

# **national vvf project nigeria**

evaluation report VI

1994

**reprint**

Babbar Ruga Fistula Hospital  
KATSINA

and

Laure Fistula Center  
KANO

and

Jummai Fistula Center  
SOKOTO

by

Kees WAALDIJK

reprint

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VVF-projects

Babbar Ruga Fistula Hospital  
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SOKOTO

by

Kees WAALDIJK



**sixth evaluation report**  
**VVF-projects KANO and KATSINA**

**introduction**

Despite the volatile political situation and the severe fuel scarcity, it has been possible to implement the majority of our programme for 1994. This implies that our activities have stabilized.

In December the United Nations Development Programme called for another round of discussions as there was a major cutback in the financial resources for the agreement between UNDP and Federal/Kano State/Katsina State Government. The period had to be shortened to 2 years and almost all of the original plans were changed without consulting/involving the people who have to execute the VVF-programme. At the moment it is not clear in what respect it will affect our programme. The contract has been signed with the Federal Government, but not yet with Kano and Katsina State. However, we are already 1 yr late, and I wonder if we have to do all the work within the last (half) year which will then not be possible. It is a pity as not only the consultant spent one full week for nothing in now useless planning and discussions at the original meetings, but many more people.

The programme between the Netherlands Government and the National Coalition on VesicoVaginal Fistula is going on like planned. Especially the training of doctors and nurses could continue.

The number of postoperative beds in KANO could be increased from 20 up to 40 as the new postoperative ward was completed in November 1994.

I am very happy to announce that Sokoto State will be the next state where we shall start another VVF-service as the whole project has to be expanded. For project document, objectives etc. see annexes. For years already there was an urgent need to do something about the VVF-patients in Sokoto State as their number is the same as in Katsina and Kano state.

**long-term objectives**

To establish a lasting VVF-service with ultimately the total eradication of the obstetric fistula.

**lasting VVF-service**

In KANO and KATSINA a VVF-repair service with training of doctors and nurses has been established.

**prevention**

The prevention of VVF with reduction in its incidence and ultimately its eradication can only be achieved by education, education and education!

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

As the relation between early marriage and the obstetric fistula is negligible we should concentrate on the real issue, viz. to establish a network of functioning obstetric units throughout Africa.

N.B. Legislation of banning early marriage will not prevent the obstetric fistula as then the woman will get her fistula 3-5 years later. We should not use the wrong arguments for the right cause.

After a preliminary study we found that the pubic arch/angle was too narrow in 50-70% of all the patients; this will not improve when the girls grow older and will always be a cause of obstructed labor.

I cannot not stress this enough as a lot of people, including health professionals, are of the opinion that when early marriage is banned, the obstetric fistula will disappear from the developing world.

However, the obstetric fistula will only disappear if any obstructed labor is relieved in time, i.e. by CS within 3 hours, whatever the cause!

### **short-term objectives**

#### **KATSINA**

Water supply:

In addition to the 6 functioning wells, two bore holes have been drilled inside the hospital compound by KTARDA. A handpump has been mounted on one, also by KTARDA, and a submersible pump on the other, as a small embassy project of the Dutch Government. It will serve roughly 1,500 persons with reliable drinking water, a major asset.

Transport:

The PEUGEOT J5 bus donated by the Netherlands Government to Babbar Ruga Hospital will solve the transportation problem for the coming 8-10 years.

International Training Center:

We are completely set and fit now to train different cadres of doctors/nurses from all over Africa. For a smooth coordination we would like to liaise with WHO and NTFVVF.

#### **KANO**

The new Amina SAMBO postoperative ward with 20 beds has been completed with the main contribution by the Kiwani Club ALPHEN a/d RIJN. It was commissioned in December, and we shall start using it from January 1995 onwards. This will increase the number of operations by 50% up to 600 repairs a year in 1995.

As NEPA is unreliable there is need for a small 7.5 kVA standby generator for the theater to ensure that we can operate at all times. Otherwise the electric autoclave cannot be used for sterilizing. The electricity problem was responsible for the fact that almost on every operation day 1 repair less was done than planned, i.e. a total of 50-60 for this year.

**In both centers KANO and KATSINA there is an urgent need for 2 hydraulic high-quality operation tables; so four in total**

N.B. Under the UNDP agreement the two operation tables were cancelled and under the agreement between the Netherlands Government and the National Task Force on VVF the money will perhaps not even be sufficient (devaluation/inflation of the naira) to buy one table only. So instead of the four operation tables as planned we shall be happy if we get only one; and even that one will not be of the same quality as needed.

### **activities**

postgraduate training (see Annex I)

After many years of intensive training all types of health personnel in the management of VVF/RVF, we are now ready to to expand our services to other countries as the problem is all over Africa with 1.5-2 million VVF-patients waiting for surgery.

#### **deputy surgeons**

Two interested indigenous doctors have to be selected, one from Kano State and the other from Katsina State. An intensive training programme will be set up sothat in due time they will be able to take care of the centers more or less on their own, and the consultant will have time to concentrate on expansion of the project first throughout the rest of (Northern) Nigeria and eventually throughout the whole of (West) Africa.

#### **general doctors/senior registrars/visiting consultants**

Sofar, a total of **42** doctors have been trained or attended our programmes in KANO and KATSINA

### **one-month postgraduate training course for nurses**

A total of 40 Nigerian nurses from all over the Federation attended and completed the course.

For this I have to praise Mr Kabir LAWAL and Mrs Hadiza MOHAMMED.

