

Surgical training in fistula repair Addis Ababa Fistula hospital / Bahirdar Hamlin Fistula Centre, Ethiopia November 20th 2006 – May 10th 2007.

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Purpose:

The purpose of the project was to gain further theoretical insight and practical skills enabling me to independently treat women suffering from simple and medium difficult obstetrical fistulae.

Background:

I had previous experience with fistula patients doing an 8 months mission in Congo DRC for MSF. In Congo I arranged a surgical project treating 23 women suffering from fistula in one week in a small bush- hospital, the surgery was done by a congolese fistula-expert.

The Addis Ababa Fistula Hospital- AAFH is a specialized hospital for surgery of obstetric fistulae. The doctors of the AAFH have treated more than 20 000 patients during the 40 years the hospital has existed. It is known as the world leading centre for this challenging surgery.

Planning / preparation/ finances:

Knowing the reputation of the AAFH I had long hoped for a possibility to come there and learn. Approaching specialization in Gyn/ Obst I sent an application to the AAFH, accompanied by a letter of motivation and letters of references / recommendation.

They accepted me given that I had finished my specialization, and we agreed on the terms such as a time frame of approximately 6 months and me being mainly financially self-sufficient.

I would start with some weeks in AAFH, and then continue to Bahirdar Hamlin Fistula Centre - BHFC where dr Andrew Browning would teach me, finally from mid March until my departure in May I would do an interim in BHFC while Dr Browning was on leave in Australia.

To cover my expenses I applied for and received:

-NFOG Lillehammer scholarship of 33007 NOK to cover travel expenses.

-Grant of 45 000 NOK from the national centre of women's health of the national hospital of Norway.

In addition I got a gift of 30 000 NOK from my 98 year old grandmother, and the AAFH paid 3 national flights during my stay in Ethiopia (app 3500 NOK).

I received no salary from AAFH / BHFC, and paid for lodging and food the first 2 months. (20 USD per day in AAFH, 100 Birr per day in BHFC). The last 3.5 months I did not pay for lodging in the hospital guest-house, or in Dr Andrews house, but I payed the staff in Dr Andrews house and covered my food-expences.

I had two roundtrips Oslo- Addis ababa, each at a cost of app 10 000 NOK, and 7 national flights between Addis Ababa and BahirDar during my stay, each at a cost of App 1100 NOK.

I had hotel expences of app 500 NOK during a working weekend in the outreach clinic of Yirga Alem.

Apart from getting financial fundings before my departure form Norway I had to get an exceptionally quick approval of my application to become a specialist, the national board of specialists and the Norwegian medical association were very cooperative and kind. In addition other kinds of practicalities had to be arranged such as coverage by the Norwegian social security, working visa for Ethiopia, Accepted specialization in obst / gyn in Ethiopia. Ethiopian drivers licence, Insurance etc etc.

Location:

AAFH: The main hospital located in Addis Ababa has app. 120 beds and a big staff including 5 permanent doctors and three registrars, nurses, anaesthetists, administration and also specialized services such as pharmacist, physiotherapist, x-ray, psychiatric nurse, urodynamic laboratory with a specialized nurse, a stoma-therapist etc.

AAFH regularly receive visiting surgeons who stay for one month, mostly from other African countries.

The last years AAFH has expanded by building five outreach centres of which Bahirdar Hamlin Fistula Centre (BHFC), Yirga Alem and Mekelle have been opened; the other two are under construction.

BHFC: The staff consists of one permanent doctor (Dr Browning), one medical officer (4 yrs of medical education), 2 nurses, and 13 nurse-aids (former patients who has been trained to do nursing, surgical assistance, physiotherapy etc), laundry ladies, cooks, guards and drivers. There are 35 beds, but the hospital is most of the time overbooked, often with 50-60 patients admitted. Patients then stay two in one bed or lie on the floor. The day starts at 0815 hrs and lasts until 1600 hrs. We do rounds all seven days a week. Surgery is usually thrice a week, starts after the round and has to be finished by 1400 hrs in order to sterilize the material before the end of the day.

Bahirdar is the capital of the Amhara region where a vast majority of the population are orthodox Christians living in monogamous marriages. The language and alphabet is Amharic, and the uneducated part of the population has no knowledge of English or other European languages.

