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Obstetric fistula and its physical, social and psychological dimension: The etiopian scenario

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Abstract

Obstetric fistula affects nearly 0.3% of all labors, totaling 8000 to 9000 new cases in Ethiopia alone. These women are affected at an early age. The current life expectancy being 55 years, there may be 250,000 women suffering from fistula in Ethiopia. The total number of fistula patients in the world is estimated to be around 2,000,000. Since 1975, the Addis Ababa Fistula Hospital has treated more than 20,000 women with vesicovaginal and rectovaginal fistulae secondary to childbirth injury.

Although obstetric fistula refers to an abnormal opening between the bladder or the rectum and the vagina, the persistent pressure exerted by the fetal head during labor not only affects the bladder or the rectum but also affects all the surrounding soft tissues and sometimes the bony structures. Moreover, the continued leakage of urine affects the women in many ways. Often patients are rejected by their family, friends or the society and have to endure their suffering in silence and shame.

There are only few centers and a handful of surgeons who can provide for optimal care for these patients in the world. As a result, it needs two to three decades to clear the fistula backlog without dealing with any new case. With the aim of shedding light on the dramatic situation of obstetric fistula in Ethiopia, this article summarizes the physical, social and psychological impact of this devastating condition.

Key words: Obstetric fistula, vesicovaginal fistula, rectovaginal fistula, obstructed labor, childbirth

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Introduction

Ethiopia, located in the horn of Africa, is the second most populated nation in the continent. The 1.4 million sq kms area of the country is inhabited by over 73 million people, of whom more than 84% live in rural areas. The

rate of natural increase (RNI) is 2.75 with a total fertility rate of 5.9 children / woman (1). It is expected that the total population will reach 177 million by the year 2050.

There are only limited number of hospitals and trained health personnel. Whatever available health institution, it is underutilized and as a result, the country has



one of the lowest antenatal care, postnatal care and institutional delivery rates of 42.1%, 13.6% and 12.4% respectively (1). Ambulances and public transportation are almost nonexistent.

Over 25,000 women and girls die needlessly each year, producing an astronomically high maternal mortality ratio of 871/100,000 live births (1). For each dying mother there are many more suffering from acute or chronic complications of childbirth. It is estimated that more than 500,000 Ethiopian adult women and girls suffer from disabilities associated with obstetric trauma (2) and about 8000 (0.3%) deliveries will be complicated by obstetric fistula annually (3). These women are affected at an early age (mean 16 years). With the current life expectancy of 55 years (1), there may be 250,000 women suffering from obstetric fistula in Ethiopia. The total number of fistula cases in the world is estimated to be around 2,000,000 (3).

Obstetric fistula is an abnormal communication between the genital organs and the surrounding structures that results from unrelieved obstructed labor. It most commonly involves the bladder and the vagina (vesicovaginal fistula) followed by the involvement of the rectum and the vagina (rectovaginal fistula). In about 17.4% (4) of the cases, both the rectum and the bladder can be involved. Various types of communication can occur between the different parts of the genital and the urinary or intestinal tracts, although these two forms are the commonest.

Obstetric fistula is one of the earliest documented human tragedies. The earliest recorded medical reference is found on a papyrus scroll of 1550 BC. The link between difficult labor and the development of fistula was established for the first time by Avicenna, an Arab-Persian physician who died in 1037 AD. He suggested prevention by postponing pregnancy among girls who married young. The first documented fistula patient was

Queen Henhemit. This was discovered in 1935 by Professor D.E. Derry after examining the mummified remains of the queen (5, 6).

To understand the history of obstetric fistulae and subsequent pelvic surgery evolution, it is essential to focus on rural Africa, where such findings are still endemic. In rural Africa true, unrelieved, obstructed labor is common due to early childbearing, an inherited anthropoid/android pelvis with marked lumbar lordosis and, more importantly, a lack of modern medical care.

Although obstetric fistula has been recognized since ancient times, the modern era of fistula repair began in the mid-20th century with major improvements in trans-abdominal and then transvaginal approaches. Despite these technical advances, repair of genitourinary fistula in general, and obstetric fistula in particular, remains a surgical challenge.