### surgery (see Annex II)

In KANO we performed 373 VVF-repairs and 43 RVF-repairs and in KATSINA 496 VVF-repairs and 45 RVF-repairs whilst in SOKOTO 42 VVF-repairs were performed by Dr Bello S CHAFE making a total of 999 VVF/RVF-repairs during 1994. The 1,000 mark was not reached this year mainly as the electricity supply in KANO was insufficient which was almost 1 operation daily less than planned.

## research

### **generally**

Almost all problems related to VVF-surgery have been solved except postoperative urge incontinence due to detrusor instability.

However, it seems that 2-3 out of 1,000 fistula patients are not operable under our conditions right from the beginning. They present with extensive fistula, subtotal bladder loss, narrow pubic angle and severe funnel-shape vagina stenosis.

### **VVF-surgery**

Having started already in 1989 with the **circumferential repair** of the **circumferential fistula**, this seems to be the theoretical and practical solution for these difficult fistulas.

### **immediate surgical management; by means of catheter and/or early closure**

Our standard treatment for patients with a fistula duration of less than 3 months can be recommended to any fistula surgeon.

This management is in line with basic surgical principles: extirpation of necrotic tissue, no antibiotics and closure as soon as it is clean.

Already some 650 patients have been treated in the 2 years since we started with a success rate of almost 95%!

### **RVF-surgery**

Also here a start was made with early closure but an evaluation of the results has not yet been done.

### **micturition under supervision**

As several patients stop drinking due to the leaking when they are incontinent, a new programme was started whereby under supervision they are instructed to drink as much as possible and to pass urine frequently up to 100 times a day.

## administration/documentation

### **database** (see Annexes)

There has been a delay in establishing a computerized relational dBase programme mainly due to problems with the structure.

### **teaching materials** (see Annexes)

The short notes/checklist on VVF have been updated. The surgical handbook especially destined for the indigenous African doctors **step-by-step surgery of vesicovaginal fistula** has been published in December 1994, of which some 2,500 copies were sponsored by the following organization:

SIMAVI  
Spruitenbosstraat 6  
NL 2021 LK HAARLEM  
The Netherlands  
fax: (.31) 23 318538

Within the five following African countries 500 copies each will be distributed free of charge: Ghana, Kenya, Nigeria, Tanzania and Uganda

### **conclusion**

For Kano State and Katsina State a functioning VVF-service has been established including a training programme for doctors and nurses from all over the Federation of Nigeria.

Time has come now to expand the programme, first to the other 29 States of (Northern) Nigeria and then to the rest of (West) Africa.

### **SOKOTO**

Sokoto State is one of the oldest created states of the Federation and is bordering Katsina State, Kaduna State, Kebbi State, Niger State and Niger Republic.

The VVF-problem is as extensive as in the rest of (Northern) Nigeria, and some patients used to come either to KATSINA or KANO for their repairs.

Therefore it was decided a long time ago to do something about the VVF-situation in Sokoto State as well and a VVF center was built.

The Jummai Yahaya Abdulkarim Ward is part of the Specialist Hospital Sokoto and was commissioned in April 1993. As there were no equipment and the people had not been trained it took till August 1994 before some action was undertaken. Then after Dr Bello CHAFE had been trained in Babbar Ruga and two nurses Mrs Beatrice AKINMADE and Mrs Esther ADAMU in Laure, the VVF work was started and already in 1994 it was possible to perform 42 VVF-repairs with a success rate of over 90% at first attempt!

The Jumai Fistula Center consists of the following:

- a. 10 preoperative beds,
- b. a very large theater where easily two teams can perform operations as there is a partition in the middle, and
- c. 20 postoperative beds.
- d. offices for doctors and sisters
- e. sanitary facilities.

The buldings are fine, and the power supply and water supply seem to be functioning (all within the normal limitations) but the equipment is faulty and a hostel is needed.

The following is needed for a good functioning of this center:

- I. a 40- or 50-bed hostel, preferably outside the hospital compound as the hospitals are all overcrowded.
- II. the operation table is just manageable and needs replacement
- III. the autoclave is faulty; if repairing is not possible it needs replacement
- IV. the instruments are below any standard and a full set of new instruments are needed



Immediately next year after introductory discussions the consultant will visit this center once a month for 3 days for the following purposes:

- a. to help with the management of the place
- b. to train doctors on the job
- c. to train them continuously
- d. to perform the difficult repairs
- e. to maintain the normal VVF-standards
- f. to promote training of all the staff

It must be possible to perform some 200 repairs in this center next year with an increase of 50 operations each following year up to some 400-450 repairs a year. If there is a hostel, then the preoperative beds can be converted to postoperative beds and then the theoretic capacity will be up to 600-675 repairs a year which seems to be more than sufficient comparing the experience in KATSINA and KANO.

A complete project document will be produced for 5 years with step-by-step implementation of the programme with the emphasis on training and doing as many repairs as possible.

P.S.

**what about the rest of the 1,5-2 million VVF-patients in Africa?**

an International Obstetric Fistula Foundation is long overdue!!!

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chief consultant surgeon i/c

