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# National fistula management guidelines, December 2011

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## Introduction

Perhaps one of the most famous accounts of obstructed labour is the case of Princess Charlotte of England. In 1817, Princess Charlotte, daughter of George IV, was the only illegible heir to the British throne in her generation. Thus, when the newspapers announced her pregnancy in early July 1817 the entire country was closely following this most important event in the British history. In November 1817, 42 weeks after her last menstrual period, Princess Charlotte went into labour. Fifty hours later, twenty-four hours after being in the second stage of labour, Charlotte delivered a nine pound still born. Five and half hours later, the princess died, presumably from hypovolemic shock after a postpartum haemorrhage due to uterine atony. Three months later, Sir Richard Crafts, princess's Charlotte's obstetrician, committed suicide unable to bear the burden of responsibility for the death of the heir. As this event resulted in the death of the infant, the patient and the physician it has been historically referred to as the '*Triple Obstetric Tragedy*'. [3]

However, obstructed labour has been a topic in the medical literature for hundreds of years. The oldest evidence of obstructed labour can be found in the remains of Queen Henhenit, the wife of Egypt's ruler around the time of 2050 BC. The queen's mummy was originally sent to the Metropolitan museum of art in 1909. It was then returned to Cairo in 1923, where an extensive anatomical review found a defect in the bladder communicating directly with the vagina. It has been hypothesized that severe damage to the queen's bladder and vagina occurred at the time of parturition, likely resulting in her death. As it has been noted, '*to queen Henhenit belongs the dubious honor of having suffered the most antique vesico-vaginal fistula documented*'. [4]

In the 11<sup>th</sup> century, the Arabo-Persian physician Avicenna made the connection between obstructed labour and vesico-vaginal fistula. In

his textbook (Al-Kanon) he noted '*In cases in which women are married too young, and in patients who have weak bladders, the physician should instruct the patient in ways of prevention of pregnancy. In these patients the fetus may cause a tear in the bladder that results in incontinence of urine. The condition is incurable and remains so till death*'. [5]

In 1838, Dr. John Peter Mettauer of Virginia wrote a letter to the Boston Medical and Surgical Journal confirming the relationship between obstructed labour and VVF. This letter reported that he had successfully closed a VVF with wire suture. Despite Mettauer's important accomplishment, the honor of being the first American surgeon to close a VVF is often given, erroneously to Dr. James Marion Sims. He has been called '*the father of American gynecology*', and as the British Medical Journal noted at the time of his death, he '*must be considered as the establisher of the branch of medical science which before his day had been looked upon as a mere accessory of obstetrics*'. Although he was not the first American to close a VVF, he significantly improved the surgical techniques of fistula repair, and to this day, many of his techniques remain the standard. [6]

## Epidemiology

When people first hear about obstetric fistula, their reaction is often to reject hearing more. The subject is just too unpleasant. Yet, rejection is often what happens to women living with fistula.

Obstetric fistula is a devastating pregnancy-related disability which affects an estimated 50,000-100,000 women each year according to the WHO. While fistula is a global problem, it appears to be particularly common in Sub – Saharan Africa. The condition usually develops in the course of obstructed labour due to cephalopelvic disproportion. Undue pressure by the baby's head on the bladder , vagina and rectum cuts off the blood supply from soft tissues. If this pressure is not relived by timely emergency CS , the result is usually devastating. If the mother survive this catastrophe , the baby dies in the course and she ends with OF. The risk factors for this are:-

- 1- Child bearing at too early an age.
- 2- Malnutrition.
- 3- Limited access to emergency obstetric care.
- 4- Poverty.
- 5- Lack of education.
- 6- Lack of antenatal care [1]

For ever mother dying in labour , there are 5 others suffering the consequences of a difficult or obstructed delivery. One of the most devastating consequences of obstructed labour is OF fistula. In the developing world, the true incidence of the condition is unknown as many patients with the disease suffer in silence and isolation. Those seeking medical assistance represent the tip of the iceberg. The majority endure their pains unable to reach facilities with fistula management services either due to unavailability of such services or to due to inaccessibility of such services.

The typical fistula patient is a young, primiparons lady, separated from her husband and has little or no education. [2]

## **Causes of OF**

### **1) Physical causes**

Obstetric fistula are predominantly caused by a very long, or obstructed, labour which can last several days or even, sometimes, over a week before the women receives obstetric care or dies. If labour remains obstructed, the unrelenting pressure of the baby's head against the pelvis can greatly reduce the flow of blood to the soft tissues surrounding the bladder, vagina and rectum. If the mother survives, this kind of labour often ends when the fetus dies and gradually decomposes enough to slide out of the vagina. The injured pelvic tissue also rots away, leaving a hole, or a fistula, between adjacent organs.

If the woman had received timely care, the baby would have been delivered by a caesarean section, and both the mother and baby would most probably have survived. In developed countries, both obstructed labour and OF are medical problems which are largely in the past. This is because problems with labour may be anticipated during antenatal care and a difficult labour that may become obstructed can be identified by the use of the partograph, and a caesarean section can be performed. In resource-poor countries, the reality is different. In these countries the vast majority of the women who die, or who develop fistula during childbirth, do so because they did not receive the health care that they needed. This may be due to a lack of basic health-care provision or through, for whatever reason, an inability to access the local health-care services.