Carrying out:

Arriving in Ethiopia I spent the first two weeks observing the activities in AAFH. There was no supervisor or person responsible for introducing me to the hospital, so finding out about routines etc took some days. While in Addis Ababa I had no individual patient contact, but observed the work of the local doctors in OR, OPD and during rounds. Watching surgery for two weeks is a bit long, but there were many doctors wanting to operate and the registrars were prioritized. Having one of the permanent doctors being responsible for the visiting doctors would make introduction to the hospital and access to the patients easier for the newcomer.

In Bahirdar Dr Browning let me observe the first day while introducing me to routines, classification, strategies of surgery etc. From day two I started doing surgery. The first operations were assisted by Dr Browning, but already the first week I did independent surgery with Dr Browning in the same room available for assistance or advice. Besides operating the simple cases initially, I assisted or watched Dr Browning while he was operating the more complicated cases.

(There are two operating tables in the OR, thus perfect setting for training) Gradually the degree of surgical difficulty was increased. OPD and round was done daily and Dr Browning gave me relevant literature and questioned me in theory thereafter.

Soon I also learned to give spinal analgesia which is used for all the interventions.

In my opinion, it is crucial that surgical training is hands-on, and that there is a trainer responsible for the person in training. For me the setting in BahirDar was perfect.

In total I did 108 procedures in 103 interventions whereof 50 were done under the supervision of Dr Browning and 53 were done after his departure.

In addition to filling the regular patient-cards and book of surgery I made a patient card that I filled in for all the patients I operated, noting their social and obstetrical history, description of the injury including classification of the fistula, description of the surgery, the postoperative period and their condition at discharge. On the card, there was also a figure where I could draw the fistula. This information was later filled into an excel sheet. For translation I used our English-speaking staff.

During the 5.5 months in Ethiopia I operated 103 patients, cards were filled for all of them, but sometimes not all the questions were answered.

Since I started close to zero in skills it is probable that “my” population is in average less severely injured than the average population of patients being treated in the AAFH / BHFC. There might also be differences between countries / races etc when it comes to severity of damage both due to physiognomy, traditions, access to emergency obstetric care etc. Comparing results is therefore more complicated than what it seems at first glance.

Classification:

The system of classification of the fistulae we used is the one developed by Dr Goh.

The Goh classification describes the fistula according to Site, Size and Scarring:

Site: distance from urethral meatus/ anus to the distal rim of fistula: 1(>3.5 cm), 2 (2.5-3.5 cm), 3 (1.5-2.5 cm), 4 (<1.5 cm)

Size: Biggest diameter of fistula: A (<1.5 cm), B (1.5-3 cm), C (>3 cm)

Scarring: i (normal vaginal capacity), ii (Reduced vaginal capacity), iii (Other: Circumferential fistula, repeat case, ureteric fistula)

Material; Medico-social profile of the 103 operated patients:

Cause of fistula:

Traumatic 6/103	Obstetric 97/103
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For the traumatic fistulae, all 6 women had recto-vaginal injury, and no bladder injury.

4 had been injured at first intercourse in pre-puberty, the youngest only 7 years old.

One had fistula after traditional treatment of haemorrhoids. One had a 4th degree perineal tear after being attacked by a cow.

The vast majority of fistulae are caused by obstructed labour. The obstruction in question is caused by a mismatch of the bony parts; the mother’s pelvis and the baby’s skull.

Once the labour is obstructed, the obstructed transport in most third world countries adds to the severity of the damage, by the long way and thus time it takes to get from the woman’s village to a hospital where emergency obstetric care is given.

Below follows further medico-social descriptions for the obstetric fistulae:

Labour duration, Delivery method and Outcome of index delivery:

Duration of index delivery was in average 2.8 days.

1 day	2 days	3 days	4-7 days
22%	25%	26%	27%

Next time I would like to differentiate between time spent at home, time for transport, and time before delivery after arrival in hospital. This would probably give a hint on where to put emphasis to prevent fistula.

91 patients gave information about delivery method and outcome;

26 patients delivered at home, 23 in local health centre, 1 in transport, and 41 in hospital.

33 had spontaneous vaginal deliveries, 30 had assisted vaginal deliveries of babies in head presentation whereof 2 with craniotomy, 7 had assisted vaginal deliveries of babies in breech-presentations whereof 2 with craniotomy, 17 had caesarean sections, 4 had caesarean hysterectomy.

Only 7 of the 91 children were live-born, and only 5 were still alive.

Parity:

The delivery that caused the fistula was the first delivery for 49% of the women, second delivery for 12.5% of the women, and delivery no 3 - 12 for the remaining 38.5% of the women. This is in accordance with other reports where approximately half of the patients with fistula were primipara.

