Dr Umar Faruk ABDULMAJID Katsina State
Dr Ibrahim ABDULWAHAB Niger State
Dr Idris S. ABUBAKAR Kano State
Dr Kabiru ABUBAKAR Kano State
Dr Abdu ADO Katsina State
Dr Mohammed I AHMAD Jigawa State
Dr Said AHMED Jigawa State
Dr Labaran Dayyabu ALIYU Kano State
Dr Yusuf ALIYU Kaduna State
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Dr Ebenezer APAKE Taraba State
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Kaduna State
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Jigawa State
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Kano State
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Zamfara State
Dr Sa’ad IDRIS  
Zamfara State
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Kogi State
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Katsina State
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Katsina State
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Sokoto State
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Adamawa State
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Kano State
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Kwara State
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Kano State
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Kano State
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Kebbi State
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Adamawa State
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Katsina State
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Kano State

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ZARIA
Dr Yomi AJAYI  
IBADAN
Dr Francis AMAECHI  
ENUGU
Dr Nosa AMIENGHEME  
ILE-IFE
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ILORIN
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ENUGU
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ENUGU
Dr Ishaya Chuwang PAM  
JOS
Dr Abdullahi Jibril RANDAWA  
ZARIA
Dr Mansur Suleiman SADIQ  
KANO
Dr Dapo SOTILOYE  
ABEOKUTA
senior registrars in anesthesia
Dr Saidu BABAYO Bauchi State
Dr Abdulmummuni IBRAHIM Katsina State

visiting consultants in gynecology/surgery/urology
Dr Joel ADZE KADUNA, Nigeria
Prof Dr Shafiq AHMAD PESHAWAR, Pakistan
Dr Said AHMED HADEJIA, Nigeria
Dr Tajudeen Adebowale AIYEDUN GUSAU, Nigeria
Prof Dr Fons A AMAYE-OBU NEW YORK, USA
Dr Abdulmalik BAKO ZARIA, Nigeria
Dr Frits DRIESSEN NIJMEGEN, Holland
Dr Aliyu Muhammad EL-LADAN KATSINA, Nigeria
Dr Kabir K.D. GARBA KATSINA, Nigeria
Prof Dr Jelte DE HAAN MAASTRICHT, Holland
Dr Tijjani Mamman HINA ZINDER, Niger
Dr Vivian HIRDMAN STOCKHOLM, Sweden
Dr Jonathan KARSHIMA JOS, Nigeria
Dr Julius M KIIRU NAIROBI, Kenya
Dr Djangnikpo LUCIEN ZINDER, Niger
Prof Dr Oladosu OJENGBEDE IBADAN, Nigeria
Dr Okay Richard ONYEBUCHI ABAKALIKI, Nigeria
Dr Thomas J.I.P. RAASSEN NAIROBI, Kenya
Dr Ruben A. ROSTAN MASANGA, Sierra Leone
Dr Wim SNELLER LEIDEN, Holland
Dr Melah George SULE GOMBE, Nigeria
Dr Walter SCHMIDT NUERNBERG, Germany
Dr Augustine Chibuzor UMEZULIKE ABUJA, Nigeria
Dr Pieter L VENEMA Den HAAG, Holland
Dr Ulrich WENDEL BESIGHEIM, Germany
Dr E.E. ZAKARIA FUNTUA, Nigeria
Dr Yacouba ZANRÉ OUAGADOUGOU, Burkina Faso

medical anthropologist
Sandra BOER AMSTERDAM, Holland

sociologist
Dan_Daoura YAOU Département du Zinder

physiotherapists
Garba M FAGGE Kano State

nurses
Mohammed B A ADAMU Adamawa State
Rauta I BENNETT Bauchi State
Hauwa D HERIJU  
Martha F MSHEH’A  

Borno State

Aliyu ABBAS  
Aminu ABDULLAHI  
Aishatu AHMED  
Dahiru HALIRU  
Theresa INUSA  
Hajara S MUSA  
Sara SALEH  
Fatima A UMARU  
Alheri YAKUBU  