### *The need for skilled care*

Skilled care before and after birth, and particularly during labour, can make the difference between life and death for women and their babies, and can help to prevent OF. Yet only half of the women in developing countries receive assistance from a skilled attendant during delivery (7).

### *Availability of facilities*

Accessing suitably equipped facilities for antenatal care and safe childbirth is usually difficult, especially in rural settings where health centres able to provide basic emergency obstetric care may be 70 kms away, and there is no easy or affordable form of transport. Even where such centres exist, there is often a lack of accessible referral facilities further away that can provide comprehensive emergency obstetric care such as a caesarean section. Assessments of basic and comprehensive emergency obstetric care in a number of anglophone and francophone African countries, conducted recently by United Nations Population Fund (UNFPA) and United Nations Children's Fund (UNICEF), found that each country had one comprehensive emergency obstetric facility per 500 000 inhabitants, but none had the required number of facilities for basic emergency obstetric care (8). Further, only 8.2–35% of women with complications in labour received care at an appropriate facility.

Even if women manage to travel to these facilities, they are often required to provide their own surgical gloves, dressings etc., for a clean delivery and may be required to pay official and, often, unofficial costs. For a poor family living in extreme poverty, the costs of an emergency caesarean section can be crippling; some families cannot afford them, or are left in debt for many years .

Improving access to timely obstetric care is the most important first step that can be taken to prevent fistula from occurring in the first place. The problems in accessing maternity care that can lead to maternal death or complications are commonly referred to as the “three-delays.” (9). Fistula can develop because of any one of these:

OF is the net result of three factors:

- a) Obstructed emergency obstetric care services : lack of trained health cadres that can follow the woman till she delivers safely,

- b) Obstructed or limited access to facilities with emergency obstetric care e.g. unpaved roads , floods ...etc.
- c) Obstructed labour due to unavailability of health center with antenatal care services and trained midwives that pick up the earliest signs of obstructed labour ; and refer the patient to deliver in hospital.

## **2) Lack of knowledge about, or facilities for, fistula repair**

Once they occur, OF require surgical repair; they usually cannot heal by themselves. The principles for this are described in Chapter Three on surgical repair. Over 90% of women can be cured with one operation and can resume an active and fulfilling life, including having further children.

However many women and/or their families, especially those who lacked skilled care during delivery, may not even know that a treatment exists for fistula. And these services, when they exist, are often too far away or too expensive. In some developing countries, a few specialized fistula hospitals or services exist, particularly in parts of Ethiopia, Nigeria, Pakistan, Sudan and Tanzania. But most doctors lack training in fistula repair, and most hospitals and clinics are unable to treat fistula successfully.

## **3) Underlying social causes**

Most fistula occur among women living in poverty in traditional cultures, where a women's status and self-esteem may depend almost entirely on her marriage and ability to bear children.

### *Poverty*

While the immediate causes of OF are obstructed labour and a lack of emergency obstetric care, pervasive poverty is an important underlying cause. Women who suffer from OF tend to be impoverished, malnourished, lack basic education and live in

remote or rural areas. Two epidemiologic studies of fistula have found that over 99% of women undergoing repair were illiterate (10,11). In sub-Saharan Africa the incidence of OF has been estimated to be about 124 cases per 100,000 deliveries in rural areas, compared with virtually no cases in major cities (12). Like many other women in remote areas of poor countries, most women who develop untreated fistula give birth at home, without assistance from skilled birth attendants.

### *Early marriage and childbirth*

The traditional practice of early marriage contributes to a risk of obstructed labour and fistula. In parts of sub-Saharan Africa and South Asia, where OF is most common, women often marry as adolescents, sometimes as young as ten years of age, and many become pregnant immediately thereafter, before their pelvises are fully developed for childbearing. In Ethiopia and Nigeria, for example, over 25% of fistula patients had become pregnant before the age of 15, and over 50% had become pregnant before the age of 18. Fistula formation is also more likely to follow a first labour and often these girls and women may have been the victims of forced marriages. Many adolescent girls in developing countries may also be undernourished and underweight, thus compounding the risks.

### *Too early marriage, inadequate family planning and birth spacing*

In many traditional communities early marriage and childbearing, and large families, are the norm. There is little awareness of the need to delay the first pregnancy, or to space pregnancies well apart to enable the mother to recover and gain strength before a subsequent pregnancy. However, health services alone are unable to respond to these problems. Deeply embedded cultural and social values, and systems of beliefs, continue to form barriers which prevent young women from being able to manage their own lives

and bodies. Changes in social and cultural attitudes, and enabling legislation to protect the rights of the health of adolescent girls, are also needed to help women delay their first pregnancy until they are physically able to deliver safely.

## **Situation in Sudan**

The situation in Sudan is not different from most of developing countries in Sub-Saharan Africa . The majority of the populations of Sudan reside in rural areas where facilities with antenatal care for pregnant women and emergency obstetric care services are still suboptimum. Furthermore , the uptake for such services by the community is low due to poverty , lack of education and knowledge about the importance of such services for the wellbeing of pregnant women and their unborn children. Being one of the developing countries , the prevalence of OF is still high in Sudan. The disease is endemic in Western and eastern Sudan , but even the Central parts are not immune. Until the problem of OF is addressed through the three strategic interventions of prevention, curative, and rehabilitation ; OF shall continue to be a health dilemma and a responsibility of all sectors of the society .

We dream that every mother is provided with the optimum antenatal and intrapartum care until she delivers safely and happily.

