

Obstetric Fistula



Maternal Health Task Force



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Course Outline:

Module I: Introduction, definition, epidemiology, etiology, pathogenesis and prevention of Obstetric Fistula

Module II: Diagnosis and Classification of Obstetric Fistula

Module III: Management of Obstetric Fistula

Module IV: Social Reintegration

Module I: Introduction, definition, epidemiology, etiology, pathogenesis and prevention of Obstetric Fistula

By the end of this module, the learner should be able to:

- Define an obstetric fistula.
- Describe the burden of obstetric fistula globally and in his/her own setting, and the difficulties in generating epidemiological estimates.
- Understand why obstetric fistula is considered a neglected condition of poverty.
- Describe the causes and processes that lead to obstetric fistula.
- Understand obstetric fistula in the context of obstructed labour injury complex.
- Describe the consequences of obstetric fistula.
- Understand the primary, secondary and tertiary strategies of preventing obstetric fistula.
- Analyze, challenge, critique or discuss the current evidence on any of the subtopics covered in the module, with the aim of improving research geared towards eradication of the problem.

Introduction

According to the World Health Organization, obstetric fistula is an abnormal connection between the vagina, rectum and/or bladder which may develop after prolonged and obstructed labour and lead to continuous urinary or faecal incontinence.

A hole between the urinary bladder and the vagina is regarded as vesicovaginal fistula whereas a hole between the rectum and the vagina is known as rectovaginal fistula (Tunçalp 2015).

Obstetric fistula is an indicator of the health system failing to provide accessible, timely and appropriate intrapartum care (Tunçalp 2015).

Obstructed labour is one of the leading causes of maternal mortality in developing countries and with it, comes other morbidities, the most devastating being obstetric fistula. It is estimated that for every maternal death, 20-30 women develop serious obstetric complications including fistula. These women, apart from surviving the ordeal of obstructed labour, face the physical and psychosocial challenges of living with obstetric fistula (Ahmed 2015).

Ahmed S, Tunçalp Ö. Burden of obstetric fistula: from measurement to action. *Lancet Glob Health*. 2015 May;3(5):e243-4.
[http://dx.doi.org/10.1016/S2214-109X\(15\)70105-1](http://dx.doi.org/10.1016/S2214-109X(15)70105-1)

Tunçalp Ö, Tripathi V, Landry E, Stanton CK, Ahmed S. Measuring the incidence and prevalence of obstetric fistula: approaches, needs and recommendations. *Bulletin of the World Health Organization*. 2015 Jan 1;93(1):60-2.

Obstetric Fistula as a neglected condition of poverty

It is argued that obstetric fistula should be considered as a neglected condition. It shares many properties with neglected tropical conditions: majority of cases occur in developing countries; it affects the poor and even exacerbates or compounds the level of poverty; it is underestimated as a major cause of morbidity and mortality; it is often highly stigmatizing; it is both preventable and treatable using proven, cost-effective approaches but the resources to do this have not been mobilized.

It differs from other neglected conditions of poverty because it is not infectious in etiology and it exclusively affects women. Moreover, its prevention and treatment are both surgical. Surgical care has traditionally fallen outside the paradigm of public health and therefore complicating access to emergency Caesarean sections for the women who need them. Even where surgical care is accessible, obstetric fistula, considered a dirty procedure, will often be found at the bottom of the theatre list.

Therefore, as an example, while improving nutrition through primary care will go a long way in preventing stunting and subsequently short stature and consequently obstructed labour. Surgical interventions for obstructed labour at secondary and tertiary levels will prevent fistula formation and treat established cases.

Epidemiology of Obstetric Fistula

Obstetric fistula occurs in all developing countries but it is confined to the “fistula belt” across the northern half of sub-Saharan Africa from Mauritania to Eritrea and in the developing countries of the Middle East and Asia (Tebeu 2012).

Though the exact prevalence is hard to determine, it is thought that patterns follow maternal mortality ratios, with higher prevalence seen in regions with high maternal mortality. This is in contrast to developed countries where the causes of obstetric fistula are mainly iatrogenic: radiation therapy and surgery (Adler 2013).

Adler AJ, Ronsmans C, Calvert C, Filippi V. Estimating the prevalence of obstetric fistula: a systematic review and meta-analysis. *BMC Pregnancy and Childbirth*. 2013 Dec 30;13(1):246.

Tebeu PM, Fomulu JN, Khaddaj S, de Bernis L, Delvaux T, Rochat CH. Risk factors for obstetric fistula: a clinical review. *Int Urogynecol J*. 2012 Apr;23(4):387-94.

Epidemiology of Obstetric Fistula

While providing emergency obstetric care for obstructed labour through caesarean section is essential in preventing the obstructed labor complex including fistula, poor surgical skill has been shown to actually lead to iatrogenic fistula (Raassen 2014).

It is estimated that 13.2 percent of genitourinary fistula results from provider error. In one review, four out of five iatrogenic fistulas developed following surgery for obstetric complications: cesarean section, ruptured uterus repair, or hysterectomy for ruptured uterus. Hysterectomy was the most common gynecological procedure leading to fistula (Raassen 2014).

Difficulties in estimating incidence and prevalence rates arise from the fact that most cases occur in remote geographical settings, the condition is rare and the fistula victims are often ostracized (Tunçalp 2015). While the most cited incidence is 1 to 2 per 1,000 deliveries and a corresponding estimated worldwide incidence of 50,000 to 100,000 new cases annually, the methodology used for these estimations has been challenged.

Epidemiology of Obstetric Fistula

Questioning the scientific basis, Stanton and colleagues (2007) estimated a prevalence of 188 per 100,000 women aged 15 to 49 years in Sub Saharan Africa and emphasized the need for population-based studies (Tebeu 2012). Many authors argue that hospital-based studies do not give a true picture on the magnitude of the problem, since the majority occur outside the hospital setting.

Subsequently, a more recent systematic review and meta-analysis including population-based studies found lower incidences and prevalence of obstetric fistula than previously thought. The pooled prevalence in population-based studies was 0.29 (95% CI 0.00, 1.07) fistula per 1000 women of reproductive age (Adler 2013).