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KATSINA

and

Laure Fistula Center

Murtala Muhammad/Bayero University Teaching Hospital

KANO

and

Jummai Fistula Center

Specialist Hospital

SOKOTO

**annex I**  
**list of trainees**

general doctors with at least 3 yr surgical experience

Dr Idris S. ABUBAKAR	Kano State
Dr Abdu ADO	Katsina State
Dr Mohammed I AHMAD	Jigawa State
Dr Said AHMED	Jigawa State
Dr Yusha'u ARMIYA'U	Katsina State
Dr Shehu BALA	Katsina State
Dr Bello Samaila CHAFE	Sokoto State
Dr Umaru DIKKO	Kano State
Dr Gyang DANTONG	Plateau State
Dr James O. FAGBAYI	Kwara State
Dr Zubairu ILIYASU	Adamawa State
Dr Benedict ISHAKU	Plateau State
Dr Momoh Omuya KADIR	Kogi State
Dr Hassan LADAN	Kebbi State
Dr Linda MAMMAN	Adamawa State
Dr Gamaliel Chris MONDAY	Plateau State
Dr Ibrahim MUHAMMAD	Jigawa State
Dr Dunawatuwa A.M. MUNA	Borno State
Dr Yusuf Baba ONIMISI	Kano State
Dr Aminu SAFANA	Katsina State
Dr Isah Ibrahim SHAFI'I	Kebbi State
Dr (Mrs) Yalwa USMAN	Kano State
Dr Munkaila YUSUF	Kano State

senior registrars

Dr Yomi AJAYI	IBADAN
Dr Nosa AMIENGHEME	ILE-IFE
Dr Lydia AUDU	SOKOTO
Dr Ini ENANG	ZARIA
Dr Nestor INIMGBA	PORTHARCOURT
Dr Jesse Yafi OBED	MAIDUGURI
Dr Mansur Suleiman SADIQ	KANO
Dr Dapo SOTILOYE	ILORIN
Dr Emmanuel UDOEYOP	JOS
Dr (Mrs) Marhyya ZAYYAN	KADUNA

residents in anaesthesia

Dr Abdulmumuni IBRAHIM	Katsina State
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visiting consultants

Prof Dr Shafiq AHMAD	PESHAWAR, Pakistan
Dr Frits DRIESSEN	NIJMEGEN, Holland
Prof Dr Jelte DE HAAN	MAASTRICHT, Holland
Dr Vivian HIRDMAN	STOCKHOLM, Sweden
Prof Dr Oladosu OJENGBEDE	IBADAN, Nigeria
Dr Ruben A. ROSTAN	MASANGA, Sierra Leone
Dr Ulrich WENDEL	REUTLINGEN, Germany

nurses

Mohammed B A ADAMU	Adamawa State
Rauta I BENNET	Bauchi State
Hauwa D HERIJU Martha F MSHEH'A	Borno State
Theresa INUSA Hajara S MUSA Sara SALEH Fatima A UMARU	Kaduna State
Herrietta ABDALLAH Esther AUDU Hauwa BELLO Sherifatu A JIMOH Ramatu DAGACHI Kutaduku B MARAMA Mairo A MOHAMMED Mabel A OBAYEMI Comfort OYINLOYE Amina UMARU Habiba A USMAN	Kano State
Adetutu S AJAGUN Magajiya ALIYU Taibat AMINU Hauwa GARBA Halima IBRAHIM Ladi H MOHAMMED Halima I NOCK Saratu S SALEH	Katsina State
Aishatu M ANARUWA 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 PAN	Plateau State
Esther ADAMU Beatrice AKINMADE	Sokoto State
Elizabeth Y GAJE	Yobe State

annex IIVVF/RVF-repairs in Laure/Babbar Ruga/Jummai Fistula Centers

	KANO		KATSINA		SOKOTO		grand total
	VVF	RVF	VVF	RVF	VVF	RVF	
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
total	1,607	147	3,798	277	42	-	<b>5,871</b>

**total VVF-repairs** and related operations: **5,447**

**total RVF-repairs** and related operations: **424**

**total:** **5,871**

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

**success** rate at **RVF** closure roughly **75%** per operation

\* sabbatical leave consultant for 6 mth

**a surgical classification of obstetric fistulas as based on  
a personal experience in over 3,500 patients**

Kees WAALDIJK

**abstract**

**OBJECTIVES:** to develop a surgical classification of obstetric fistulas in order to compare surgical techniques and results.

**METHODS:** Based on a retrospective analysis of the first 775 fistula patients the following classification is presented: I) fistulas not involving the urethral closing mechanism; II) fistulas involving the urethral closing mechanism; and III) ureter and other exceptional fistulas. The type II fistulas can be further divided into: A) without (sub)total urethra involvement and B) with (sub)total urethra involvement; and a) without a circumferential defect and b) with a circumferential defect. This classification was applied prospectively in over 2,700 consecutive fistula patients.

**RESULTS:** The surgical technique becomes progressively more complicated from type I through type IIBb. The results as to closure and to continence worsen progressively from type I through type IIBb. For type III fistulas the personal experience is very limited.

**CONCLUSION:** This classification will enable one to compare different surgical techniques systematically and the results from different centers objectively.

**introduction**

The genitourinary fistula is far more prevalent than is generally known. The incidence is estimated at a minimum of 50,000 to 100,000 new patients a year in the world, the great majority of them in the developing countries. As only part of them are operated, the prevalence is at least 1,000,000 fistula patients in need of an operation; their actual number might be well over 2,000,000 {1}.

Obstetric complications constitute by far the main cause accounting for more than 85% of the fistulas, due to the nonavailability of obstetric care. Since it will take a long time to set up a network of functioning obstetric units throughout the rural areas, the obstetric fistula though preventable will remain a major public health problem for the coming 50 years. As such it will be a challenge to present and future generations of surgeons.

To compare different surgical techniques systematically and the results of different centers objectively a proper classification is needed.

Several classifications have been presented but all are based on the anatomic location of the fistula without surgical implications {2,3,4,5}.

Based on a retrospective analysis of 775 fistula patients who underwent surgery consecutively by the author a surgical/physiologic classification has been designed {6} which has been applied prospectively in over 2,700 patients.

**methods**

The following classification of obstetric fistulas is presented according to their anatomic/physiologic location with regards to surgical technique and results (table 1; fig 1 and 2):

I) fistulas not involving the closing mechanism; II) fistulas involving the closing mechanism; and III) ureter and other exceptional fistulas. The type II fistulas are further divided into: A) without (sub)total urethra involvement and B) with (sub)total urethra involvement; and a) without a circumferential defect and b) with a circumferential defect.