Causes of fistula

Genital fistula can be due to several conditions including childbirth, surgery, radiation, coitus, malignancy, infections and trauma. In developing countries, however, childbirth is the leading cause of genital fistula. In our series, 95.4% of the fistulae were caused by childbirth, while all other causes, including early sex at young age, accounted for less than 5% (Addis Ababa Fistula Hospital Document). The following are the different causes by decreasing frequency in our hospital: 1) childbirth (95.4%); 2) coitus (2.1%); surgery (1.2%); 3) trauma (0.8%); others (0.5%).

Why does childbirth, a rather normal physiologic situation, create this serious problem in women in the developing countries? Mafouz in 1929 carried out an autopsy study in women who had died of obstructed labor and found that in 66% of them the fistulae were caused by cephalopelvic disproportion, while in 33% it was due to malpresentation (7). However, the major reason is lack of access to emergency obstetric care. In our study the patients need travel 6 days on foot and 6 hours by bus on average to reach a center where they can find emergency obstetric care (8). The lack of access, however, is not only geographical. It also refers to financial constraints to access health facilities. In countries like Ethiopia, where the per capita income is very low, financial restrictions have considerable significance. Although access to emergency obstetric care plays a pivotal role in the genesis of fistula, malnutrition, early marriage, poverty and illiteracy also add a huge contribution to the development of fistula. A recent

survey from our hospital showed that the three most important reasons for not reaching a health institution during labor are distance, economical factors and poor knowledge in 28.2%, 13.6% and 9.8% of the cases, respectively (9).

Pathophysiology

The central issue in the pathophysiology of fistula is hypoxia. During prolonged obstructed labor the maternal tissue is compressed between the fetal head and the maternal bony pelvis for a long period of time, 3.9 days on average in our series (4). This trauma results in hypoxia, which in turn leads to ischemic necrosis of the surrounding tissues followed by sloughing of devitalized tissues with a subsequent hole in the bladder or rectum. Moreover, depending on the extent of hypoxia, a wide range of changes occur in the surrounding tissues. This is collectively termed **obstetric injury complex** (4). These changes include vaginal scarring, cervical avulsion, scarring of the uterus, different degrees of nerve damage, bone involvement, etc. As all these structures are affected, the patients may suffer from a number of acute and chronic complications including:

- Foot drop: the prevalence of clinical foot drop is about 20%, the rate increasing to 65% if evidence of foot drop from patient's history is considered. The most likely pathophysiological mechanism is prolapse of the intervertebral disk, pressure from the fetal head on the lumbosacral plexus and/or direct trauma to the peroneal nerve from prolonged squatting (4, 10, 11).
- Contracture of the lower limb: with the vain hope of preventing urine leakage and curing their problem women sometimes lie on the floor for months or years, which leads to severe contracture of the lower limbs.
- Vaginal scarring and sexual problems: in about 28 % of our patients some degree of vaginoplasty is required to overcome the extensive scarring that occurs as a result of hypoxic insult (4).
- Amenorrhea: it occurs in about 64.2% (4). Different etiological factors are involved in the causation of amenorrhea. These include Asherman syndrome, hypothalamic pituitary failure, vaginal scarring, cervical stenosis, malnutrition and anemia (12, 13).
- Infertility: although the exact magnitude is not determined, many will remain childless for the rest of their lives.
- Infection of the urinary and genital tract is also one of the co-morbidities associated with fistula.

- Stone formation: a common problem, especially after closure of the fistula.
- Mental problems including suicidal attempts are not uncommon.
- Urine dermatitis: the constant irritation of the surrounding skin from the continuous urine leakage leads to various degrees of skin changes and is one of the most bothersome problems of fistula care.
- Osteitis pubis: up to 32 % of the cases will have various bony abnormalities (14).
- Renal failure: caused by obstruction, chronic ascending infection, or reflux.
- Social problems including divorce: our hospital reports showed that more than 67% are already divorced when they reach the hospital (8). Serious social problems associated with fistula are also reported from other African countries (15).
- Stillbirth: occurring in 97% of the cases (8).