Regionally, sub Saharan Africa and South Asia had a prevalence of 1.57 (95% CI 1.16, 2.06): sub Saharan Africa having 1.60 (95% CI 1.16, 2.10) per 1000 women of reproductive age with fistula and 1.20 (95% CI 0.10, 3.54) per 1000 in South Asia. The pooled incidence was 0.09 (95% CI 0.01, 0.25) per 1000 recently pregnant women (Adler 2013).

In another systematic review including reports from Sub Saharan Africa and the Middle East, 79.4% to 100% of reported fistula cases were obstetrical while the remaining cases were from other causes. Rectovaginal fistulae accounted for 1% to 8%, vesicovaginal fistulae for 79% to 100% of cases, and combined vesicovaginal and rectovaginal fistulae were reported in 1% to 23% of cases (Tebeu 2012).

Epidemiology of Obstetric Fistula

In Sub-Saharan Africa alone, a recent review of obstetric fistula symptoms from demographic health surveys and multiple cluster indicators surveys (MICs) showed that fistulas were most often pregnancy-related (90.4%), followed by pelvic operations (5.3%), and sexual assault (4.3%) (Maheu-Giroux 2015).

Sexual assault has been linked to obstetric fistula, especially in conflict settings. In a retrospective study of 604 consecutive patients seeking treatment for fistula in the Democratic Republic of Congo, 24 (4%) had fistula related to sexual assault: 5 (0.8%) directly from forced penetration with foreign objects and/or gang rapes; 6 had a fistula before they were raped; 9 had iatrogenic fistulas following inappropriate instrumentation to manage rape-induced spontaneous abortion or stillbirth, or after abdominal hysterectomy, and 4 developed fistulas after prolonged and obstructed labour (Onsrud 2008).

In the review by Maheu-Giroux and colleagues (2015), the prevalence of women in DRC reporting that their fistula was a result of sexual violence was higher, at 22%. This was the highest prevalence of sexual-assault-related fistula, compared with an overall prevalence of 4.3%.

Epidemiology of Obstetric Fistula

Though facility- and community-based studies have previously been employed in measuring incidence and prevalence of obstetric fistula, studies combining both have been suggested. It is also suggested that routine surveillance and monitoring be integrated in national programmes such as incorporation of key indicators on obstetric fistula in health information systems (Tebeu 2012).

These information systems include the Demographic and Health Survey (DHS) fistula module, questionnaires used in other household surveys, and the National Institutes of Health PROMIS system (nihpromise.org) (Fistula Care Plus/Maternal Health Task Force 2014).

As such, a standardized obstetric fistula module with key questions has been included in demographic health surveys of some countries since 2006. DHS currently has a fistula module on 25 country sets (Maheu-Giroux 2015).

By analyzing this information collected in demographic health surveys of 19 countries from sub-Saharan Africa and multiple indicators cluster surveys, Maheu-Giroux and colleagues currently estimate that 3 in every 1000 women have had symptoms of obstetric fistula in their lifetime (lifetime prevalence), while 1 in every 1000 women currently has the symptoms (point prevalence) (Maheu-Giroux 2015). See Fig. 1 and 2.

Fistula Care Plus/Maternal Health Task Force. *Fistula Care Plus: International Research Advisory Group Meeting Report, July 8-9, 2014*. New York: EngenderHealth/Fistula Care Plus. 2014.

Maheu-Giroux M, Filippi V, Samadoulougou S, Castro MC, Maulet N, Meda N, Kirakoya-Samadoulougou F. Prevalence of symptoms of vaginal fistula in 19 sub-Saharan Africa countries: a meta-analysis of national household survey data. *Lancet Glob Health*. 2015 May;3(5):e271-8.

Tebeu PM, Fomulu JN, Khaddaj S, de Bernis L, Delvaux T, Rochat CH. Risk factors for obstetric fistula: a clinical review. *Int Urogynecol J*. 2012 Apr;23(4):387-94.

Figure 1.1: Lifetime prevalence of vaginal fistula symptoms per 1000 women of reproductive age in sub-Saharan Africa (2005–12) CrI=credible interval.

