

ABSTRACT

Due to vocal statements by verbal surgeons in the industrialized world and political statements by the major aid organizations, there is a lot of misunderstanding about obstetric fistula surgery and training. Such as the patient can be cured by a simple operation and beginners need rapid hands-on training for only a short period.

However, there are no simple fistulas considering the complex trauma of the obstetric fistula and the enormous variety in tissue loss; it may only look simple in the hands of the few experienced fistula surgeons. Still one has to start somewhere and the work of the author shows there are vesicovaginal fistulas (vvfs) suitable for beginners as based on objective findings of size, location, tissue quality, mobility of the fistula/tissue/cervix, width of pubic arch, depth of the vagina, concomitant rectovaginal fistula/sphincter ani rupture, previous repairs etc. Out of the 10,529 patients operated during 1983-2010 in four Nigerian centres (Katsina, Kano, Zaria and Nguru) where there is reliable follow-up only 1,236 (12%) fulfilled these objective criteria.

Keywords: *Obstetric fistula; simple; complex; surgery; training; beginners*

Fistulas for beginners: objective characteristics and setting standards as based on evidence

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Introduction

There is a lot of debate about obstetric fistula surgery and training, most of it by verbal surgeons in industrialized countries with no or little personal experience.¹ Or by the major organizations who use it for political reasons and for fund raising. This has all resulted in many wrong assumptions and instructions without any evidence such as early-age delivery being the cause of obstetric fistulae, and trying to come up with all sorts of classification etc. whilst stressing the need for evidence based results. More significantly there has been a lot of misunderstanding about obstetric fistula surgery and training. Such as the patient can be cured by a simple operation and beginners in fistula surgery need rapid hands-on training for only a short period without proper theoretical and practical instruction.¹

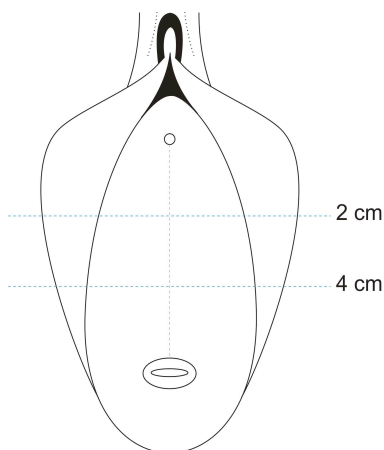
However, there are no simple fistulas considering the complex trauma of the obstetric fistula and the

enormous variety in tissue loss; it may only look simple in the hands of the few experienced fistula surgeons. Still one has to start somewhere and the aim of work of the author is to show that based upon extensive experience with more than 21,000 repairs with excellent evidence-based results² that there are vesicovaginal fistulas (vvfs) suitable for beginners. As based on objective findings of size, location, tissue quality, mobility of the fistula/tissue/cervix, width of pubic arch, depth of the vagina, concomitant rectovaginal fistula/sphincter ani rupture, previous repairs etc. And in terms of tissue and instrument handling. The objective characteristics of these are outlined along with operation technique, management and evidenced based outcome in order to help trainers and trainees use objective criteria to select suitable cases for those beginning in fistula surgery.