## **Fistula call**

In 2005 , the international “ Campaign to End Obstetric Fistula “ was launched by the UNFPA and partners in line with the millennium developmental goals 4 & 5.

Currently there is a worldwide effort to reduce maternal mortality in line with the Millennium Development Goals (MDGs) to reduce maternal mortality by 75% by 2015 . This was restated and re-

emphasized on World Health Day 2005, which was dedicated to maternal and newborn health. The accompanying World Health Report for 2005 was devoted entirely to advocating that more action should be taken to save the lives of mothers and children. The determinants for both maternal deaths and OF are the same. Thus strategies that are currently being designed to develop national programmes to improve maternal and newborn health are directly linked to those aimed at fistula prevention and cure. There is no better time than now to assimilate the fistula prevention and treatment strategies ; into an integrated maternal health strategy designed to ensure that all pregnant women have safe deliveries and return home, with a healthy baby, to a loving and supportive family.

In 2006 , the national fistula call was launched by UNFPA and the Reproductive Health Directorate – Federal Ministry of Health with Dr Abbo's National center for Fistula & Urogynaecology as key partner. A national fistula road map was formulated with the objective of availing antenatal and emergency obstetric care at rural areas as well as increasing the number of professionals ( surgeons and paramedicals ) providing fistula management services for fistula victims.

### **Dr Abbo's National Fistula & Urogynaecology Center**

This center the largest center in Sudan dedicated for OF management. It was established in the late 80's and since then it has functioned to provide fistula management services .Five satellite centers were established with the sponsorship of the UNFPA Sudan country office and in collaboration of Dr Abbo's Fistula Center. The surgical teams and health professionals providing fistula management services in those centers were trained at Dr Abbo's Fistula Center.

This year 2011 , medical officers from different state health centers and facilities were trained on OF diagnosis , initial management ( avert any concomitant health problems e.g. local or systemic infections, anaemia, urinary tract infection), and referral of these patients to the nearest health facility that provide OF treatment services.

The standard management protocols of fistula entails surgical repair and psycho-social rehabilitation of fistula victims to help them regain their self esteem and return to their communities and families as productive empowered member of the society.

### **Fistula Rehabilitation and Social Reintegration Center**

In 2009 , the fistula rehabilitation and social reintegration center was established to offer psycho-social rehabilitation programmes by professional psychologists and social workers. It also offers vocational training as well as illiteracy eradication programmes.

# Management protocols

## Initial management of OF

- 1) Medical doctors at single doctor hospitals / health centers should be able to diagnose OF.
- 2) Medical doctors should also be able to offer initial assessment of the patient condition and offer treatment for commonly encountered morbidities often coexisting with OF . These include
  - Removal of vesical stones.
  - Advise on personal hygiene and skin care for vulval and perineal excoriations and ammoniac dermatitis ( zinc oxide cream).
  - Physiotherapy for sciatic nerve injuries and dropped foot.
  - Correction of anaemia ( haematoinics and/or blood transfusions as indicated).
  - Treat local or systemic infections.
  - Treat urinary tract infections ( Ciprofloxacin 500 mg / Norlfloxacin 400 mg b/d for 10 days ).
- 3) Produce a simplified diagrammatic representation of the type of fistula.
- 4) Refer OF patient to the nearest facility offering fistula management services.

## **Management at specialized fistula centers level**

- 1) Referred patients should be assessed and triaged accordingly.
- 2) The patient is placed in the lithotomy position for good exposure of the fistula.
- 3) Each patient is examined to identify the type of fistula ( vesicovaginal or rectovaginal or both ) , the fistula site , and to assess the condition of the tissues surrounding the fistula, determine the route of operation . Any necrotic tissue is excised. Local infection is treated with antibiotics and vaginal antiseptic wash.
- 4) A catheter test can be done to identify the fistula; if it's big enough to allow passage of tip of a metallic catheter.
- 5) A dye test is done to locate the small fistulae; and diagnose multiple fistulae if present.
- 6) Three dry swab test is performed to identify the level of fistula. If the swabs are wet but not stained suspect ureteric fistula; and request an intravenous urogram or magnetic resonance imaging.
- 7) A diagrammatic representation of the fistula is made on the specified booking card. The fistula is classified using the classification system adopted at the center( appendix 1 ) . Accordingly simple fistulae are treated at satellite centers while more complex and complicated ones are referred to Dr Abbo's National Fistula & Urogynaceology Center.
- 8) Vesical stones are looked for , and if present should be removed before repair is undertaken.
- 9) Surgical repair is attempted 4 months after delivery , to allow for inflamed and necrotic tissues to resolve in order to maximize the chance for success of the repair.

- 10) The patient is booking for surgical repair and an appointment for admission is given according to booking timetable.
- 11) Meanwhile , any co-morbidities are treated in collaboration with other medical disciplines eg diabetes , tuberculosis, hypertension.

### **After admission**

- 1) Patient notes should be filled with details of personal history , past medical history, pervious surgeries, ask for known drug allergy or long time medications.
- 2) Evaluate patient for fitness for surgery eg diabetes control , hypertension, thyroid disease ( high prevalence in Western states ).
- 3) General examination ;
  - a. Look for pallor , presence of goitre or tracheal deviation.
  - b. Check the blood pressure.
  - c. Check the chest.
- 4) Local examination ;
  - a. Look for local infection or necrotic tissues ; ttt: antibiotics and daily wash with Vagyl vaginal wash for 5 days. Sometimes Gentamycin soaked packs may be indicated.
  - b. Skin macerations are treated with oral antibiotics ( penicillin caps and metronidazole tabs for 1 week ) + zinc oxide cream b.i.d .
- 5) Order routine investigations which are : haemoglobin estimation , urinalysis, renal profile, liver function test, chest X-ray, electrocardiogram, and random blood glucose.
- 6) Additional investigations are requested as indicated eg thyroid function tests , intravenous urogram, magnetic resonance imaging.