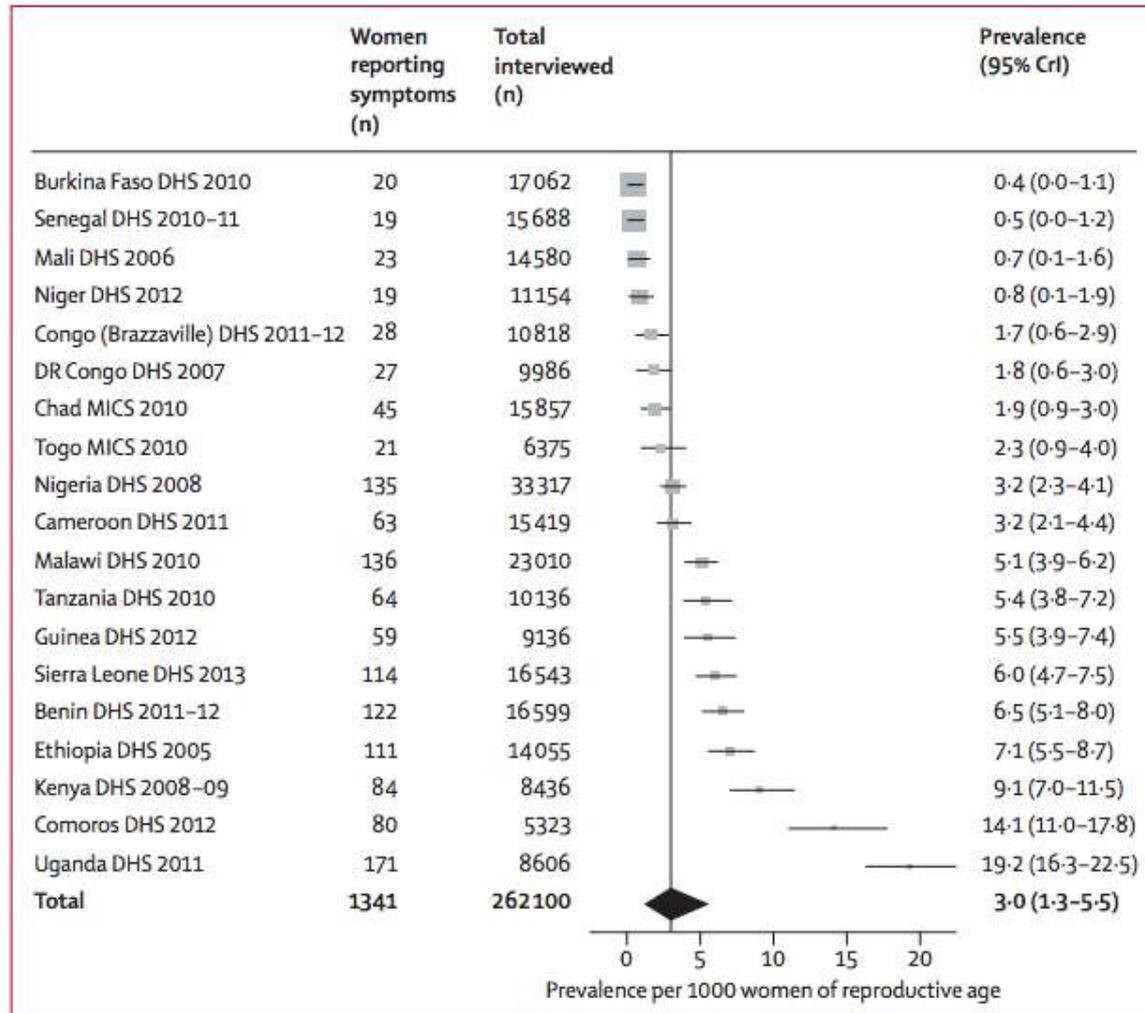
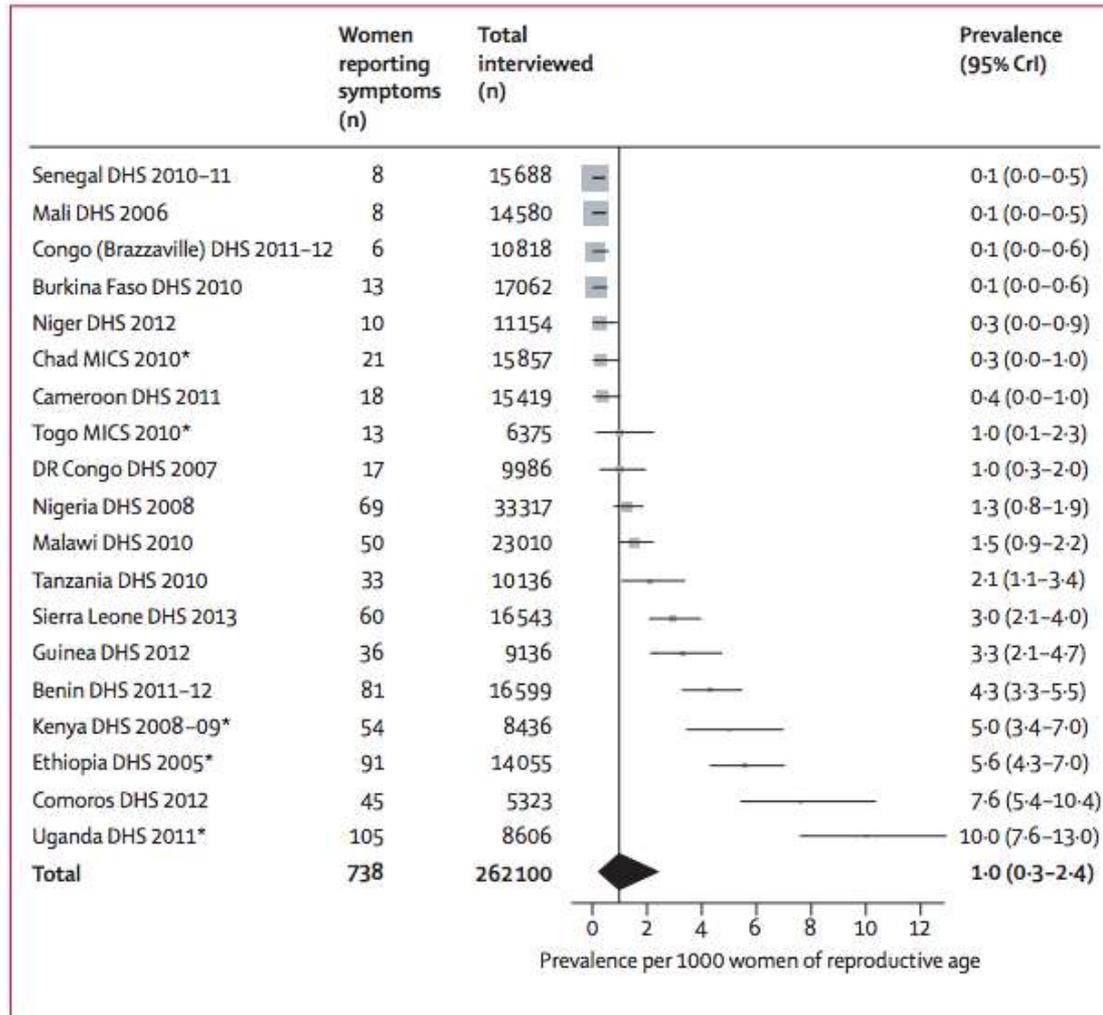


Figure 1.2: Point prevalence of vaginal fistula symptoms per 1000 women of reproductive age in sub-Saharan Africa (2005–12)



*No information recorded about whether treatment for vaginal fistula was successful; responses were imputed on the basis of overall rate of treatment success. CrI=credible interval.

Epidemiology of Obstetric Fistula

From the meta-analysis, in absolute terms it is estimated that Uganda and Ethiopia had the largest number of women of reproductive age who had experienced vaginal fistula symptoms, estimated at 142,100 and 140,500 respectively (Maheu-Giroux 2015).