Kaduna State

Herrietta ABDALLAH  
Umma ABUBAKAR  
Florence AJAYI  
Esther AUDU  
Hauwa BELLO  
Sherifatu A JIMOHO  
Ramatu DAGACHI  
Amina KABIR  
Kutaduku B MARAMA  
Hadiza MOHAMMED  
Mairo A MOHAMMED  
Mabel A OBAIREMI  
Comfort OYINLOYE  
Rabi RABI‘U  
Maijiddah SAIDU  
Amina Abdu SALIHI  
Ummi Bello SANI  
Bilkisu SULEIMAN  
Amina UMARU  
Habiba A USMAN  

Kano State

Hamisu ABDULLAHI  
Rakiya ABUBAKAR  
Ramatu ADAMU  
Adetutu S AJAGUN  
Magajiya ALIYU  
Taibat AMINU  
Saratu GAMBO  
Hauwa GARBA  
Halima IBRAHIM  
Gambo LAWAL  
Kabir K LAWAL  
Ladi H MOHAMMED  
Halima I NOCK  
Oguguo OKOH  
Saratu S SALEH  
Faruk SAMBO  
Alia USMAN  

Katsina State

Aishatu M ANARUWA  
Safiya Isa MANGA  

Kebbi State
Aishatu Y MOHAMMED  
Aishatu SAMBAWA  
Kulu A SHAMAKI  

Kebbi State

Leah T AMGUTI  

Kogi State

Hajara JOSEPH  
Dorcas NATHANIEL  
Hauwa TAUHID  

Niger State

Rhoda T AGANA  
Victoria S HARRI  
Lami PAM  

Plateau State

Esther ADAMU  
Beatrice AKINMADE  
Deborah AKUBO  
Fatima ARZIKA  
Binta Malami KALGO  
Aishatu MOHAMMED Birnin_Kebbi  

Sokoto State

Elizabeth Y GAJE  

Yobe State

anesthesia nurses
Philip Joseph KITHONGA  
Jibo Adamou ZINDER  
Hadiza GALADIMA  
Salamatou ADAMOU  

MACHAKOS, Kenya  
ZINDER, Rep du Niger  
SOKOTO  
ZINDER

operation theater nurses
Mohammed B A ADAMU  
Aliyu ABBAS  
Aminu ABDULLAHI  
Dahiru HALIRU  

Adamawa State  
Kaduna State  

Kano State

Umma ABUBAKAR  
Florence AJAYI  
Mairo ALIYU  
Ramatu DAGACHI  
Hadiza ISAH  
Amina KABIR  
Hadiza MOHAMMED  
Rabi RABIU  
Maijiddah SAIDU  
Amina Abdu SALIHI  
Ummi Bello SANI  

Hamisu ABDULLAHI  
Rakiya ABUBAKAR  

Katsina State
Adetutu S AJAGUN
Taibat AMINU
Saratu GAMBO
Mohammed HASHIMU
Halima IBRAHIM
Gambo LAWAL
Kabir K LAWAL
Hauwa MAMMAN
Faruk SAMBO
Alia USMAN

Fatima ARZIKA
Sokoto State

Souëba LAOUALI
Dadimi BAGANA
Département de Zinder

nurses/midwives from Republique du Niger
Zakari AYOUBA
Maimouna Saidou BAGNA
MARADI

Salamatou ADAMOU
Hadiza ALI
Dadimi BAGANA
Fassouma BRAH
Hadizatou IBRAHIM
Salamatou ADAMOU
ZINDER