**table 1**  
**classification of vesicovaginal fistulas**

<b>I</b>	fistulas not involving the closing mechanism
<b>II</b>	fistulas involving the closing mechanism
<b>A</b>	without (sub)total urethra involvement
<b>a</b>	without a circumferential defect
<b>b</b>	with a circumferential defect
<b>B</b>	with (sub)total urethra involvement
<b>a</b>	without a circumferential defect
<b>b</b>	with a circumferential defect
<b>III</b>	miscellaneous, e.g. ureter and other exceptional fistulas

**fig. 1 and fig. 2**

Of the 2,700 consecutive patients prospectively classified like this, 483 (17.9%) presented with type I, 1061 (39.3%) with type IIAa, 754 (27.9%) with type IIAb, 134 (5.0%) with type IIBa, 75 (2.8%) with type IIBb and 15 (0.6%) with type III. Another 178 (6.6%) presented with stress/urge/overflow incontinence either immediately post partum or following fistula repair(s) elsewhere (table 2).

**table 2**  
**prospective classification of 2,700 consecutive fistula patients**

	<b>I</b>	<b>IIAa + IIAb</b>	<b>IIBa + IIBb</b>	<b>III</b>	<b>inc</b>	<b>total</b>
N	483	1061 + 754	134 + 75	15	178	2,700
%	17.9%	39.3% + 27.9%	5.0% + 2.8%	0.6%	6.6%	100%

This classification was done under anesthesia just before the operation was started. Within this classification it is possible to further classify each fistula according to the size of the defect into: small (<2 cm), medium (2-3 cm), large (4-5 cm) and extensive (≥ 6 cm) (table 3)

**table 3**  
**additional classification according to fistula size**

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

**surgical technique**

The surgical approach of choice in the majority of type I and type II fistulas is the transvaginal route, except in rare situations. A transabdominal approach is often chosen for type III fistulas.

The anesthesia of choice in the developing countries is spinal anesthesia for type I and II. For type III other forms of anesthesia might be necessary.

The operation becomes progressively more and more complicated from type I through type IIBb. Type IIBb fistulas are the most difficult to repair since there is only scar tissue left for the reconstruction of the urethra.

In type I only closure of the fistula is sufficient, either longitudinal or transverse. If the patient was continent before she developed the fistula she will be also continent after successful fistula closure.

In type IIAa longitudinal closure is preferred, but it is only possible in some 15% because of lateral edge scar retraction of the fistula. If indicated by urethral mobility an elevation of the bladder neck should be done.

In type IIAb an end-to-end vesicourethrostomy should be performed in order to restore the closing mechanism circumferentially.

In type IIBa the urethra can be reconstructed from the available urethra tissue together with an elevation of the bladder neck if indicated.

In type IIBb the urethra has to be reconstructed from other tissue, e.g. scar tissue, paraurethral structures, or bladder tissue.

In the fistulas with a circumferential defect, circumferential mobilization of the bladder from the anterior vagina wall, pubic bones, symphysis and anterior abdominal musculature is necessary to perform a tension-free end-to-end vesicourethrostomy.

In type III the author's personal experience is very limited. In this type an implantation of the ureters into the bladder is necessary, or urinary diversion, or still something else.

## **results**

The results of fistula repair show diminishing closure rates and increasing post-repair incontinence rates as the fistula type increases progressively from type I through type IIBb {6}.

The results as to closure and continence at first attempt in the first 500 consecutive patients are given in table 4.

**table 4**  
**results at first attempt in the first 500 patients**

type	number	closure rate	incontinence rate
I	56	141 (90.4%)	2 (1.4%)
IIA	288	255 (88.5%)	37 (14.5%)
IIB	56	43 (76.8%)	9 (20.9%)
total	500	439 (87.8%)	48 (10.9%)

In another group of 150 type IIA(a+b) fistulas consecutively operated with an elevation of the bladder neck by the bulbo cavernosus graft the results at first attempt are presented in table 5.

**table 5**  
**results at first attempt in another 150 type IIA(a+b) fistulas**

type	number	closure rate	incontinence rate
IIAa	76	67 (88.2%)	4 (6.0%)
IIBb	74	61 (82.4%)	11 (18.0%)
total	150	128 (85.3%)	15 (11.7%)

## **discussion**

It is no surprise that the results as to closure progressively worsen from type I through IIBb as the operation becomes progressively more difficult and complicated. Also in type II fistulas the thinner urethra tissue has to be used for (part of) the repair.

It is also no surprise that the results as to continence are progressively worse from type I through type IIBb. In type I fistulas the closing mechanism is intact. In the type II fistulas progressively more of the closing mechanism is partly or totally lost as the classification type increases.

For a proper use of this classification, the typing of each fistula should be done under anesthesia at the beginning of the operation.

It is important to look for a circumferential defect as it is common in the obstetric fistulas, makes the operation more difficult, and worsens the prognosis as to closure and to continence. Also often the urethra is blocked proximally, and then patency has to be restored by passing a metal sound transurethrally.

Of course it is also possible within this classification to further classify according to the size of the fistula. However, the size of the fistula does not always represent the actual damage done. There are instances where the fistula is small but the tissue loss is such that it must be classified as extensive.

## **conclusion**

This classification will enable one to compare different surgical techniques systematically and results from different centers objectively. Based on the anatomic/physiologic location of the fistula, it has consequences for the surgical technique to be used and for the outcome of the repair. Still these are only principles, as every fistula needs an individual approach for that specific fistula.