By analyzing data from the 2005 Ethiopian Demographic Health Survey, Biadgilign et al. (2013) estimated that among women who had ever given birth (9,713), some 103 (1.06%, 95% CI; 0.89%-1.31%) experienced obstetric fistula in their lifetime, giving a lifetime prevalence rate of 10.6 per 1000. However, the lifetime prevalence was 7.3 per 1000 (95% CI: 5.9-8.7) for women aged 15-49 years, giving a total burden of 142,387 (95% CI: 115080, 169694) obstetric fistula patients in Ethiopia.

Other countries with women who have reported fistula symptoms in the tens of thousands include Nigeria, Kenya, Tanzania, DR Congo, Malawi, Cameroon and Benin. Ethiopia also had the largest burden of women who presently had symptoms of vaginal fistula (see Table 1.3) at 110800 (Maheu-Giroux 2015).

Self-reporting is still a weak approach to estimating prevalence of obstetric fistula. It has been suggested that clinical exam follow-up of women identified as having fistula through DHS surveys might assist in question validation (Fistula Care Plus/Maternal Health Task Force 2014).

Biadgilign S, Lakew Y, Reda AA, Deribe K. A population based survey in Ethiopia using questionnaire as proxy to estimate obstetric fistula prevalence: results from demographic and health survey. *Reproductive Health*. 2013 Feb 25;10(1):14.

Fistula Care Plus/Maternal Health Task Force. *Fistula Care Plus: International Research Advisory Group Meeting Report*, July 8-9, 2014. New York: EngenderHealth/Fistula Care Plus. 2014.

Maheu-Giroux M, Filippi V, Samadoulougou S, Castro MC, Maulet N, Meda N, Kirakoya-Samadoulougou F. Prevalence of symptoms of vaginal fistula in 19 sub-Saharan Africa countries: a meta-analysis of national household survey data. *Lancet Glob Health*. 2015 May;3(5):e271-8.

Figure 1.3: Burden of lifetime and present vaginal fistula in women of reproductive age (15–49 yrs)

	Number of women who have ever had symptoms	Number of women who presently have symptoms
Benin DHS 2011–12	14 600 (11 500–18 000)	9600 (7300–12 300)
Burkina Faso DHS 2010	1500 (100–4000)	500 (0–2000)
Cameroon DHS 2011	15 500 (10 000–21 400)	1900 (100–5000)
Chad MICS 2010	4900 (2300–7500)	800 (0–2500)
Comoros DHS 2012	2300 (1800–2900)	1200 (900–1700)
Congo (Brazzaville) DHS 2011–12	1600 (600–2800)	100 (0–600)
DR Congo DHS 2007	25 200 (9000–43 100)	14 200 (3600–27 700)
Ethiopia DHS 2005	140 500 (109 700–173 800)	110 800 (85 500–140 100)
Guinea DHS 2012	13 900 (9800–18 700)	8300 (5300–11 900)
Kenya DHS 2008–09	90 100 (69 400–113 700)	49 900 (34 000–69 200)
Malawi DHS 2010	16 900 (13 100–20 900)	5200 (3200–7500)
Mali DHS 2006	23 00 (200–4900)	300 (0–1500)
Niger DHS 2012	2800 (400–6200)	900 (0–3000)
Nigeria DHS 2008	115 200 (82 400–147 700)	46 800 (28 000–67 800)
Senegal DHS 2010–11	1500 (100–3800)	300 (0–1400)
Sierra Leone DHS 2013	8500 (6600–10 600)	4100 (2900–5600)
Tanzania DHS 2010	55 300 (39 400–73 400)	21 400 (10 800–34 700)
Togo MICS 2010	3700 (1400–6300)	1500 (200–3500)
Uganda DHS 2011	142 100 (120 300–166 100)	74 200 (56 000–95 700)

Data are median (95% credible intervals). DHS=Demographic and Health Survey. MICS=Multiple Indicator Cluster Survey.

Epidemiology of Obstetric Fistula

Though the accuracy in self-reporting was adjusted for through Bayesian meta-analysis, the authors note that the case definition probably includes a high proportion of false positives. Given that specificity is more important than sensitivity in estimating prevalence and incidence of obstetric fistula, in a population-based study, differentiating symptoms of stress incontinence and other causes from those of ‘continuous leakage of urine and/or faeces’ following delivery without physical examination (either earlier for lifetime prevalence, or current, for point prevalence) might still lead to overestimation of the burden. This could contribute to false positives, if the interviewees feel that they may get help if they revealed their condition, which might not be too embarrassing than symptoms of obstetric fistula (Maheu-Giroux 2015).

For example, Fronczak and colleagues, in a prospective study aimed at estimating post-partum complications in Dhaka, in which self-reported information about fistula (leakage of urine or feces vaginally 1 month post-delivery) was asked, the 3 women who responded “YES” from a sample of 557 women turned out not to be having fistula after all on physical examination: 2 had incontinence resulting from a severe urinary tract infection and the third, incontinence from an old third-degree perineal tear that affected her anal sphincter (Stanton 2007). Those that responded with a “NO” were not examined, yet it is likely that, as aforementioned, those affected may have been too embarrassed to admit their fistula status.

Epidemiology of Obstetric Fistula

Many studies have appreciated the occurrence of postpartum incontinence. A systematic review and meta-analysis examining the prevalence of postpartum urinary incontinence in population-based studies by Thom and colleagues estimated a prevalence rate of 30% within the first 3 months (Thom 2010).

Studies from developing countries were not identified in the review by Thom and colleagues, as they have been lacking. A recent longitudinal study of 230 parturient women in Nigeria found a cumulative prevalence rate of 12.2 %, 13.5% and 3% for urinary, anal and combined urinary and anal incontinence respectively (Obioha 2015).

It has also been thought that obstetric fistula closely follows maternal mortality, an equally rare event, whose estimation is equally problematic and in which Sisterhood Studies have been found appropriate. The Sisterhood Method would also be very useful in estimating prevalence of obstetric fistula. Given the ostracization associated with the condition in many places, sufferers would be less willing to confide in the interviewer, especially if they feel that this is a routine process that is not aimed at solving their concerns (Stanton 2007).