## **Preoperative Preparation**

- 1) Fill an informed consent with details of the operation to be done and possible complications ( early & late).
- 2) Prepare 2 pints of blood.
- 3) Check the patient's last menstrual period ( LMP ).
- 4) Check the blood pressure, Hb%, Urinalysis.
- 5) Recheck the condition of the vaginal skin the day before the operation.
- 6) For rectovaginal fistula bowel preparation starts 48hrs before the operation with:
  - Fluid diet excluding milk.
  - Isotonic Coloclean solution (2 sachets dissolved in one liter per 24hrs).
  - Enema the night before the operation.
- 7) Instruct the patient to fast overnight.
- 8) Preoperative anaesthetic check , plus premedication as indicated in selected patients eg the very anxious patient.
- 9) For known diabetic and/ or hypertensive , ensure optimum blood sugar and/or blood pressure control before anaesthesia.

## **Operative principles**

The overriding principle is that the first attempt at repair offers the best chance of success which is why emphasis is placed on determining the classification of the fistula in order to decide who should operate.

A number of different surgical techniques are employed, depending on the surgeon's preference. None are described here and, although references for many of the different techniques are given at the end of this chapter, it is stressed that none should be attempted by untrained surgeons.

**The following are the basic principles for fistula surgery:**

*The route of repair*

The usual approach for fistula repair is the vaginal route. However, the surgeon's own experience, the site of the fistula and the extent of injury determine whether the vaginal or, less commonly, the abdominal route is chosen.

*The operative position*

The most commonly used position for the vaginal route is the exaggerated lithotomy position with shoulder supports for comfort and to help prevent the woman from sliding from the table. The operating table should be tilted in the steep Trendelenburg position so that the surgeon can look down easily into the vagina. The woman's legs should be placed outside the lithotomy poles or padded supports, and supported in the stirrups of the poles, with a small pillow placed under her head.

*Preventing infection*

Strict asepsis should be ensured by using antiseptic wash, sterile drapes and employing an aseptic technique. Some surgeons also routinely use prophylactic antibiotics, while others do not. It is, however, common practice in developed countries to give appropriate prophylactic antibiotics to all patients undergoing pelvic surgery at induction of anaesthesia and this principle should be followed wherever possible, particularly for women undergoing repair of recto-vaginal fistula, who are at higher risk of coliform contamination.

**The basic surgical principles for vesico-vaginal fistula (VVF) can be summarized as follows:**

- 1) The fistula should be exposed and the ureters protected.
- 2) The bladder should be mobilized to enable tension-free closure and wide enough dissection of the bladder and vagina. The bladder and vagina should be closed separately, excluding the mucosa and inverting the bladder. The majority of fistula surgeons use one layer closure for the bladder but some prefer closure in two layers, though this may necessitate wider dissection. The vaginal skin/ epithelia can be opposed either by minimal suturing to allow for drainage or closed more formally, but in either case haemostasis should be obtained.
- 3) The bladder should be drained with a size 16-18 catheter. The catheter should be held firmly but gently in place by anchoring stitch on the thigh or sutures at the introitus to keep it in place and to avoid pulling on the repair site.
- 4) Suture material used is usually Vicryl 2-0 for bladder closure and Vicryl 0 or 1 for the vaginal skin. But this may be modified subject to availability of different type of sutures at different centers. Non absorbable suture material can not , and should not be used , to repair OF.

*Recto-vaginal fistula (RVF)*

The principles of repair of a RVF are similar to those given for VVF except:

- 1) Care should be taken not to cause an inadvertent stricture of the rectum.

- 2) Preoperative bowel preparation should be more thorough than for VVF alone. This can be achieved by the use of enemas.
- 3) A temporary colostomy may be required for large, high or severely scarred RVF.

### **Post operative care**

- 1) Adequate analgesia ( morphine or pethidine )should be prescribed to these patients to keep them pain-free.
- 2) Vital signs ( pulse , blood pressure , tempreture ) should be taken every 4 hrs for the first hours , and then accordingly. Beware of signs of primary haemorrhage.
- 3) Hydration and fluid balance should be maintained by IV fluids till oral intake is allowed. If abdominal repair ; oral intake usually allowed after 24hrs durning which the patient receives IV fluids in the form of 1 drip dextrose water + 1 drip ringer lactate every shift . If vaginal repair ; allow oral intake after 8 hrs.
- 4) Upon taking orally , the patient should be advised to maintain high oral fluid intake.
- 5) Prophylactic antibiotics are crucial for infection control. IV Penicillin + metronidazole infusions + gentamycin IM should be commenced , and treatment course completed with orally when the patient start taking by mouth. It is common practice to continue parental antibiotics for 24 hrs postoperative.
- 6) Foley's catheter usually removed 2-3 weeks after the operation, and the ureteric catheters (if present) are removed after 7-10 days.
- 7) Vaginal pack, if present, is removed after 24-48hrs.