Method

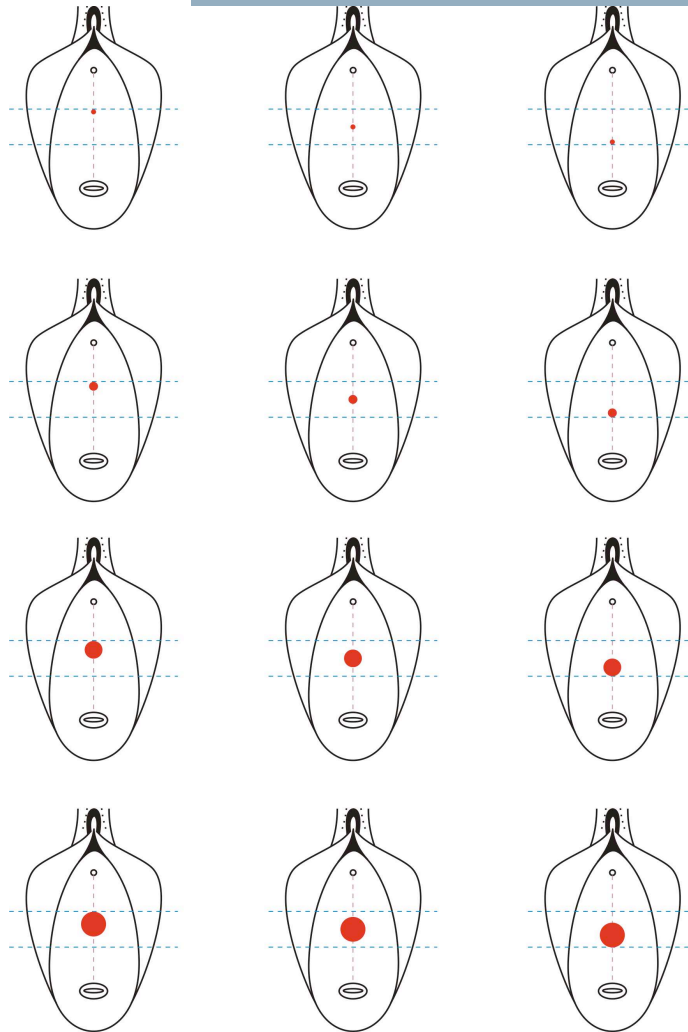
Patients operated during the period 1983-2010 in Katsina, Kano, Zaria and Nguru states for which there was reliable follow-up data for at least 5-6 months post operatively, were analyzed. Those that met the objective characteristics of fistulas suitable for beginners (Table 1 and Figures 1 and 2) in terms of tissue and instrument handling and as based on previous evidenced based results were included in the study.

Figure 1: Location of fistula



fistula for beginner

Figure 2: Possible configurations



fistulas for beginner

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Table 1: Objective criteria of fistulas for beginners

Criteria	Details
Size	0.2 – 1.5 cm
Location	Midline
Distance from euo*	2 -4 cm
Classification	Small type IIAa
Rugae folds	Intact
Mobility	Good mobility of fistula, tissues and cervix
Vaginal depth	≥ 10 cm
Previous operation	No contraindication as long as no major scarring and no mutilation
Rectovaginal fistula	No contraindication
Severe obesity	Obesity makes any operation complicated

Results

The total healed was 1230 since 4 patients with a residual fistula did not report for follow-up surgery and two experienced mortality due to the reasons outlined in Table 2. During short- and long-term follow-up 4 out of 11 patients with severe postrepair incontinence presented for incontinence surgery; all were cured. Another patient developed a urethrovesical stricture and was cured by dilatation/urethrotomy; whilst one patient developed a bladder stone which was removed with cure of the patient. Three patients had also a concomitant ureter fistula; in a separate operation session a vaginal implantation was performed in two and an abdominal implantation in one with total cure of the patients. Ten patients developed a

recurrence due to early sex; of these one patient refused operation and the other 9 were cured after another repair. Finally 259 patients (21%) reported back whilst pregnant or after a subsequent delivery; 56 had developed a 2nd obstetric fistula and were all cured after repair; 7 developed a 3rd obstetric fistula and were cured by repair; and one patient developed a 4th obstetric fistula cured by repair.

Table 2: Results in 1,236 patients with a simple fistula operated during the period 1983-2010

Healed first attempt	1221 (98.8%)
Healed second attempt	9
Healed final outcome	1230 (99.5%)
Post repair continence surgery	4
Success	4 (100%)
Persistent incontinence	7 (0.5%)
Mortality	2 (< 02%)
Native medicine	1
Cerebrospinal meningitis	1

Discussion

After 28 years of obstetric fistula surgery with systematic 21,000 repairs and evidence-based long-term follow-up. Including appropriate operation reports, a database of more than 250 parameters per patient, systematic research and training of some 350 doctors in one form or the other, and having set up 14 vvf-repair centers and 2 training centers, the author feels it is time to make certain points clear and set certain standards for classification, operation techniques, research and training.