Obioha KC, Ugwu EO, Obi SN, Dim CC, Oguanuo TC. Prevalence and predictors of urinary/anal incontinence after vaginal delivery: prospective study of Nigerian women. *Int Urogynecol J*. 2015 Apr 17.

Stanton C, Holtz SA, Ahmed S. Challenges in measuring obstetric fistula. *Int J Gynaecol Obstet*. 2007 Nov;99 Suppl 1:S4-9.

Thom DH, Rortveit G. Prevalence of postpartum urinary incontinence: a systematic review. *Acta Obstet Gynecol Scand*. 2010 Dec;89(12):1511-22.

Epidemiology of Obstetric Fistula

Ostracization also means that the affected women might not be in the household at the time of survey if they are currently suffering from the condition, as demographic health surveys do not include institutionalized or homeless individuals. Questions included in the fistula module in the DHS are aimed at the interviewee and may therefore give us a better lifetime prevalence than point prevalence (Ahmed 2015).

In conclusion, there is no perfect measurement to accurately capture the number of women with fistula. Although household and mixed method surveys, key informant interviews, health management information systems, and modeling all offer insight, none of these alone adequately captures the scope of fistula prevalence. Consequently, measuring incidence and prevalence of this maternal morbidity is difficult. Additionally, fistula often affects the poorest, most vulnerable, and powerless women and, because they are frequently so marginalized, they can be hard for a “system” to find (Fistula Care Plus/Maternal Health Task Force 2014).

However, data on incidence and prevalence of obstetric fistula are needed for planning, including sustained interest in – and funding for – prevention and treatment but this data needs not just to be transparent, but accurate (Ahmed 2015; Fistula Care Plus/Maternal Health Task Force 2014).

Ahmed S, Tunçalp Ö. Burden of obstetric fistula: from measurement to action. *Lancet Glob Health*. 2015 May;3(5):e243-4.

[http://dx.doi.org/10.1016/S2214-109X\(15\)70105-1](http://dx.doi.org/10.1016/S2214-109X(15)70105-1)

Fistula Care Plus/Maternal Health Task Force. *Fistula Care Plus: International Research Advisory Group Meeting Report*, July 8-9, 2014. New York: EngenderHealth/Fistula Care *Plus*. 2014. Available from: http://wordpress.sph.harvard.edu/mhtf-2/wp-content/uploads/sites/32/2014/09/MeetingReport_FC-IRAG_9.14.pdf

Risk Factors

Thaddeus and Maine described 3 delays that contribute towards bad obstetric outcomes including obstructed labour. These delays are synergistic.

The first delay:

The decision to seek care may be delayed by the socio-economic and cultural factors in a woman's environment. For example, in a prospective study examining the profiles of women seeking obstetric fistula treatment, women in Bangladesh and Guinea were more likely to say that their husband or other family members did not allow them to go to a facility (Landry 2013). Or the community may perceive women who deliver at a health facility as weak.

The second delay

Delayed arrival at the health facility may be influenced by poor road conditions, transportation or communication. Insecurity may deter a woman from going to the facility at night and waiting until morning, or the facilities may simply just be too far, which is not uncommon.

In their prospective study, Landry and colleagues (2013) found that the overall median travel time to the treatment facility was five hours (IQR 2–9), women in Guinea had the longest delay (median 24 hours: IQR 4–48); women in Nigeria, the shortest (median 2 hours; IQR 1–4) (Landry 2013). Clearly, if a woman had already laboured at home in the hopes of delivering, the extra amount of time spent on the way to hospital only further complicates the issue.

Risk Factors

The third delay

Once a woman arrives at the facility, she may not access adequate care, due to a lack of staff or unfriendly staff, supplies, or electricity (Abrams 2013). Insufficiently skilled staff may mean that the woman may not get the care that is needed or when provided, results in complications (Raassen 2014).

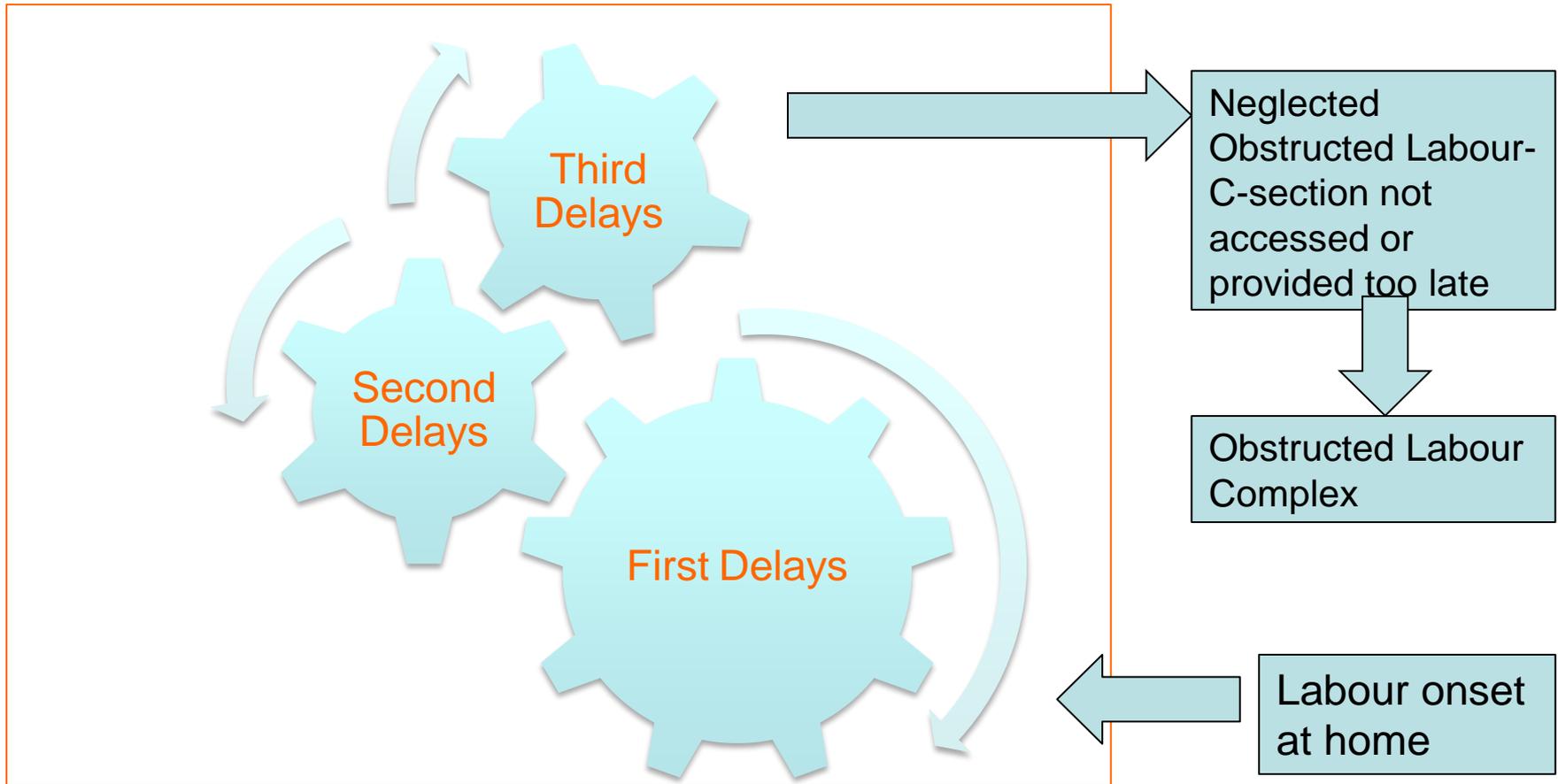
These delays may, other than synergy, trigger a vicious cycle (see [Fig. 1.4](#)). For example, if a woman reaches the facility, workers with poor attitude may quarrel why she came late, or embarrass her if she is too young. Where maternity care is not free, extra costs for caesarean section or costs of fistula repair may push the family further into poverty. Eventually, the woman may be discouraged to seek care from the facility next time she is in labour (Abrams 2013).