- 8) Usually a 3-ways foley's catheter is used to freely drain the bladder.
- 9) Rectal tube, if present, is removed after 4-5 days.
- 10) For rectovaginal fistula : Fluid diet excluding milk is continued in the postoperative period for 10 days , and castor oil is started on the 5<sup>th</sup> postoperative day for 2 month.
- 11) For vesicovaginal fistula ; clamp test is done 1 day before catheter removal ( 48 hrs before discharge ) . The catheter is clamped using artery forceps every 2 hrs to check for the integrity of the repair and to exercise the bladder.
- 12) 24 hrs before discharge of the patient from hospital , the urinary catheter is removed and the patient is instructed to empty her bladder frequently ( 2-3 hrs ).this is important to recognize any voiding difficulties before the patient is discharged home.

### **Instructions on discharge**

- 1) Patients are usually discharged 2-3 weeks after the operation.
- 2) A discharge card is filled with details of the operation , date of operation, result of the operation , and the date of next follow-up appointment (annex ).
- 3) If the operation was successful, advise frequent evacuation of the bladder e.g. every 2 -3 hrs. Check-up visit is scheduled after 6 months. The patient is advised to abstain from sexual intercourse for 3-6 months. After that if she gets pregnant, she should report to the nearest health facility and inform the personnel that she had had a successful repair of genital fistula ( show her card ) ; so that she will be planned for an elective C/S

- 4) If the attempt was not successful another repair can be attempted after 3 months.

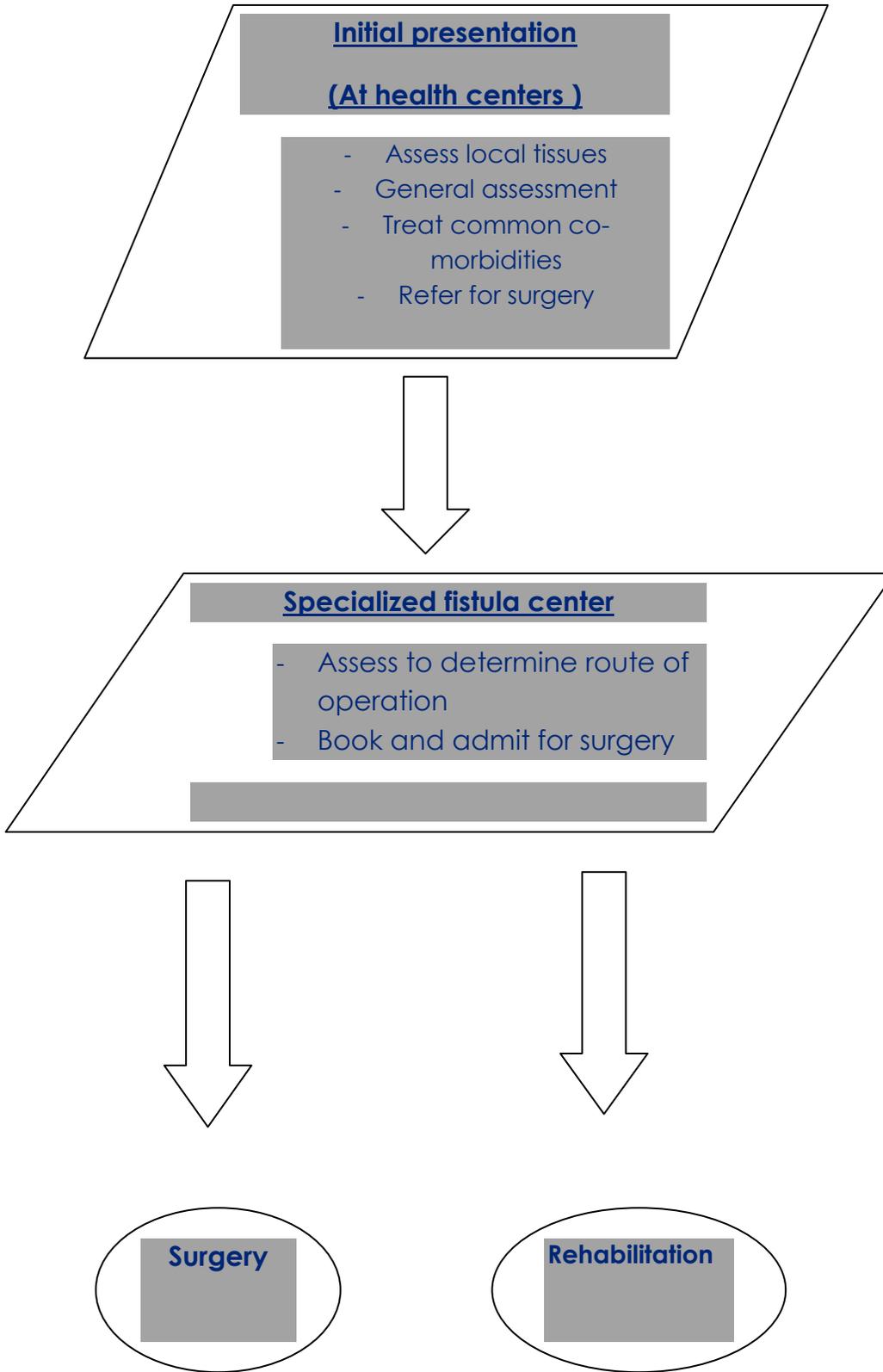
### **Urinary catheter protocol**

The postoperative follow-up is critical to operation success. Meticulous catheter care is thus mandatory. The following are common catheter problem management themes:

- 1) A turbid catheter drain is managed but prescribing antibiotics whilst taking urine sample for analysis. The urine bag should be changed as well.
- 2) If uncountable pus cells are present , send a culture and sensitivity sample and change antibiotics accordingly.
- 3) If there are participate in the urine bag or drainage tube , wash with normal saline or normal saline with dissolved antiseptic boric acid powder.
- 4) If the catheter blocks in the first post-operative day , yhink of clot blockage and flash with normal saline.
- 5) If still blocked , change the catheter if appropriate.