Secondary infertility:

12% of the women had been pregnant after they got their fistula, 88 % had not.

It is unknown to what extent the birth trauma that gave the women the fistula also renders them infertile.

Secondary infertility may be due to secondary pituitary failure, asherman syndrome, cervical insufficiency, and vaginal stenosis that inhibit intercourse.

Among my patients in fertile age, 42% had secondary amenorrhoea, but only 3% of them were more than 12 months post-partum, and thus probably had a permanent amenorrhoea. 54% had regular or irregular menses at the time of surgery.

It is probable that some of the patients with high fistulae will have a cervical insufficiency due to the birth trauma, but the prevalence is unknown.

Education:

92% of the women were illiterates, 8% had some education, one beyond secondary school.

Age at marriage/ injury/ admission:

Most of the patients do not know their own age precisely. Age is therefore an estimate, but remains of interest in my opinion however imprecise.

Age at marriage (av.)	14.4 yrs	(7-24 yrs)
Age at injury (av.)	24 yrs	(7-45 yrs)
Age at admission (av.)	28 yrs	(15-55+)

The concept of marriage in Amhara seems to be less precise than what we are used to in Europe. There is often an engagement rather than a marriage taking place in childhood years. Sometimes there is a full ceremony, and the bride moves in with the husband's family. The tradition apparently says that she shall not be approached sexually prior to menarche, but we saw many sad results of this not being respected.

Marital status at admission:

Married 64 %	Divorced 32%	Widowed 2%	Never married 2%
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Becoming pregnant and delivering a baby outside of marriage seems to be socially unacceptable in Ethiopia. Two of my patients were not married. One had been raped on her way to school. The other, who was our highest educated patient, had become pregnant with her boyfriend, but told us this was so shameful that she suffered a prolonged labour at home even though she lived close to a hospital.

In many studies a divorce frequency around 50% is common among fistula patients, and experienced fistula surgeons have said that 3 months of incontinence seems to be a "threshold

of pain” for marriages. The comparatively low percentage of 32% among my patients might reflect that many of the patients come for treatment soon after the injury.

Women who have many living children at the time of injury seem to have a lower risk of divorce.

Duration of incontinence:

It is recommended that the tissues are left to heal for three months before repair when the cause is obstructed labour and tissue necrosis.

The average time between the injury and the repair for my patients was almost 4 years (46 months), but there was a large spread from 1.5 months to 24 years.

As many as 35% were operated within three months after the injury, something that indicates that the fistula hospital is well known in the region, and also is accessible for the patients.

There is a system of partnership between the fistula hospital and local NGOs who recruit the patients in their villages and also provide transport. This greatly contributes to access.

Circumcision:

None	24%	Type I	75%	Type III	1%
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The majority of the women were circumcised, usually a reduction of labiae minora done during childhood. Only one of the patients had been infibulated, and her story was an unusual one: she had like other girls had her labia minora reduced in childhood, but at getting married her in-laws had performed infibulation, described as a very violent and traumatic experience being held down by her in-laws while they cut and stitched her up. She was so mutilated by scar tissue that I suspect this could actually have represented an obstacle to delivery, something that is otherwise extremely rare.

Types of fistulae:

VVF: 80 patients had vesicovaginal fistulae. According to Goh classification they were distributed as follows;

Site: 25 had type 1 (high) whereof 6 were cervical, 23 had type 2, 23 had type 3, and 9 had type 4.

Size: 49 had type a (small fistulae), 20 had type b, 3 had type c.

Scarring /repeat case/ circumferential: 49 were classified as type i (plain, non-circumferential) but 8 of these were described as almost circumferential. 7 were classified as ii; substantial scarring / shortening of vagina. 24 were classified as iii; whereof 18 were circumferential, the remaining 6 were repeat cases. 3 patients had double VVFs.

RVF: 9 patients had RVFs. None of them were circumferential and, only one was high and combined with substantial scarring and a circumferential VVF.

GSI: 12 patients were operated for GSI. All had previously undergone successful closure of VVFs, but suffered from strong residual stress incontinence.

Comorbidity:

Two patients had a malformation of a lower limb since childhood and possibly a pelvic malformation that could have contributed to the obstructed labour.

One patient was discovered having pulmonary TB at admission, and surgery was delayed for 2 months when she received TB medication, she gained weight and her general condition improved considerably. None of the patients were severely anaemic at the time of surgery.