Clinical picture and diagnosis

The diagnosis of fistula is not difficult. In the majority of cases, the history, physical findings and bed side tests establish the diagnosis. The typical presentation is a young peasant girl, married in the early teens, who had been in labor for several days and ended up in stillbirth. She reports leakage of urine and/or feces permanently. Speculum examination often reveals a defect in the vaginal mucosa, which communicates with the bladder or rectum. The position and size of the fistula is quite variable. Based on their anatomical location, vesicovaginal fistulae are classified as:

- Juxtaurethral
- Midvaginal
- Juxtacervical
- Vesicocervical
- Vesicouterine
- Vault fistula (most commonly encountered after hysterectomy).

Figures 1, 2 and 3 demonstrate examples of different obstetric fistulae. Besides the bladder, communication with other parts of the urinary tract is also a possibility. These include urethrovaginal, urethrocervical, ureterovaginal and vesicouterine fistulae.

In very rare circumstances, visualizing a fistula with speculum examination may be difficult. This happens when the fistula is too small, the vagina is scarred, the fistula is adherent to the pubic bone and when there is a ureteric fistula. In such situations, the methylene blue dye test will confirm the diagnosis. In very small fistulae

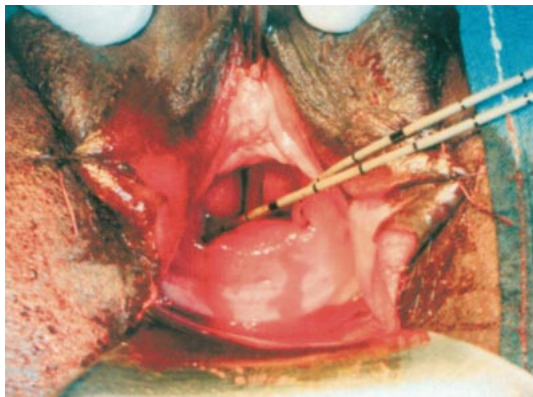


Figure 1. A large vesicovaginal fistula



Figure 3. A giant vesicovaginal fistula

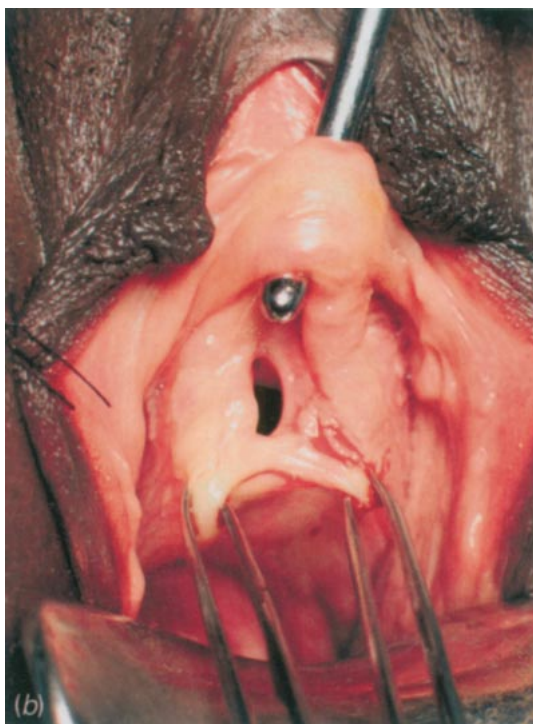


Figure 2. Urethrovesical desinsertion

sometimes it is necessary to fill the bladder with as much as 200ml methylene blue to obtain a positive test. The presence of clear urine in the vagina while the bladder is filled with methylene blue establishes the diagnosis of a ureteric fistula. The administration of furosemide 40 mg IV will increase the production of urine, which makes the diagnosis easier. To decide which part of the ureter is involved, it is wise to perform either cystoscopy or IVP. In apprehensive patients and in cases of scarred vagina, examination under general anesthesia will help both in establishing the diagnosis and in assessing the extent of the damage. Ultrasound scan may be helpful in case of suspicion of ureteric obstruction or in the management of certain complications.

Classification

No consensus has been reached so far on the classification of fistulae. Different authors have proposed different classifications. The Hamlins suggested a classification based on subjective assessment of the extent of the damage. Arrowsmith suggested a scoring system in an attempt to predict outcomes. Waaldjik also suggested a more complex classification (16). Recently, Goh has developed a new classification (17). Each of them has its own advantages and drawbacks. It is beyond the scope of this article to discuss the peculiarities of each of them. However, the general problems related to the classification of fistulae include their limited prognostic value, the difficulty in the objective assessment of all parameters and the involvement of a number of parameters that makes the classification more complex.