### **Data & record keeping**

An integrated and detailed patients' information system should be in place to allow for data analysis and self audit . A uniform data collection sheet will allow data sharing between all centers providing fistula services ( appendix 2, patient data collection sheet ). This promotes sharing of experiences and research on the sociodemographic determinants that prevail in communities with large volume of patients to help formulate and implement sound action strategies.





**Rehabilitation  
&  
Vocational training**

## **Rehabilitation programmes**

Fistula is one of the diseases that have a major psychological impact that might sometimes be shattering. Thus fistula patients should be offered physical and psychological rehabilitation services provided by skilled social workers / psychologists . Selected cases should have physiotherapy by a skilled physiotherapist. If not available , a nursing staff should provide simple exercises for those patients.

Thus establishing a psychological rehabilitation protocol is one the fundamental aspects of fistula management .

Anxiety and depression constitute most of the problems encountered with fistula patients, among other psychological problems. The rehabilitation team should include psychologist , psychiatrist , and a social worker. In cases that are neurotic and not psychotic, the consultation of the associated psychiatrist is mandatory. Their work consist of preoperative and postoperative assessment, counseling and management of the patients.

Preoperative counseling is also very important especially for recurrent and difficult cases.

### **GROUP THERAPY**

A number of patients are treated at the same time in small groups to make use of the social interaction between the patients themselves and the therapist leading to a change in their behavior. The indication for this type is similar disease signs. It helps the patient to express her emotions and decrease the feeling of anxiety, fear, being self-centered leading to a boost in self confidence.

### **COGNITIVE THERAPY**

This is one of the recent types of therapy which deals with the cognitive basis of psychological disorders. It aims at modifying the disturbed awareness of the patient in order to replace it with a more appropriate ways of thinking to make cognitive, behavioral, and motivational changes in the patient.

### **Vocational training**

This should be offered for cured fistula patients in the form of sewing classes, embroidery classes, Sudanese traditional handcrafts ( traditional head-wear and kitchenware ), and other forms of small incoming generating activities that will help to empower the woman ; and render her self dependent when she returns back at her community.

### **Illiteracy eradication programmes**

These should be part of the rehabilitation programmes offered as lack of education is one of the determinant factors in OF causation. Programmes must include some health awareness programmes about the importance of antenatal care for the health of the pregnant lady and her baby.

Indeed some motivated cured patients who were successfully reintegrated into their societies can be selected and educated to become "fistula advocates" for their own local communities as they are the best to do so. They can help enlighten their communities about antenatal care progrmmes , skilled attendance at birth , and refer other OF victims for repair. Some can even be trained to be skilled birth attenants at their localities.



## Prevention strategies

## **Prevention strategies**

- 1- Widespread health education campaigns are required to raise community awareness about the link between poorly managed deliveries, harmful cultural practices and fistula development. These campaigns should also offer information about the risk of pregnancy at an early age and highlight on the importance of ANC programmes. This can be promoted by increasing community awareness, training traditional birth attendants, increasing women's knowledge of normal pregnancy and delivery, and about when and where to seek help, and why. However, increasing knowledge is not enough and easy access to a local essential obstetric-care facility is paramount .
- 2- Proposal by the reproductive directorate and medical council to incorporate the training on the diagnosis and referral of OF patients in resident doctors' training. Also the residency programme of obstetrics and gynecology of the Sudan Medical Specialization Board should include training of resident future specialist on OF management ( surgery and rehabilitation ).
- 3- Implementation of illiteracy eradication programmes especially addressing communities in areas with the highest disease prevalence.
- 4- Mid-wifery training should aim at providing high quality obstetrical care at community level, both during pregnancy and delivery. Well-trained midwives should be able to diagnose obstructed labour as early as possible so that the patient is referred for emergency obstetrical care before the damage occurs.

- 5- Emergency obstetric care training offered to health cadres at rural areas to prevent the occurrence of OF. This includes monitoring every labour by use of a partograph to identify those women who are at risk of, or who have developed, obstructed labour and to refer them quickly, if services are not available on site, to a comprehensive emergency obstetric-care facility.
- 6- Construction of the '*Maternity Waiting Home*' in rural areas near health facilities where high-risk pregnant women can stay until they deliver safely.
- 7- Endorsement and implementation of a sound referral system connecting rural hospitals and health facilities with facilities with tertiary care through a network of ambulances and mobile clinics.



# Appendices

## Appendix 1

### **ELFAKI'S FISTULA CLASSIFICATION**

#### **I VESICOVAGIBNAL FISTULA**

##### **1) SIMPLE FISTULA**

- a) Size at widest diameter  $\leq 2\text{CM}$ .
- b) Relation to external urethral meatus  $> 3.5\text{ cm}$ .
- c) Away from ureters + intact urethra.
- d) Urethral closure mechanism preserved.
- e) No or minimal fibrosis around the fistula.
- f) Preserved vaginal length and capacity.