Chief among these standards is that there are no simple fistulas considering the complex trauma of the obstetric fistula and the enormous variety in tissue loss; it only may look simple in the hands of the few highly experienced fistula surgeons. And the obstetric fistula surgery they do is complicated reconstructive surgery which aims to reconstruct the functional anatomy of this enormous variety of quantitative and qualitative amounts of pressure necrotic tissue loss. As such it is the wrong mentality to

have “hands on” quick intervention training as practiced by fistula camps without understanding the complex trauma of the obstetric fistula. Where in the industrialized world is this being practiced for any similar complex pathology? Why should there be different standards for the developing world?

However, it is recognised that surgeons have to start somewhere in getting their experience in the science and noble art of obstetric fistula surgery and the work of the author shows there are vesicovaginal fistulas suitable for beginners as based on objective findings of size, location, tissue quality, mobility of the fistula/tissue/cervix, width of pubic arch, depth of the vagina, concomitant rectovaginal fistula/sphincter ani rupture, previous repairs etc. (Table 1)

Firstly, fistulas < 0.2 cm or > 1.5cm in size are difficult to handle and need special insight and operation principles. Similarly, fistulas not located in the midline are difficult to handle since instrument handling and tissue handling is complicated. In addition a proximal fistula close to the external urethral opening (euo) is difficult due to instrument handling. And if it is too distal the delicate urethra (which is the main continence structure) may be traumatized. For these reasons fistula classified as small type IIAa³ are seen as suitable for beginners as at a minimum they are 2 cm from external urethra, are easily accessible and the distal urethra length is still at least 2 cm which will ensure continence.

Next when the rugae folds are not intact there is far more trauma than anticipated at first sight and one has to determine exactly the amount of tissue loss. This makes handling the fistula difficult. As does if mobilization of tissue is poor - then tension-free closure may be compromised or even impossible, and even after closure there may be traction upon the repair, such as when a retracted cervix (after cesarean section) is pulling on the repair when the patient is coughing. This makes the fistula repair difficult. Then if the pubic arch is < 85° it would make the access to the fistula poor and as such the operation more complicated. Additionally if the vagina depth is < 10 cm there is already substantial tissue loss.

Other characteristics such as previous operations are not a contraindication to beginners in fistula surgery as if operated by expert surgeon there is almost no scar tissue. However, if operated by a surgeon without expertise there may be excessive scar tissue and mutilation. Also a rectovaginal fistula (rvf) does not interfere with the operation technique or healing; and a sphincter ani rupture makes the access even better. However, beginners should not combine the vvf and rvf in one session but concentrate totally on one at a time. Lastly, severe obesity makes any operation complicated; if so the patient should lose weight first before she can be operated.

This study shows that out of the 10,529 patients operated during 1983-2010 in four Nigerian centres (Katsina, Kano, Zaria and Nguru) where there is reliable follow-up till at least 5-6 months post operatively, only 1,236 (12%) fulfilled these objective criteria of a simple fistula. These fistulae which fulfilled the objective criteria were operated on by the author and his trainees with good results. There was final healing in 1,230 women (99.5%) with 1,221 (98.8%) healed at the first attempt and another 9 at the second attempt. And out of the 1,230 patients with a healed fistula 1,223 were completely continent whilst only 7 (0.5%) had persistent postrepair incontinence but they did not report back for incontinence surgery.

However, these results do not mean that the fistulas were simple considering the complex trauma of the obstetric fistula and the enormous variety in tissue loss; it only may look simple in the hands of the few highly experienced fistula surgeons. In this study all the operations have been performed by one surgeon and the trainees under his personal strict supervision. The patients operated by the trainees were all personally selected by the surgeon in a prospective manner. Operations were done under similar conditions in the four centers where there is reliable evidence-based postoperative follow-up till at least 6 month postoperatively; with evidence-based long-term follow-up over years. So the first part, like in any surgical training, is teaching pelvic floor anatomy such as the importance of the pubocervical fascia in continence, the urine and stool continence mechanism in the female, the position of arcus tendineus fasciae and arcus tendineus of

levator ani muscles, the function and anatomy of the pelvic floor structures in 3-dimensional proportions, classification, and physiologic wound healing processes. The second part is to demonstrate the enormous variety of the complex obstetric fistula trauma in the patient and explain the principles as based on the findings in reconstruction of the functional anatomy. Since the fistula has to heal and the physiology has to be restored resulting in continence. The third part is for trainees to analyse and determine for themselves the quantitative and qualitative amount of tissue loss due to pressure necrosis and to make up their mind how to deal with this. The very last part is the hand-on surgical training where they can practice their own surgical skills though under strict supervision. The basic principles² of these are described below.