In general, there are two important factors that any classification system should take into account in order to predict the outcomes with reasonable accuracy. These are: 1) the extent of damage, which can be assessed by the size of the fistula, the scarring of the vagina and bladder capacity; 2) involvement of the continence mechanism, which is located in the urethra and bladder neck. The degree of damage to the bladder neck is very difficult to assess objectively but measuring the length of the healthy urethra will yield a reasonable assessment of the damage sustained by the continence mechanism.

A recent logistic regression analysis of our series revealed that important prognostic factors are urethral length and scarring of the vagina, whereas the size of the fistula has marginal impact. Hence, any classification needs to take these factors into account and measure them objectively for a good prognostic value. The development of methods to measure these parameters more

objectively is one of the areas for further research in the field of fistula care.

Management of fistula

The common mistake in fistula management is focusing exclusively on the hole and disregard the other associated injuries occurred in the surrounding structures. In fact, surgery is the final step of the overall management package. Management of fistula includes supportive measures, such as nutritional rehabilitation, counseling, medical treatment, physiotherapy, psychotherapy, local wound primary care and treatment of infection.

Surgery

After the steps described above and a general pre-operative assessment, surgery is planned. It is imperative to assess the following in the operation room immediately before surgery: 1) size of the fistula and bladder, 2) location of the fistula, 3) position of the ureters, 4) condition of the tissues, 5) and presence of bladder stones.

The basic principles of fistula surgery include: 1) wide mobilization, 2) excision of scar tissue, 3) tension free closure, 4) protection of the ureters and 5) water-tight closure of the fistula (3, 5, 16, 18). However, excessive mobilization should be avoided to not damage the blood and nerve supply. A detailed description of the related operative techniques is not included within the scope of this article, and readers are encouraged to read other more elaborated texts. However, a few important and controversial points associated with fistula surgery and postoperative care will be discussed briefly:

1. Timing of surgery; traditionally, it has been customary to wait for about 3 months after the onset of the obstetric fistula. The rationale for this approach is to give time for the tissues to heal (19, 20), to provide ample time for nutritional rehabilitation and correction of anemia, and to allow spontaneous healing, which can occur in small fistulae without any surgical intervention during this initial 3-month waiting period. Spontaneous closure has been reported to occur in up to 60% of newly formed fistula in selected women (16). However, recently some experts have claimed high success rates without this waiting period. Nonetheless, in our experience we often feel that the tissues will not be ready for operation until 3 months after the injury. The-

refore, we value this initial stabilization period and still practice it.

2. Graft; since its development by Martius, labial fat graft has been one of the important adjuncts of fistula surgery and this has been considered as a major breakthrough in the successful treatment of genitourinary fistula. It was estimated that it increases the success of closure in 70-90% (3). The potential benefits of the Martius fat graft include an additional blood supply to the heavily scarred surgical area, support of the bladder neck, simultaneously preventing or minimizing stress incontinence, and use as a cushion in subsequent childbirth, if it occurs vaginally (19, 20). However, recent studies have shown that there is no significant difference in healing in the presence or absence of the Martius fat graft, at least in small size fistulae. Recent retrospective studies have also demonstrated that the fat graft has no significant contribution in preventing or minimizing stress urinary incontinence (21). An area that needs further research is its role in preventing fistula recurrence in subsequent childbirth. Although women are not encouraged to give birth vaginally after obstetric fistula repair, the occurrence of home birth is quite common in Ethiopia. Thus, the role of the fat graft as a cushion to prevent fistula recurrence needs to be carefully evaluated.

3. Duration of ureteric catheterization; ureteric catheterization is one of the milestones in fistula surgery. The main advantages include prevention of ureteric injuries, prevention of postoperative oedema in the ureteric orifices and diversion of urine from the wound site. Although these advantages are well established, there is no consensus on the duration of ureteric catheterization. The critical issue is the increased risk of infection with prolonged indwelling catheterization. Moreover, some urologists believe that there is always a reactionary dilatation of the ureteric orifice whenever there is a catheter in the ureter and thus, its importance both in preventing oedema and in diverting the urine is doubtful. In our centre this practice is greatly dependent upon the individual surgeon and varies from 5-10 days, except when ureteric re-implantation is performed, in which case we keep the catheter in place for 2-3 weeks. Currently, we are conducting a study on the importance of the use of ureteric catheters in urine diversion.