##### **2) COMLPEX FISTULA**

- a) Size at widest diameter  $> 2\text{cm}$  but  $< 3.5\text{ cm}$ .
- b) Relation to external urethral meatus  $> 2.5$  but  $< 3.5$ .
- c) Partial loss of the urethra.
- d) + / - affection of urethral closure mechanism.
- e) Moderate fibrosis around the fistula.
- f) Vaginal length  $< 5\text{ cm}$  with minimal capacity affection ( width  $2 - 3\text{ cm}$  ).

##### **3) COMPLICATED FISTULA**

- A) Size at widest diameter  $> 3.5\text{ cm}$ .
- b) Relation to external meatus  $< 1.5\text{ cm}$ .
- c) Total loss of the urethral.
- d) Urethral closure mechanism lost.
- e) Severe fibrosis around the fistula.
- f) Vaginal stenosis with loss of tissue elasticity.

**OR**

Other urinary fistula e.g. Ureteric fistula , vesico-uterine fistula , vesico-cervical fistula + / - rectovaginal fistula.

## **II RECTOVAGINAL FISTULA**

### **1) SIMPLE FISTULA**

- a) Low in the lower 1/3 of the posterior vaginal wall.
- b) Size at widest diameter < 2 cm.
- c) No or minimal fibrosis around the fistula.
- d) Perineal body not involved + intact anal sphincter.

### **2) COMPLEX FISTULA**

- a) Mid-vaginal in the middle 1/3 of the posterior vaginal wall.
- b) Size at widest diameter > 2 cm but < 3.5cm.
- c) Moderate fibrosis around the fistula.
- d) Loss of perineal body + / - weakness of anal sphincter.

### **3) COMPLICATED FISTULA**

- a) In the upper 1/3 of posterior vaginal wall.
- b) Size at widest diameter > 3.5 cm
- c) Severe fibrosis around the fistula.
- d) Loss of perineal body + weakness of anal sphincter ( skin tag).

**OR**

**Combined RVF + VVF**

## Appendix 2

### Patient data collection sheet /Record

Date:\_\_\_\_\_Record No:\_\_\_\_\_File No:\_\_\_\_\_

Name:\_\_\_\_\_Age:\_\_\_\_\_

Tribe:\_\_\_\_\_

Residence:Village:\_\_\_\_\_Town:\_\_\_\_\_Willah:\_\_\_\_\_

Nomadic: Yes No

Marital Status:

Married  Separated  Divorced

Address of the nearest relative in khartoum:

\_\_\_\_\_

#### **\*History**

Complaint:

True urinary incontinence

Stress incontinence

Faecal incontinence

Flatus incontinence

Duration:

Month:

Years:

Age at marriage: \_\_\_\_\_

Age at the first pregnancy: \_\_\_\_\_

Number of term deliveries: \_\_\_\_\_

The pregnancy followed by the condition: \_\_\_\_\_

Antenatal care :

Regular

Erratic

No

The level of antenatal care:

-Midwife

-G.P.

-Specialist

**\*Menstrual History:**

Status of current menstrual cycle :

Regular

Erratic

Amenorrhoea

**\*The Mode of delivery**

Vaginal D

Forceps D

Destructive operation

C S

The place of delivery :

Home

Health Centre

Hospital

**\*The duration of each stage of labour in hours :**

1<sup>st</sup> Stage

2<sup>nd</sup> Stage

3<sup>rd</sup> Stage

or Total duration

of delivery in hours

Is it obstructed labour?

Yes

No

**\*The person in charge of delivery :**

Alone

T.mid-wife

H.m-wife

Doctor

specialist

**\*Other causes of V.V.F:**

-Gynecological operation

Malignancy

-Trauma

F.body

-Radiation

Time elapsed between the inflicted cause and the occurrence of urine leakage

Immediately

Days

Weeks

Months

Years

\*Examination of the V.V.F:

-Size: Small  Moderate  Big

-Shape: Well-defined  Ill-defined

-Relation to the urethra: Involving  Near  Far

-Relation to the cervix : Low  Mid-vaginal  High

-Vaginal wall loss: Present  Absent

-Attachment to the lateral bony wall: Present  Absent

-Relation of ureteric orifice(s) to the fistula edge: At  Away

-Edges: Pliable  Fixed  Calcific

-Urethra: Patulous  Competent

Type of fistula by the dye test:

-Presence of stones: Yes  No

-Dimension of fistula in cm Length  cm Width  cm

-Is it operable?

Yes

No

**\*Diagrammatic representation of the V.V.F:-**

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**\*General Examination:**

Patient height

<150 cm

>150 cm

**\*Repair:-**

-Number of previous attempts : \_\_\_\_\_

-Date of operation: \_\_\_\_\_

-Surgeon: Dr. \_\_\_\_\_

-Approach: Vaginal   
Combined

Abdominal

**\*If Vaginal approach :**

-Flap sliding technique

-Flap sliding technique with labial fat pad "Maritus repair"

-Saucerization technique

-Re-consturction of aneourthra

Yes

No

**\*If abdominal approach:**

-Extra-peritoneal,intravesical

-Transperitoneal,intravesical

-Transperitoneal,intravesical with omental graft

-Transperitoneal,intravesical with re-implantation of the ureter

One ureter

Both

**\*Ureteric fisula :**

-Extra-peritoneal re-implantation.