Abrams P, De Ridder D, De Vries C, Elneil S, Emasu A, Esegbono G, Gueye S, Hilton P, Mohammad R, Mourad S, Muleta M, Pickard R, Rovner E, Stanford E. Fistula. In: Incontinence: 5th International Consultation on Incontinence, Paris February, 2012. Paris: ICUD-EAU; 2013. 5th Ed. p. 1529-82.

Raassen TJIP, Ngongo CJ, Mahendeka MM. Iatrogenic genitourinary fistula: an 18-year retrospective review of 805 injuries. *Int Urogynecol J*. 2014 Dec;25(12):1699-706.

Risk Factors

Figure 1.4: Thaddeus' and Maine's Three Delays



Risk Factors

Obstructed labour that is not attended to in time or totally unattended is the most common final pathway that begets obstetric fistula. However, a variety of predisposing factors come into play. These factors, acting separately or in synergy, have come to be known as the “obstetric fistula pathway”(see [Fig. 1.5](#)).

These risk factors are largely preventable and knowledge of them should inform targeting of preventive measures.

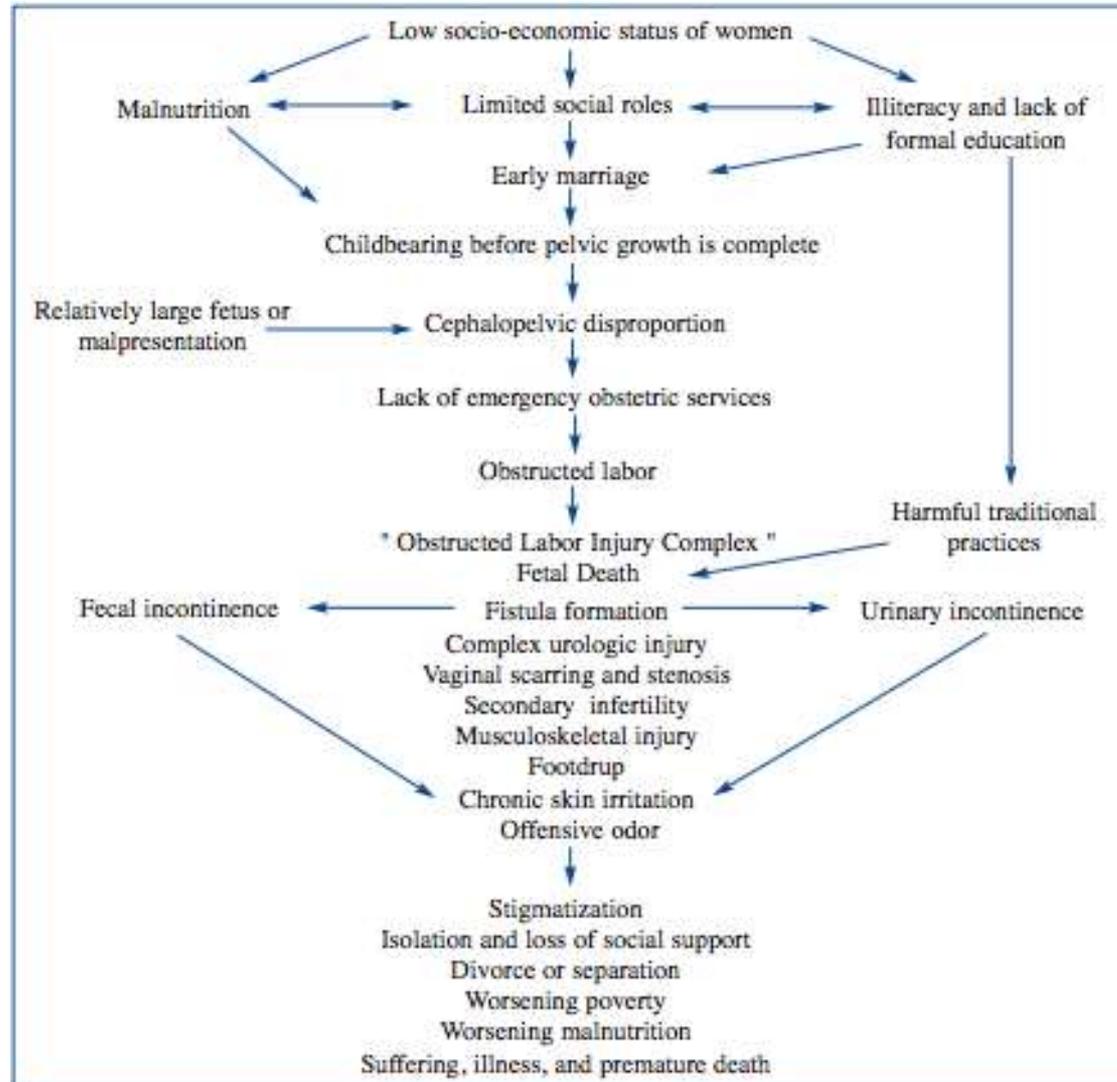
In one systematic review, 8.9%-86% of fistula patients were teenagers at time of management (Tebeu 2012). Sub-Saharan Africa has the highest level of adolescent childbearing, with more than 50% of women giving birth before the age of 20. In Latin America and the Caribbean, the rates typically range from 50 to 100 births per 1000 women. In South-East Asia, Bangladesh has the highest level of fertility among adolescents: 144 births per 1000 women (WHO 2007). Factors such as poverty, lack of education and cultural practices that encourage child marriages lead to child-bearing before the pelvis is mature. Malnutrition also leads to a short stature and contracted pelvis (Miller 2005).