theater attendants
Makama MAMOUDA
ZINDER

other nurses/midwives
Feonagh COOKE
Sierra Leone

workshops

pilot workshop in MACHAKOS Kenya

consultants gynecology
Dr Caleb ACHAPA
African Highland Hospital
KERICHO
Dr David Wekesa KAPANGA
Machakos General Hospital
MACHAKOS
Dr Abdallah KIBWANA
Coast Province General Hospital
MOMBASA
Dr J M KIRIU
Kiambu District Hospital
KIAMBU
Dr Simon W MUEKE
Machakos General Hospital
MACHAKOS
Dr Muia NDAVI
University of Nairobi
NAIROBI
Dr Frederick O NDEDE
Provincial General Hospital
NAKURU
Dr Zahida QURESHEI
Kenyatta National Hospital
NAIROBI
Dr Khisa W WAKASIKA
Kenyatta National Hospital
NAIROBI

anesthetic nurse
Philip Joseph KITHONGA
Machakos General Hospital
MACHAKOS

facilitators
Dr Thomas RAASSEN
consultant surgeon at AMREF
NAIROBI
Kees WAALDIJK, MD PhD
Babbar Ruga Hospital
KATSINA

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pilot interstate workshop in KATSINA Nigeria

Federal Ministry of Health
Dr Mope OLANUSI assistant director ABUJA
Hospital Management Board
Dr Jabir MOHAMMED general manager KATSINA
consultant gynecologists
Dr Djangnikpo LUCIÉN Maternité Centrale ZINDER Niger
Dr Aliyu EL_LADAN Maternity Hospital KATSINA
Dr Tajudeen A AIYEDUN Federal Medical Center GUSAU

doctors/surgeons/gynecologists
Dr Idris A HALLIRU deputy surgeon B/RUGA KATSINA
Dr Sa’ad IDRIS West Cumberland Hospital DUBLIN, Eire
Dr Imam AMIR Murtala Muhammad Specialist Hospital KANO
Dr Abdurasheed YUSUF Babbar Ruga Hospital KATSINA

nurses
Mairo A KURFI nurse/superintendent prisons KATSINA
Sani ABU chief nursing officer i/c B/RUGA KATSINA
Abdullahi HARUNA assistant chief nursing officer KATSINA
Kabir K LAWAL theater nurse i/c B/RUGA KATSINA
Nafisat A AJAGUN postoperative nurse i/c B/RUGA KATSINA
Gambo L KUSA theater nurse B/RUGA KATSINA
Hajara T MOHAMMED matron i/c MAWCH SOKOTO
Fatima ARZIKA theater nurse MACWH SOKOTO

theater attendants
Idris AUDU operation theater B/RUGA
Audu IDRIS operation theater B/RUGA
Sale ISAH operation theater B/RUGA

logistics
Abdullahi HARUNA Babbar Ruga Hospital KATSINA

facilitators
Dr Idris HALLIRU Babbar Ruga Hospital KATSINA
Kabir K LAWAL Babbar Ruga Hospital KATSINA
Kees WAALDIJK, MD PhD Babbar Ruga Hospital KATSINA

Zamfara State workshop in GUSAU Nigeria

doctors/surgeons/gynecologists
Dr Ibrahim Adamu BATURE King James Hospital DUBLIN, Eire
Dr Abubakar DANLADI University Teaching Hospital ILORIN
Dr Sa’ad Idris General Hospital GUSAU
Dr AbdEllatif MOHAMMED El Salam General Hospital CAIRO, Egypt
Dr Lawal Umaru BUNGUDU Higher Medical Institute PLOVDIV, Bul

nurses
Binta ATTAHIRU ACNO Faridat Yakubu VVF Center GUSAU
Mohammadu MALAMI ACNO General Hospital GUSAU
Fatima Lami MOHAMMED SNM Faridat Yakubu VVF Center GUSAU
Hussaina SALAMI ACNO Faridat Yakubu VVF Center GUSAU
Christiana TSABA SNO Faridat Yakubu VVF Center GUSAU

attendants
Hamidu ATTAHIRU Faridat Yakubu VVF Center GUSAU
Murtala HALLIRU Faridat Yakubu VVF Center GUSAU

logistics
Abdullahi HARUNA Babbar Ruga Hospital KATSINA
facilitators
Dr Idris HALLIRU Babbar Ruga Hospital KATSINA
Dr Tajudeen A AIYEDUN Federal Medical Center GUSAU
Kabir K LAWAL Babbar Ruga Hospital KATSINA
Kees WAALDIJK, MD PhD National VVF Project Federal Min of Health