4. Ambulation; strict bed rest for about 2 weeks was the rule, but recently its advantage has been questioned and one series from our hospital showed that patients with small fistulae can start ambulation safely shortly after surgery.

5. Open versus closed drainage of the bladder; our practice is to use open drainage into a kidney dish. The reason is to ensure free flow of urine. Although the closed system prevents infection, unless checked regularly there is a risk of catheter blockage and it is also expensive for our standards of medical care.

6. Antibiotic use; whether as postoperative treatment or as prophylaxis, its use is controversial. A report from West Africa showed no benefit from antibiotics (22). Nevertheless, caution should be exercised in generalizing this result as the type of fistula may influence the outcome. However, routine use of antibiotics will remain our practice until the results of ongoing clinical trials are known.

7. Abdominal versus vaginal approach; some urologists argue that the best route is abdominal while gynaecologists favour the vaginal approach (23). We recommend the vaginal approach because we believe it is associated with less morbidity and a higher success rate.

8. Anesthesia; spinal anesthesia is the most common form of anesthesia employed in our center. In case of prolonged surgery, general anesthesia and spinal epidural are the options.

Post operative care

The most important points in the postoperative care are the continuous drainage of the bladder, high fluid intake and bladder drill (24).

Post operative complications

Postoperative complications can be grouped into early and late complications. Early complications consist of haemorrhage, infection and urinary tract injuries. Late complications include fistula recurrence, residual stress incontinence, vaginal scarring and stenosis, dyspareunia and apareunia, cryptomenorrhea, ureterohydronephrosis, and bladder calculi.

Prognosis

In our centre the success rate of fistula closure averages 92% (25). However, we see immediate residual incontinence in 33% of the patients (26), 8- 12 % of whom return for further surgery for residual incontinence.

Challenges and areas of research in the future

- Follow-up: as our patients live in rural areas, it is difficult to establish a follow-up protocol.

- Residual incontinence: some fistula patients will continue to leak after fistula closure. The reported incidence varies widely and ranges between 6.2 % to 57% (8, 26, 27). Residual incontinence is higher in fistulas involving the urethra and/or the bladder neck (4, 28, 29, 30). Neither the exact cause, nor the appropriate treatment has been established. One study from the UK demonstrated that 50% of the patients had detrusor instability, while 11% showed genuine stress urinary incontinence (28). Moreover, there is no definitive therapeutic approach for these cases, and the conventional forms of bladder neck suspension may be technically difficult and of limited success. Long-term postoperative evaluations are usually extremely difficult as these patients live far away from the hospital.

- Sexuality and fertility: for most third world rural women sex and childbearing are not regarded as a pleasure but mainly as a means of survival. In the absence of these functions their womanhood is at stake. Although many patients suffer from this problem, the extent of the problem, its pathophysiology and the care for such women are not established.

- Social reintegration: reintegration of these women back into the society is also a complex issue that deserves further political and social attention.

- Prevention: in our medical centre, we have been more focused on cure than prevention for the last 35 years. Although prevention is quite a formidable challenge, it is time to work towards fistula eradication as it devastates the lives of these young women, commonly nicknamed "the living dead". For many of these women, who carry physical, social and psychological scars permanently, life can no longer be restored. The strategy for prevention should include: advocacy, improvement in emergency obstetric care, collaboration with other stake holders and mobilization of the community and government authorities.

Conclusion

Obstetric fistula is one of several third world human tragedies. And one that seems to have been long neglected by the international community. The Hamilins, like

many others throughout rural Africa and other parts of the globe plagued by this devastating medical condition, have contributed remarkably and incessantly to alleviate the heavy burden carried by these poor women.

With an accurate diagnostic evaluation and judicious use of basic surgical principles, successful closure of obstetric fistulae is possible in most patients in the hands of experienced skilful surgeons. But much more needs to be done in terms of prevention by all of us, doctors, local societies and governments, as well as the industrialized western world. Because it is indeed our task, and deontological duty, to offer help through progress, hope, technical surgical innovation and our unending motivation to these poor, undeserved women who suffer in silence and shame the chronic pain of ostracism and oblivion.

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