Miller S, Lester F, Webster M, Cowan B. Obstetric fistula: a preventable tragedy. *J Midwifery Womens Health*. 2005;50(4):286-94. doi: 10.1016/j.jmwh.2005.03.009.

Tebeu PM, Fomulu JN, Khaddaj S, de Bernis L, Delvaux T, Rochat CH. Risk factors for obstetric fistula: a clinical review. *Int Urogynecol J*. 2012 Apr;23(4):387-94.

World Health Organization. Adolescent pregnancy: unmet needs and undone deeds. A review of the literature and programmes. WHO. 2007.

Figure 1.5: The obstetric Fistula Pathway. Reused with permission



Risk Factors

Obstetric fistula is a condition exclusive to women and gender has a big role in its genesis. Gender inequality and oppression of women are known to persist in regions where obstetric fistula occurs. In these regions, forced adolescent and teen marriages, low education levels for girls, male control of money, and the need for women in obstructed labor to get the permission of their husband or mother-in-law to seek care are common findings (Roush 2012).

Gender power imbalance has been implicated in food insecurity for women, higher rates of malnutrition, unsafe abortion and sexual violence, factors that have been associated with obstetric fistula (Roush 2012).

Since many of the girls are married off early, fistula more often occurs in the first pregnancy. In the review by Tebeu et al. (2012), primiparous status was present in 31-66.7% of patients. Many of the fistula patients were shorter than 150 cm tall (40–79.4%).

Risk Factors

Obstetric fistula occurred in 57.6%- 94.8% whenever home delivery was attempted irrespective of whether a hospital delivery eventually happened. In cases where labour ended in a home delivery, 9%-84% of the cases developed obstetric fistula. Many women deliver at home because the health facility is far away, cultural beliefs or because the facilities do not offer friendly services especially for teenage girls who might even shy away from the facilities. They may also seek unsafe abortions from unscrupulous individuals, eventually ending up with fistula (Tebeu 2012).

Most likely as a result of home delivery, the mean duration of labor among the fistula patients ranged from 2.5 to 4 days. 20%-95.7% of women had laboured for more than 24 hours in the review by Tebeu and colleagues. Failure to intervene urgently subsequently leads to pressure necrosis of the soft tissues. This may be due to delays in getting to a health facility that is able to offer comprehensive emergency obstetric care or failure to use a partograph in monitoring labour progress (Tebeu 2012).

Risk Factors

A number of cultural practices also contribute to fistula formation. Amongst the Hausa in Nigeria, *gishiri*, is a traditional medical practice in which it is thought that an imbalance between salty and sweet foodstuffs can cause a film to form in the vaginal wall, leading to a number of gynecological or obstetric complications, including infertility and obstructed labour. When this happens, the genitalia is cut using a sharp object. The *gishiri* fistula typically presents as a longitudinal cut through the bladder neck or urethra, or a similar finding posteriorly through the rectum.

In several Arab countries, women insert a caustic agent (usually rock salt) in the vagina as a cure to gynecological conditions or to help the vagina return to its normal state following delivery in order to enhance the husband's sexual pleasure. Fistula arises from the fibrosis that follows, hence causing future obstruction to labour progress, or through direct chemical injury.

Risk Factors

Even though female genital cutting involves the external genitalia and no effect to the pelvis per se where obstruction requiring Caesarean Section mostly occurs, there is popular belief that female genital mutilation increases the risk of fistula formation (Browning 2010).

However, it is possible that female genital mutilation may cause direct trauma to the urinary tract during the procedure. Secondly, extensive tissue loss from the vulva following infibulation (type III genital cutting) may be followed by marked fibrosis and reduction in the vaginal length. The vaginal opening may also be too small, causing a delayed second stage. Under such circumstances, an extended midline episiotomy may be performed, leading to rectovaginal fistula (Wall 2001).

A retrospective study in Ethiopia failed to find significant differences between women who had undergone type I or II genital cutting and those without cutting in the development of fistula. What remains clear in areas where female genital cutting is practiced there are other factors leading to obstetric fistula such as early marriage and poor empowerment of women in general (Browning 2010).

Pathogenesis

Obstructed labour leads to ischemic necrosis of soft tissues between the vagina and the urinary bladder or the rectum. This occurs when the fetal head is blocked in the pelvis and prolonged pressure on the anterior vaginal wall and underlying bladder neck or urethra as the tissues are compressed between the fetal head and posterior aspect of the symphysis pubis. The necrotic tissue sloughs away in about 10 days, after which incontinence is experienced (Harris 2010, Tebeu 2012).