Pilot workshop in Zinder République du Niger
consultant gynecologists
Dr Djangnikpo LUCIEN Maternité Centrale ZINDER
Dr Somana HAMA Maternité GAZOBI NIAMEY
Dr Tchambou DOULAY DS MIRRIAH
Dr Canut NKEBEREZA ONG Esperance ZINDER
Dr Idrissa HASSANE Centre Hosp Départ DOSSO
doctors/surgeons/gynecologists
Dr Abdulrasheed YUSUF B/Ruga Hospital KATSINA

nurses
Kabir K LAWAL theater nurse i/c B/Ruga KATSINA
Kindo ZAMO superintendent Matern Centr ZINDER
Bagana DADIMI IDE Maternité Centrale ZINDER
Fatsouma BRAH IDE Maternité Centrale ZINDER
Souëba LAOUAL IDE Maternité Centrale ZINDER
Maimun BARO-AJOU surveillante Maternité Centr ZINDER

midwives
Rabi Ali NOCTAR sage femme CNSS ZINDER
anesthetist nurses
Djibo ADAMOU Maternité Centrale ZINDER
Salamatou ADAMOU Maternité Centrale ZINDER
Ibrahim ADAMOU Maternité Centrale ZINDER

social workers
Dan Daoura YAOU ONG ZINDER
Hadéza Bala ALI Maternité Centrale ZINDER

officials
Malam MAHAMAN SR/DDS/ZR ZINDER
Ibrahim HADIJABOU président adjunte ONG ZINDER
Marie Marian Bello MATHIEU DDDS/P/PF/PE ZINDER

logistics
Abdullahi HARUNA ACNO in B/Ruga KATSINA
Kindo ZAMO Maternité Centrale ZINDER

facilitators
Dr Djangnikpo LUCIEN Maternité Centrale ZINDER
Kabir K LAWAL Babbar Ruga Hospital KATSINA
Kees WAALDIJK, MD PhD Babbar Ruga Hospital KATSINA

Kaduna State workshop in Zaria Nigeria
consultant urologist
Dr Lawal KHALID ABU Teaching Hospital ZARIA
senior registrar in gynecology/obstetrics
Dr Mohammed A ABDUL ABU Teaching Hospital ZARIA
doctors
Dr UMAR M MOHAMMED General Hospital GIWA
Dr ADO Z MOHAMMED Kofan Gayan Hospital ZARIA
Dr Abdulrasheen YUSUF Babbar Ruga Hospital KATSINA

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nurses/midwives
Fidelia AYOK
Aishatu AHMED
Hafsatu SULEIMAN
Fatima A UMAR
Abdullahi ALIYU
Kabir JUMARE
Kabir LUKMAN
Aminu ABDULLAHI
anesthetic nurse
Abdu ALIYU
theater nurses
Aliyu ABBAS
Kabir K LAWAL
attendants
Isa ADAMU
Umaru YUSHA’U
Ahamadu ABDU
logistics
Abdullahi HARUNA
facilitators
Dr Lawal KHALID
Dr Abdulrasheed YUSUF
Aliyu ABBAS
Kabir K LAWAL
Kees WAALDIJK, MD PhD

first VVF workshop in DAR ES SALAAM Tanzania
consultant gynecologists
Dr Fiona BURSLEM
Dr Marietta MAHENDEKA
Dr Gaudens KOMBA
Dr August MANYANGA
Dr Gilliad MASENGA
Dr Charles SWEKE
Dr Miriam M MGONJA
consultant surgeon
Dr Janis PERIALIS

doctors
Dr Meryl NICOL

operation theater nurses
Neema DAVID
George GONKI
Joyce JOSEPH
Elly MATERA
Christina MBUNDA
Lucy MSANGI
facilitators
Dr Meryl NICOL
Dr Tom RAASSEN
Kees WAALDIJK, MD PhD