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30th of December 1994

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## sex/condition of infant

### **introduction**

the sex and condition of the infant belong to the most reliable parameters in obstetric fistula history taking as these are something a woman will not forget or lie about

theoretically it could be expected that there might be a slight preponderance of male infants born as males are up to 10% heavier at birth than females

however, right from the beginning there was a male to female ratio of 2:1 which cannot be explained by the heavier birth weight

so there must be other factors/mechanisms involved

the trauma to the infant is even more excessive than to the woman, and only few babies survive perinatally

actually the death of the infant is a protective measure for the woman as then the head (whole infant) shrinks and may pass the birth canal easier

### **methods**

the woman was systematically asked about the sex of the infant born; if it was a twin or triplet birth she was asked about the individual sex of the infants

very seldomly the woman did not know the sex of the infant born as it was completely decayed or she was not told (hospital personnel on strike); the sex is then given as unknown

only the infants which survived the first week are noted down as live

the infants which were born alive but died in the first week are noted down as dead; a special column has been reserved for them

### **the main question**

which are the real factors or which are the mechanisms responsible for this male to female ratio of 2:1 besides the heavier birth weight?

**sex/condition of infant**

<u>patients</u>	<u>obstetric</u>	<u>male ? female</u>		<u>twin/triplet</u>	<u>live</u>		<u>died</u>
					<u>male/female</u>	<u>1st wk</u>	
<b>katsina-vvf</b>							
1-100	97	64	36	3	1	2	1
101-200	91	67	24		4	1	
201-300	97	69	31	1 1	2	1	
301-400	94	59	2 35	2	2	2	
401-500	91	60	32	1	4	1	
501-600	97	70	29	2	3		
601-700	96	61	1 36	2	4		
701-800	94	60	1 34	1	1	5	
801-900	95	64	33	2	3	1	3
901-1000	95	60	1 34		5	5	
1001-1100	95	67	29	1	3	2	4
1101-1200	88	60	1 28	1	5	3	1
1201-1300	97	71	28	2	3	2	2
1301-1400	96	65	32		3	5	
1401-1500	96	55	1 41	1	4	4	
1501-1600	94	69	27	2	7	1	3
1601-1700	95	63	33	1	3	5	9
<b>kano-vvf</b>							
1-100	88	73	15		3	1	3
101-200	95	72	24	1	4	2	2
201-300	90	59	31		3	6	2
301-400	96	69	1 27	1	2	3	4
<b>katsina-catheter</b>							
1-100	96	58	38		7	4	
101-200	97	61	38	2	4	5	
201-300	98	61	38	1	5	8	9
<b>kano-catheter</b>							
1-100	95	65	30		8	8	5
<b>katsina-rvf</b>							
1-100	95	62	2 31		4	5	

**sex/condition of infant  
total figures per VVF-repair and VVF-catheter**

<u>total infants</u>	<u>male</u>	<u>?</u>	<u>female</u>	<u>twin/triplet</u>		<u>live</u>		<u>died</u>
						<u>male/female</u>		<u>1st wk</u>
<b><u>vvf-repair</u></b>								
2004	1357	8	639	25	1	69	51	24
in %	<b>67.7%</b>	<b>0.4%</b>	<b>31.9%</b>			<b>3.4%</b>	<b>2.5%</b>	<b>1.2%</b>
<b><u>vvf-catheter</u></b>								
389	245	-	144	3	-	24	25	20
in %	<b>63.0%</b>		<b>37.0%</b>			<b>6.2%</b>	<b>6.4%</b>	<b>5.1%</b>

**sex/condition of infant  
total figures per VVF-repair and VVF-catheter**

<u>sex</u>	<u>number</u>	<u>dead</u>	<u>alive</u>
<b><u>vvf-repair</u></b>			
male	1357	1288	69
in %		<b>94.9%</b>	<b>5.1%</b>
female	639	588	51
in %		<b>92.0%</b>	<b>8.0%</b>
unknown	8	8	
in %		<b>100%</b>	
total	2004	1884	120
in %		<b>94.0%</b>	<b>6.0%</b>
<b><u>vvf-catheter</u></b>			
male	245	221	24
in %		<b>90.2%</b>	<b>9.8%</b>
female	144	119	25
in %		<b>82.6%</b>	<b>17.4%</b>
total	389	340	49
in %		<b>87.4%</b>	<b>12.6%</b>

## interval between delivery and leakage

### introduction

in the literature an interval of 5-7 days is given between delivery and the onset of leakage

in the author's experience, the majority of the patients started to leak immediately upon the (still)birth of the infant

this is no surprise as the majority of the patients were in labor  $\geq 2$  days

even if an obstetric fistula had not developed yet, the necrotic bladder tissue (mostly involving the closing mechanism) will prevent the closing mechanism to function normally

however, it must be said that this parameter is not totally reliable in this study:

- a memory of the patient after long time of leakage
- b several patients were unconscious for days (eclampsia)
- c most of the CS patients had a catheter for some days
- d it could not be objectively checked when the leakage started

still all these factors considered, it seemed that the majority of patients started to leak the same day as they delivered, i.e. immediately

### methods

the patient was asked when she started to leak: immediately, the same day she delivered; exactly after how many days if it was not immediately and if she was really dry in between and could pass urine normally

sometimes the patients did not know as they were unconscious (eclampsia), but then their (grand)mother was asked if around

when they had undergone a cesarean section (hysterectomy) they were asked the same questions and if the leakage started immediately upon removal of the catheter

it was considered immediately when the leakage started the same day or the leakage started immediately upon removal of the catheter

so all in all this parameter can be considered as accurate as possible in this study