Many of the patients had intestinal worms, and were treated after diagnosis. Patients were not screened for HIV, but tested on clinical suspicion.

Method; The surgery:

Principles for treatment:

Preop:

Tender Love and Care

Examination and classification of fistula according to Goh at admission.

Nutrition and sufficient hydration.

Expectancy until sane tissues around the fistula.

Mobilization with physiotherapy for the non-mobile.

Elimination of infections preoperatively.

Preoperative body-wash and shaving of pubic hair.

Enema and Tinidazol for RVF

Perop:

General:

Spinal analgesia with marcaine heavy 2ml.

Exaggerated lithotomy position with the buttocks outside the edge of the table and shoulder support.

Preoperative antibiotics with 80mg of gentamycine iv.

Infiltration of tissues with saline to facilitate dissection.

Closing the different layers of tissue separately.

Tension free sutures using resorbable material.

Painting of closed wound with bonnys blue or gentiane violet.

Vaginal pack soaked with a special disinfectant mixture of beeswax and.....

Insertion of urethral Foley catheter ch no 14 or larger, sutured to mons pubis.

VVF:

Protect ureters

Wide mobilization of bladder

Tension-free closure

Maintain urethral length

Support with pubococcygeal sling if the fistula is of some size and includes proximal urethra.

Check closure with dye-test

GSI:

Lateral mobilization of bladder

Exaggerated Kelly-sutures duplicating the distal bladder “urethralizing” it to gain normal urethral length.

Pubococcygeal sling under the proximal urethra.

RVF:

Tension-free horizontal closure of rectum.

Postop:

Free drainage of urine from urethral foley-catheter through long tube into an open basin / bucket.

High fluid-intake (3-5 litres / day)

Eat, drink and mobilize from day 1.

Vaginal pack out on day one.

Foley out on day 1-3 for GSI, 3-5 for RVF, 10-14 for VVF.

Antibiotics on indication, otherwise none.

Results; The outcome of surgery:

VVF	80	78 closed (97%) 63 cured (78%) 12 residual GSI, 6 severe 3 retention 2 breakdowns
GSI	12	11 cured
RVF	9	9 cured
4 th degree tear	1	1 cured
Bladderstone	2	2 uncomplicated cystotomy
Urethral stricture	2	2 uncompl. Incisjon
Tubal ligation by minilap.	2	2 uncompl procedure

Discussion:

Outcome:

The patients that had residual voiding problems after successful closure of VVFs had all but one had circumferential fistulae; the last one had substantial scarring after mutilating circumcision and the following obstructed labour. These patients had longer labours in average (3.5 days) than the mean for the whole group (2.8 days). This confirms what already was anticipated; the bigger the damage, the harder it is to cure.

The two breakdowns both came as a surprise. One had a small cervical fistula and a split cervix, with quite difficult access. She was dry the first day, but during the night the catheter had blocked and the fistula broke. No urine came in the catheter thereafter and we discharged her early. She was cured with a second intervention 3 months later. The other breakdown was a repeat case initially repaired at Gonder hospital where she had been delivered by cs after 7 days in labour. She now had a small mid-vaginal fistula, with a bit scary tissue. We tried with prolonged catheterization but no improvement after 3 weeks made me discharge her and reappoint her for three months later. I do not know whether she has come back yet.

Complications:

2 patients had to be taken back to OR due to postoperative haemorrhage. Both got satisfactory haemostasis by adding some sutures under local anaesthesia.

5 patients had signs of infection postoperatively; treated with antibiotics they underwent uneventful recovery.

One patient probably had a pulmonary embolism with attacks of chest pain and shortage of breath. The diagnosis was made from her symptoms as no sophisticated diagnostic tools were available. She was treated with oxygen and heparin injections and recovered with no sequel.

One patient had a transient paralysis of her right quadriceps after the spinal; she regained the function in her leg in the course of 9 days.

The incontinence gap:

There was for me as for all fistula-surgeons a discrepancy between the number of successfully closed fistulae and the number of patients with normal voiding after fistula closure. This gap is often called the incontinence gap, as most of these patients will suffer from continuous urinary incontinence. The reason for disturbed voiding / continence function after successful fistula-closure lies in the trauma that created the fistula. The ischemic injury did not only cause a loss of tissue, leaving a hole, but often has caused a field-injury rendering the tissues surrounding the hole with impaired function.