-Transperitoneal re-implantation.

**\*postoperative complications:-**

-Catheter blocked

Yes

No

-Wound infection

Yes

No

-Retention of urine

Yes

No

**\*Results:**

-End of the second week:-

-Leak on lying down

Yes

No

-Leak on walking

Yes

No

-Continuous Leak

Yes

No

-Stress incontinence

Yes

No

-Methylene blue leak

Yes

No

-No leak

Yes

No

**\*End of the 4<sup>th</sup> Week :**

-Integrity of closure

Present

Absent

-Stress incontinence

Present

Absent

-True urinary incontinence Present  Absent

-Methylene blue leak Yes  No

\*Conculsion:

Successful repair  Not succesful repair

if not successful repair please explain \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

**\*Examination of the RVF:**

-Shape Well-defined  Ill-defined

-Relation to the cervix High  Low

-Relation to the anal sphincter High  Low

-Rectal wall loss	Present	<input type="checkbox"/>	Absent	<input type="checkbox"/>
-Perineal body loss	Present	<input type="checkbox"/>	Absent	<input type="checkbox"/>
-Split anal canal	Present	<input type="checkbox"/>	Absent	<input type="checkbox"/>
-Attachment to the lateral bony wal	Present	<input type="checkbox"/>	Absent	<input type="checkbox"/>
-Anal stenosis	Present	<input type="checkbox"/>	Absent	<input type="checkbox"/>

**\*If presence:**

-Proximal to the :	Fistula	<input type="checkbox"/>	Distal to the fistula	<input type="checkbox"/>
-External anal sphincter:	Competent	<input type="checkbox"/>	Incompetent	<input type="checkbox"/>
-Edges pliable :	Tough & fixed	<input type="checkbox"/>	Calcific	<input type="checkbox"/>

**\*presence of perineal tear:**

-First degree	<input type="checkbox"/>	second degree	<input type="checkbox"/>	third degree	<input type="checkbox"/>
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**\*Dimension fo fistula :**

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**\*Pelvic Examination:**

-Relation of the episiotomy to the anus:                      Close                       Far

-Injury to the rectum by the episiotomy (3<sup>rd</sup> PT)                      Yes                       No

-Injury to the rectum by the episiotomy (2<sup>nd</sup> PT)                      Yes                       No

**\*Diagrammatic representation of the R.V.F:-**

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**\*Repair:**

-Number of previous attempts: \_\_\_\_\_

-Date of operation: \_\_\_\_\_

-Surgeon:Dr \_\_\_\_\_

-Approach: Abdominal  Vaginal  Combined

-Colostomy: Yes  No

**Method of repair:**

-Repair in two layers:

-Date of operation:

-Full-through technique

**\*Additional repair:**

-Repair of the perineum Yes  No

-Repair of the anal canal Yes  No

-Repair of the levator Yes  No

**\*End of the 4<sup>th</sup> week:**

-Anal tone Present  Absent

-Integrity of closure Present  Absent

-Flatus Present  Absent

-Fecal leak Present  Absent

-Defecation controlled  Not-Controlled

\*Conclusion :

Successful repair  Not Successful repair

if not successful repair please explain: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

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### Appendix 3

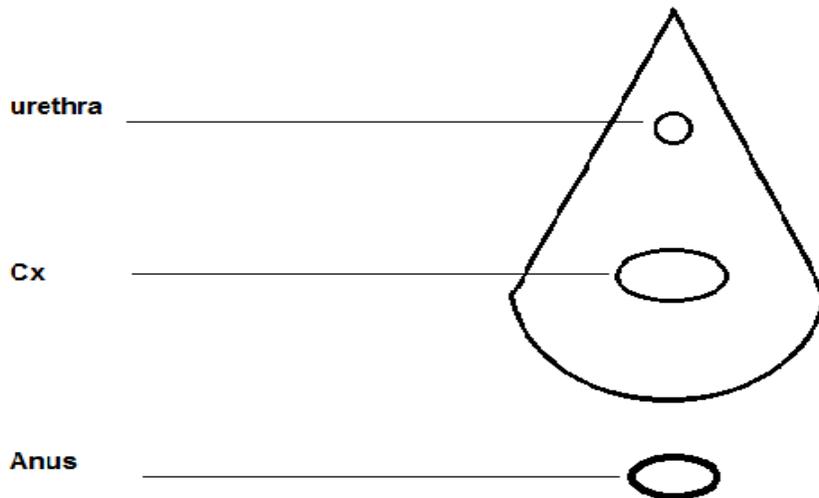
## Booking card

Date .....

Name .....

Age .....

Residence:.....



Comment:.....

Date of admission .....

## Appendix 4

### Discharge card

<b>FileNo.</b>	<input type="text"/>
<b>RecordNo</b>	<input type="text"/>
<b>Patient's name</b>	<input type="text"/>
<b>Residence...</b>	<input type="text"/>
<b>Diagnosis...</b>	<input type="text"/>
<b>Cause of fistula..</b>	<input type="text"/>
<b>Date of operation..</b>	<input type="text"/>
<b>Date of Discharge..</b>	<input type="text"/>
<b>Type of Operation..</b>	<input type="text"/>
<b>Surgeon...</b>	<input type="text"/>
<b>Result of Operation.</b>	<input type="text"/>
<b>Comment</b>	<input type="text"/>
<b>Date of follow- up appointment</b>	<input type="text"/>

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