## interval between delivery and onset of leakage

<u>patients</u>	<u>obstetric</u>	<u>imm</u>	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>	<u>9</u>	<u>&gt;10</u>
<b>katsina-vvf</b>												
1-100	97	81	1	4	3			1	2	1	1	3
101-200	91	79	1	2	2	1	1	1			4	
201-300	97	81	2	3	2		1	1	3			4
301-400	94	84	1	1				1	3			4
401-500	91	77		1	3		2	1	5	1		1
501-600	97	86	2	2	2		1	1	1			2
601-700	96	81		2	4	2	4	1		1		1
701-800	94	81	4	2		1		1			1	4
801-900	95	83	1	4		1			1			5
901-1000	95	81	2	3	3	1	2		1			2
1001-1100	95	68	4	4	2	2	2	1	5	2		5
1101-1200	88	69	2	4	2	1	1		3	2	2	2
1201-1300	97	75	6	5	2	1	1		3	1		3
1301-1400	96	67	2	6	4	2			3	2	1	9
1401-1500	96	67	4	5	2	2	3		5	1		7
1501-1600	94	71	3	5	3		1		3	4	1	3
1601-1700	95	66	5	6		1	1		4		1	11
<b>kano-vvf</b>												
1-100	88	63	6	2	4		1		1	1	1	9
101-200	95	62	4	4	8			1	8		1	7
201-300	90	51	4	8	2	2	7	1	4	1	1	9
301-400	96	55	3	10	3	2	1	1	6		1	14
<b>katsina-catheter</b>												
1-100	96	74		4	1	3	4	1	2			7
101-200	97	49	6	10	3	2	3		11	2		11
201-300	98	52	9	3	6		4	2	7	1	2	12
<b>kano-catheter</b>												
1-100	95	42	6	7	5	2	2	2	7	2	1	19

**interval between delivery and onset of leakage  
total figure per VVF-repair and VVF-catheter**

<u>total obstetric</u>	<u>imm</u>	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>	<u>9</u>	<u>&gt;10</u>	
<u>vvf-repair</u>												
1977	1528	57	83	51	19	29	15	62	13	11	109	
in %	77.3	2.9	4.2	2.6	1.0	1.5	0.8	3.1	0.7	0.6	5.5	%
<u>vvf-catheter</u>												
386	217	21	24	15	7	13	5	27	5	3	49	
in %	56.2	5.4	6.2	3.9	1.8	3.4	1.3	7.0	1.3	0.8	12.7	%

## Surgeons show success in early fistula repairs

Surgeons in Nigeria report that vesico-vaginal fistulae can be successfully repaired much sooner than is often thought.

Though traditional practice has been to wait at least three months before repairing a vesico-vaginal (or obstetric) fistula, there are many advantages in repairing it as soon as possible, according to consultant surgeon Kees Waldijk of the Kano and Katsina fistula hospitals in northern Nigeria. Dr Kees (as he is popularly called) reports high success in repairing fistulae far less than three months old.

Vesico-vaginal fistulae are usually caused during lengthy obstructed labour. The head of the baby presses hard against the wall of the birth canal for a long time, cutting off the blood supply and killing the tissue. After the birth the tissue decays and then falls away, leaving a hole or fistula between the vagina and bladder (and sometimes the rectum). As urine leaks constantly from the bladder into the vagina the woman with a fistula is incontinent and smells of urine.

It has been a generally accepted rule to wait three months after the decayed tissue has fallen away before repairing a fistula so that all tissue reactions could subside before the operation. Dr Kees says that with more than 1000 patients a year seeking help at the Kano and Katsina hospitals a new approach had to be found.

Dr Kees and his team carried out a prospective study of the effects of fistula repair on 170 patients who had had fistulae for less than three months. The women's fistulae had been leaking urine for between 6 and 75 days at the time of repair. Most of the patients (about 80%) had fistulae that had leaked for between 16 and 60 days.

The study showed that in 156 of the patients the fistula was closed successfully and 141 of them were continent. Fifteen of the 156 still had incontinence (13 mild and two severe) but were expected to

improve during the months after the operation.

Of the 170 patients studied, 124 were treated without anaesthetic. The more complicated cases and those who could not bear to have a speculum inserted in the vagina were given a spinal anaesthetic.



Young fistula patients await the operation that can change their lives.

Most patients felt very little, even without anaesthetic, and had been told the procedure might be uncomfortable. "To give spinal anaesthesia was considered to make the procedure unnecessarily complicated," Dr Kees says. In addition, anaesthesia in all cases might have been a risk because many patients were not in the best general condition. Six patients could neither stand nor walk but could only crawl at the time they came for the fistula repair.

In the third evaluation report (January-June 1993) of the vesico-vaginal fistula projects in Kano and Katsina, Dr Kees describes the benefits of "an active surgical strategy" rather than "a passive attitude of waiting three months".

Not only did the study show a high success rate from the strategy but it also helped prevent the girl or woman from becoming a social outcast. "It is a stimulation for patients to come forward early for treatment and for doctors to refer patients immediately," Dr Kees says.

The procedure generally took about 20-25 minutes, he says, and no special pre-operative preparations were necessary. Most patients not only walked into the operating theatre but also walked out of it after the operation. The physical condition of the patient did not normally interfere with the procedure.

Antibiotics were not given routinely to the patients. Fistulae are caused by decay of tissue but not by infection. "It is better to spend the little amount of money available on a high protein diet and oral hematinics (iron and folic acid) than to waste it on expensive antibiotics," Dr Kees says.

The Kano and Katsina surgical teams have noted that fresh fistulae that are no more than 2 cm in diameter will heal themselves in more than half the cases where an indwelling catheter is inserted into the bladder.

The two fistula hospitals serve a population of about 15 million. Kano has an objective of 1000 fistula repairs a year by 1996 and Katsina is aiming at 1500 repairs a year by the same date. Dr Kees estimates that some 1.5-2.0 million women in Africa have vesico-vaginal fistulae, with around 50,000-100,000 being added to that number each year.