Preoperative preparation

The normal preoperative preparation is followed like in any other operation; special for the woman with vvf is abundant preoperative oral fluid intake until the operation which cleans the fistula, bladder and urine and hydrates the patient so that spinal anesthesia becomes safe. Other advantages with abundant fluids is that the ureters can be identified, the occurrence of catheter blockage postoperative is minimal and to ensure patient compliance.

Operation technique

Under spinal anesthesia and in the (exaggerated) lithotomy position a proper examination is performed whereby the above-named checklist is followed (Table 1); then the surgeon should ask himself if he is able to handle this fistula competently. A liberal use should be made of episiotomy to improve the accessibility to the operation field.

An incision is made at the fistula edge with bilateral transverse extension; then minimal sharp dissection of the anterior vagina wall from the pubocervical fascia (with adherent bladder/urethra). A transverse closure of the pubocervical fascia (with adherent bladder/urethra) is made by a single layer of inverting polyglycolic acid; the patient is asked to cough (with urine in the bladder) to check for urine leakage through the suture line or through the euo.

A foley catheter ch 18 is inserted and it is checked. If urine flows through the catheter it means 3 things; the catheter is in the bladder, at least one ureter is functioning and the patient is not in shock. Then the bladder capacity is estimated and the urethra length is measured in mm. The anterior vagina wall is only adapted with 2x everting nylon sutures according to the principles of septic surgery and the episiotomy is closed. Next a secure check is made of the hemostasis; as routine a vagina pack is not inserted unless there should be diffuse oozing which cannot be controlled otherwise.

Postoperative care

Intensive care is normally only for 12-24 hours with liberal use of analgesics; no morphine or morphine derivatives are used since these interfere with breathing. The following morning the patients have to be mobilized like in any other operation; besides being good for their general health it is also good for prevention or treatment of contractures.

Abundant fluid intake is needed for as long as there is a foley catheter inserted (a minimum period of 14 days) to prevent catheter blockage. If nonabsorbable sutures have been used for adaptation of the anterior vagina wall these are removed 1 week after catheter removal.

Upon catheter removal the patient is instructed to continue with abundant oral fluid intake and to urinate frequently; to refrain from sex for 4-6 months; to come for regular follow-up up till 6 months postoperatively; to report when 3 months pregnant and to go immediately to a hospital at subsequent deliveries when labor pains start. During the recovery phase all the patients are attending rehabilitation courses in special centers like literacy class, making soap, sewing etc.

Documentation

Since 2005 at the end of each operation the results are prospectively predicted as to healing and as to continence at 5% intervals (ranging from 5% to 95%) and for objective reasons written down in the operation report and entered into the database; the results confirm the prospective predictions.

An electronic operation report is made of every patient including a drawing of the fistula and the other findings of the complex obstetric fistula trauma. Electronic

photographic documentation is performed before and at operation end, the follow-ups are written down on the operation report and all the data (more than 250 parameters per patient) are entered into an extensive database; this unique documentation is hard to find elsewhere, especially the prospective predictions as to healing and as to continence of each operation.

Conclusions

There is a lot of misunderstanding about obstetric fistula surgery and training. Such as the patient can be cured by a simple operation and beginners need rapid hands-on training for only a short period. **There are no simple fistulas** considering the complex trauma of the obstetric fistula and the enormous variety in tissue loss; it may only look simple in the hands of the few experienced fistula surgeons. So the first priority in training in fistula surgery is to teach and demonstrate the anatomy of the pelvic floor, the obstetric pressure gradient within the pelvis, the variety of tissue loss and the systematic examination of these lesions, the classification of the fistula as based on the quantitative/qualitative amount of tissue loss and the different solutions as customized to that specific fistula. Only if the trainer and trainee have full understanding of all these theoretical/practical aspects, can they undertake hands-on training under direct supervision according to the basic principles of general, urologic, gynecologic, colorectal, septic and especially reconstructive surgery to reconstruct the functional anatomy all in order to restore the normal physiology; this is not something for inexperienced surgeons.

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