The causes of impaired voiding after fistula closure ranges from neurological damage that leaves the patient with urinary retention or hyper-reactive bladder (urge-incontinence), to loss of crucial anatomic structures to continence such as the closing mechanism of the proximal urethra or the storing capacity of an elastic bladder of a certain volume.

There are four main pathologies within this group: 1. Retention, 2 GSI due to very small or absent bladder, 3 GSI due to destroyed closing mechanism, and 4 Urge incontinence.

For some there might be a mixture of the four.

Identification of the problem is done by history, observation and measuring urinary output when sensation of full bladder and residual urine thereafter. (measurements of urethral length and bladder diameter is done pre or peroperatively). Repeated dye-test is also performed if there is suspicion on breakdown. Sophisticated urodynamic investigation is unrealistic in most African settings.

1. For the patients with retention there is a neurological damage that disturbs the normal voiding-reflex. We teach the patients self-catheterizing, and they will then be able to lead a close to normal life. For some the situation will improve over time as nerves regenerate.

2. and 3. For the majority of patients with disturbed voiding after successful closure the problem is strong stress incontinence either due to a destroyed closing- mechanism (short, wide and/ or stiff urethra) or a small scary bladder with strongly reduced storing-capacity.

The latter problem is usually seen as incurable, as bladder-expanding procedures are unrealistic to attempt in an African setting. Urine diversion-methods are being tried out, with mixed results so far. The patients with a very small or absent bladder should be identified prior to surgery, since a closure of the fistula is unlikely to improve their symptoms.

Several methods have been developed to cope with a disturbed closing mechanism. I have employed the methods developed by Dr Browning by “urethralizing” the distal bladder in order to substitute the missing proximal urethra, and also to use the fibro-muscular sling to support the proximal urethra. This technique has shown significantly improved results compared to just closing the fistula by conventional technique.

Other techniques are being used by other surgeons, for instance by creating a sub-urethral sling using the fascia of the rectus abdominis muscle, others again prolong the urethra in the distal end, and others use a martius flap. A study comparing the various techniques that aim to lessen the incontinence gap has not yet been done to my knowledge.

These procedures are either done at the moment of fistula closure or they are done at a separate intervention after the fistula has been closed.

4. Finally some of the patients experiencing incontinence after a successful fistula closure suffer from overactive bladder/ urge-incontinence. In the affluent parts of the world this disorder is treated medically with peripheral muscarine receptor blocking agents, however in the Ethiopian setting this is not accessible treatment. The measures used are instruction in bladder-training, and advice to have a high fluid-intake.

Predicting the long term results after fistula closure for patients of all categories (various fistulae, various immediate outcomes) is difficult. Reliable descriptive data is hard to obtain as the drop-out rate is high for the follow-up appointments.

Many interesting questions both concerning urinary physiology post repair but also concerning psycho-social aspects (social reintegration, fertility / fecundity) will hopefully be answered in the future, as there is an increasing interest globally for the women suffering from fistulae.

The problem of comparing results:

-There is no consensus for classification of fistulae, and currently at least 4 different classification systems are in use. Hence it is impossible to identify variations between different populations of fistula-patients. This leaves studies aiming at comparing surgical techniques with the uncertainty of not knowing whether the populations are comparable.
-There is neither an established consensus for the definition of “cured”, but most surgeons now seem to agree that successful closure alone, regardless of voiding function does not merit the term cured.

-Probably there are variations between different populations of fistula-patients when it comes to severity of damage. This assumption is based on the fact that there are differences in physiognomy/ shapes of the pelvis between different populations. The lack of access to healthcare will also vary among regions. Finally there will be differences among surgeons when it comes to who they select for surgery, and who they turn down or refer to other surgeons.

Hopefully these difficulties will be overcome by the association of fistula-surgeons that were constituted in Addis Ababa in April 2007, whose aim amongst others is to establish a common classification system.

As for me; it is probable that my patients were less severely damaged than the average population of fistula-patients in Ethiopia as I was in a process of learning, and the simple cases were selected for me, and the more difficult ones were taken care of by others.

Conclusion:

These six months of training in fistula surgery in AAFH / BHFC fulfilled all my expectations and hopes. I feel that I have gained skills both in evaluating the fistulae prior to surgery, and in surgical skills making me confident in handling the simple and medium difficult cases. I hope to be able to carry on and improve further in fistula surgery in the future.

I am very grateful for all the people who supported and helped me, believed in me, trained me and cooperated with me making this project of training come true.