The ultimate objective is to ensure that fistulae do not happen - by avoiding early childbearing and by making sure that all women have access to skilled care during delivery. ■

## *Original Article*

# **The Obstetric Fistula and Peroneal Nerve Injury: An Analysis of 947 Consecutive Patients**

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**Abstract:** Peroneal nerve injury, resulting in leg weakness and foot drop, is seen frequently after long, obstructed labor that has caused an obstetric vesicovaginal fistula. Nine hundred and forty-seven consecutive patients treated in northern Nigeria for obstetric fistulas were reviewed for the presence of peroneal nerve trauma. The first 470 patients were reviewed retrospectively, and 25 (5.3%) were noted to have presented with significant motor weakness. The next 470 patients were prospectively evaluated by both history and physical examination. In this group, 311 (64.9%) women had either a history or current signs of peroneal nerve injury at the time of admission for fistula repair. Injuries were more common on the right side and were more commonly apparent in the first 2 years after the obstetric trauma causing the fistula.

**Keywords:** Foot drop; Obstetric fistula; Peroneal nerve body; Rectovaginal fistula; Vesicovaginal fistula

## **Introduction**

Patients with obstetric vesicovaginal fistulas often present with a multitude of other problems as well. These may be categorized as local or intravaginal problems, and distant or extravaginal problems. The intravaginal lesions may include rectovaginal fistulas, loss of perineal body tissues, vaginal stricture or stenosis, ureterovaginal fistulas, loss of cervical tissues,

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urethral destruction, loss of periurethral supporting tissues, and vesicocervical fistulas in association with a vesicovaginal fistula. Extravaginal, or distant, problems include uterine atrophy, endometrial scar tissue formation (with amenorrhea), peroneal nerve paralysis (with foot drop), pressure ulcers over pelvic bones (especially the sacrum and the ischial tuberosities), vulvar ulcerations from chronic urine exposure, general cachexia, and psychological distress because of social isolation. Very few reports exist concerning these multiple problems, which are seen in association with obstetric vesicovaginal fistulas caused by the trauma of long, obstructed labor. This paper addresses the problem of peroneal nerve palsy seen in a large number of patients with vesicovaginal fistulas in northern Nigeria.

## **Materials and Methods**

All patients were seen at the Babbar Ruga Fistula Hospital in Katsina, Nigeria, or at the Laure Fistula Center, Murtala Muhammed Specialist Hospital in Kano, Nigeria. All patients were examined by the principal author of this report in 1989 and 1990.

In the first group of 470 patients treated consecutively for the presence of obstetric vesicovaginal fistulas, only those with obvious motor function loss (foot drop) were noted. Therefore, Group A represents those patients identified by a retrospective review of the surgical records.

During 1990, the first 470 consecutive patients with obstetric fistulas were asked questions about any history of foot drop or leg weakness that lasted at least 1 month after delivery, as well as questions about current function at the time of presentation. Those still com-



plaining about weakness at the time of initial presentation were examined for muscle weakness and degree of foot drop. All were graded by voluntary muscle testing (VMT). Normal appearing muscle function was documented as '5' in the patient's record, while no apparent muscle function (i.e. complete foot drop) was recorded as '0'. Gradations of muscle strength were documented subjectively by the same examiner and documented as '1-4' in patient records.

### Results

As shown in Table 1, in Group A, unilateral or bilateral peroneal nerve paralysis with foot drop was noted in 25 (5.3%) of the 470 patients. Foot drop was present in 22 (12.6%) of the 174 patients who presented with an obstetric fistula of less than 2 years' duration. Foot drop was noted in only 3 (1.0%) of the 296 patients who presented more than 2 years after the fistula was caused by obstructed labor.

**Table 1.** Group A: gross peroneal paralysis in first 470 patients

Leaking	No. of patients	Signs
<2 yr	174	22 (12.6%)
≥2 yr	296	3 (1.0%)
Total	470	25 (5.3%)

As shown in Table 2, the 479 patients in Group B included 127 (26.5%) who showed signs of peroneal nerve weakness at the time of presentation. Ninety-nine (36.9%) of the 268 patients seen less than 2 years since the onset of the fistula had signs of peroneal nerve weakness, while only 28 (13.3%) of the 211 patients seen beyond the 2-year point had signs of persistent foot drop.

**Table 2.** Group B: peroneal paralysis in 479 patients

Leaking	No. of patients	History	Signs	Total
<2 yr	268	56 (20.9%)	99 (36.9%)	155 (57.8%)
≥2 yr	211	128 (60.7%)	28 (13.3%)	156 (73.9%)
Total	479	184 (38.4%)	127 (26.5%)	311 (64.9%)

Although no sign of foot drop was noted, 184 (38.4%) of the 479 patients in Group B recalled a history of at least 1 month of peroneal nerve motor dysfunction. This was the situation for 56 (20.9%) of the 268 patients with a fistula less than 2 years old, and in 128 (60.7%) of the 211 patients leaking for more than 2 years (Table 2).

By combining history and physical examination findings at the time of presentation for fistula repair, it appears that the peroneal nerve was injured in at least 311 (64.9%) of 479 patients with obstetric fistulas caused by long, obstructed labor (Table 2).

**Table 3.** Group B: peroneal paralysis in the 83 patients with VVF/RVF

Leaking	No. of patients	History	Signs	Total
<2 yr	39	6 (15.4%)	20 (51.3%)	26 (66.7%)
≥2 yr	44	27 (61.4%)	10 (22.7%)	37 (84.1%)
Total	83	33 (39.8%)	30 (36.1%)	63 (75.9%)

**Table 4.** Group B: peroneal paralysis in the 396 patients with VVF only

Leaking	No. of patients	History	Signs	Total
<2 yr	229	50 (21.8%)	79 (34.5%)	129 (56.3%)
≥2 yr	167	101 (60.5%)	18 (10.8%)	119 (71.3%)
Total	396	151 (38.1%)	97 (24.5%)	248 (62.6%)

**Table 5.** VMT scale for 142 peroneal nerve damages found in 127 patients

Grade	0	1	2	3	4
Leaking <2 yr	13	10	29	34	25
Leaking ≥2 yr	6	2	8	7	8
Total	19	12	37	41	33

As shown in Table 3, peroneal nerve trauma was present in 63 patients with both a vesicovaginal fistula (VVF) and a rectovaginal fistula (RVF); 248 (62.8%) patients with a VVF only had a history or definite physical signs of peroneal nerve trauma (Table 4).

Peroneal nerve injury was most often unilateral, but was noted to be bilateral in 47 of the 311 patients with a history or with signs of peroneal nerve injury. Of the 311 patients, 212 (59.2%) had right-sided injury, while 146 (40.8%) had left-sided injury. (Table 5).

The 127 patients in Group B who presented with persistent signs of peroneal nerve weakness underwent muscle strength analysis with relative VMT levels (Table 5).

No efforts were made to document sensory loss because of peroneal nerve injury. However, no skin ulcerations of the feet were noted (as is seen in total neurosensory loss of peripheral nerves), in the entire group of 947 patients undergoing fistula repair.

### Discussion

With the ready availability of operative delivery and obstetric expertise in the developed world, long obstructed labor resulting in a vesicovaginal fistula is a rare event. However, peroneal nerve injury after a prolonged second stage of labor has been observed in a patient in the USA who did not develop a vesicovaginal

fistula. Obstetric trauma and vesicovaginal fistula formation due to neglected labor is a common problem in West Africa.

It is estimated that 1–2 of every 1000 vaginal deliveries results in a vesicovaginal fistula, and that over 20,000 women await fistula repair in Nigeria alone [1]. Little has been written about the peroneal nerve injury and associated foot drop that often accompanies fistula formation after long obstructed labor.

The incidence of peroneal nerve injury, especially in those patients in Group B who were analyzed prospectively, is higher than estimated by other fistula surgeons [2–4]. The mechanism of this injury is poorly defined in the obstetric literature. It is thought to result from direct, long-lasting pressure of the fetal head on the L4–5 and S1–2 nerve roots, both at their origin and as they pass out of the sacral hollow and leave the pelvis through the greater sciatic foramen, with the sciatic nerve. This is most common with mid-pelvic obstruction, but may accompany any level of obstructed long labor. In one study, vesicovaginal fistula was noted to occur in patients only after 48 hours of obstructed labor had occurred without obstetric intervention [2]. When this degree of obstructed labor occurs, severe pressure necrosis of all pelvic structures may be the result.

Sinclair (1952) reviewed 20 cases of maternal obstetric palsy, but thought most were associated with the use of forceps in primigravida patients [3]. Naidu (1962) noted peroneal nerve palsy in 6 of 208 patients with vesicovaginal fistula [4]. Bird (1967) noted foot drop in 6 of 70 patients with vesicovaginal fistula [5]. Zacharin related that peroneal nerve palsy was a common finding among the Hamlin's patients in Ethiopia [6]. As would be expected, peroneal nerve injury was more common when both VVF and RVF had occurred in the same patient, indicating more extensive damage to the pelvic floor. In some patients muscle wasting of an entire leg is noted, and not just foot drop.

Patients suffering from such lower leg weakness should be reassured that there is a good chance of spontaneous recovery within the first 2 years after the injury. Of the 211 patients with prior peroneal nerve trauma and a VVF of over 2 years' duration, only 28 (13.3%) had persistent physical signs of nerve trauma. This can be very serious, however, since 16 of these 28 patients had VMT scores of 0, 1, and 2, implying severe permanent loss of motor function.

The authors recognize the many limitations of this study. Electromyographic and sensory nerve deficit studies will be important future projects. No information is presently available concerning the amount of

pressure necessary to cause such nerve injury; how long the obstructed labor must be for such nerve injury to occur; what level of pelvic obstruction must be present (inlet, mid-pelvis or outlet obstruction) for peroneal nerve trauma to develop; how often this problem occurs in patients who do not develop a fistula; or how many patients would improve with physical therapy. No information currently exists about other associated nerve injuries that would perhaps be less obvious, such as anal sphincter dysfunction or vulvar numbness.

This report does, however, bring attention to one of the most debilitating sequelae of obstructed labor in developing countries. Although the vesicovaginal fistula problem is what drives the patient to seek surgical care, the high incidence of associated peroneal nerve trauma makes it imperative that even more efforts be made to prevent obstructed labor, and to provide physical rehabilitation for those patients with neuromuscular injury.

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**EDITORIAL COMMENT:** We must be periodically reminded that medical practice in the western world is very different from third-world nations. This is especially true in obstetrics, where postdelivery vesicovaginal fistulas are rare. Even rarer is the problem of peroneal nerve injury after delivery. This report elaborates on this problem, which is relatively common in West Africa. One of the reviewers (also from an African nation with a high incidence of fistulas) stated that they also see foot drop associated with fistulas, although the percentage of patients with this problem is not nearly as great as mentioned in this paper. Perhaps there are other factors at work, such as that suggested by another reviewer, the position for delivery, which results in a lesion actually within the leg rather than within the pelvis. Further study and definition of the problem is needed in the form of EMG and clinical evaluation by a neurologist to more precisely define the lesion and its etiology.

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