The level at which the fetal head is arrested determines the site of fistula, which may be dictated by the configuration of the woman's pelvis ([Fig. 1.6](#) and [Fig. 1.7](#)). John St. George (1969) cited in Wall (2001) observed that:

“Vesico-vaginal fistulae occurred more often in primigravidae (often very young) than in multiparae. Deep transverse arrest of the fetal head was commoner in primiparae with an android type of pelvis, and therefore the site of the fistula was more often at the bladder neck or was juxta-urethral. ... On the other hand, labour in multigravidae was often obstructed at the inlet because of a secondary flat pelvis; in these cases mid-vaginal or juxta-cervical fistulae, which were more amenable to surgery, were more common.”

Harris N, Garthwaite M. Vesicovaginal fistulae. Indian Journal of Urology. 2010;26(2):253.

Tebeu PM, Fomulu JN, Khaddaj S, de Bernis L, Delvaux T, Rochat CH. Risk factors for obstetric fistula: a clinical review. Int Urogynecol J. 2012 Apr;23(4):387-94.

Wall LL, Arrowsmith SD, Briggs ND, Lassey A. Urinary incontinence in the developing world: The obstetric fistula. Proceedings of the Second International Consultation on Urinary Incontinence, Paris. 2001:1-67.

Pathogenesis

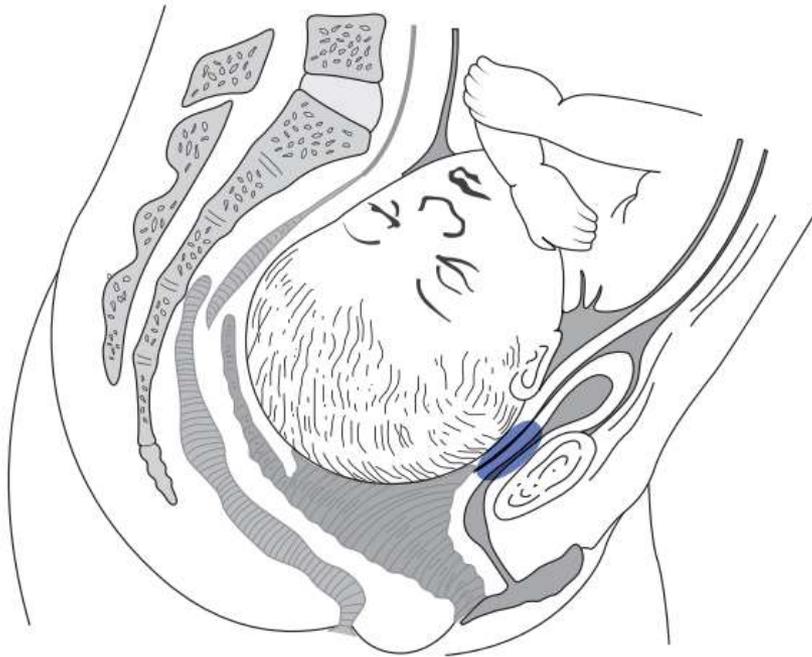


Figure 1.6 The area coloured blue is the first to undergo ischaemic necrosis

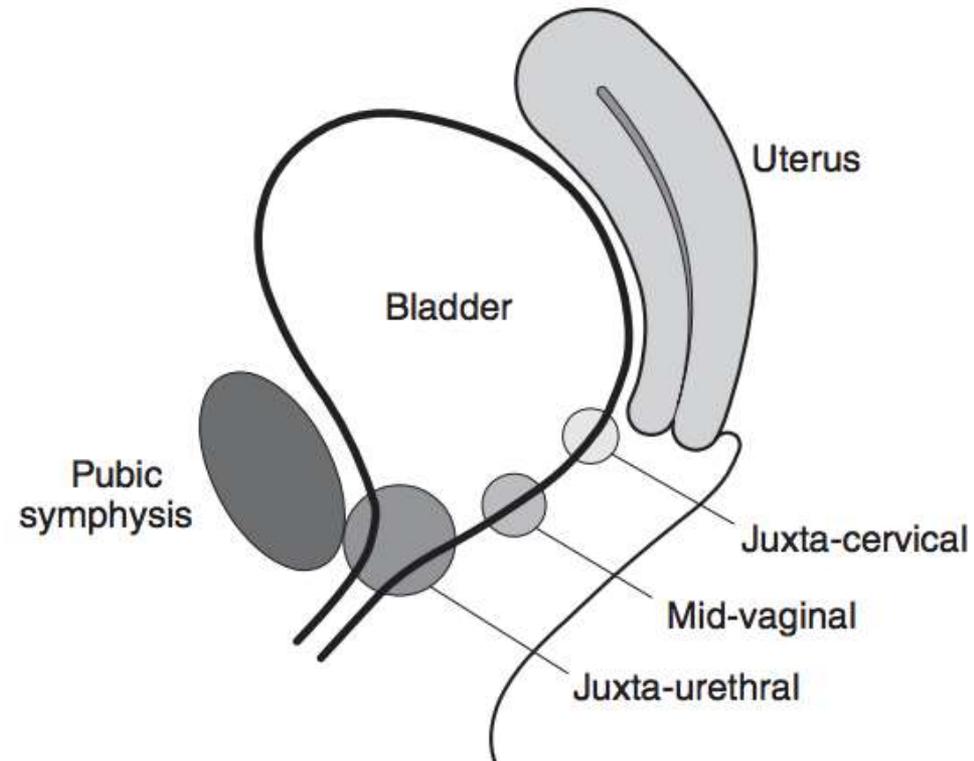


Figure 1.7 The various positions of ischaemic injury

Reused with permission

Pathogenesis

The force and duration of the compression also determine the nature and extent of maternal injury. If the compression occurs before full cervical dilation and before good descent of the fetal head, the vaginal vault and cervix undergo pressure necrosis resulting into vesico-cervico-vaginal or utero-vaginal fistula (Wall 2001).

Unattended, obstructed labour leads to fetal death while the fetus softens and is expelled. It has previously been estimated that obstetric fistula cases have an accompanying 95% rate of fetal loss (Wall 2001). Tebeu et al. (2012) in their meta-analysis found that in more than 78% of obstetric fistula cases, there was fetal loss while Ahmed and Holtz (2007) estimated this figure to be 85% rate of fetal loss.

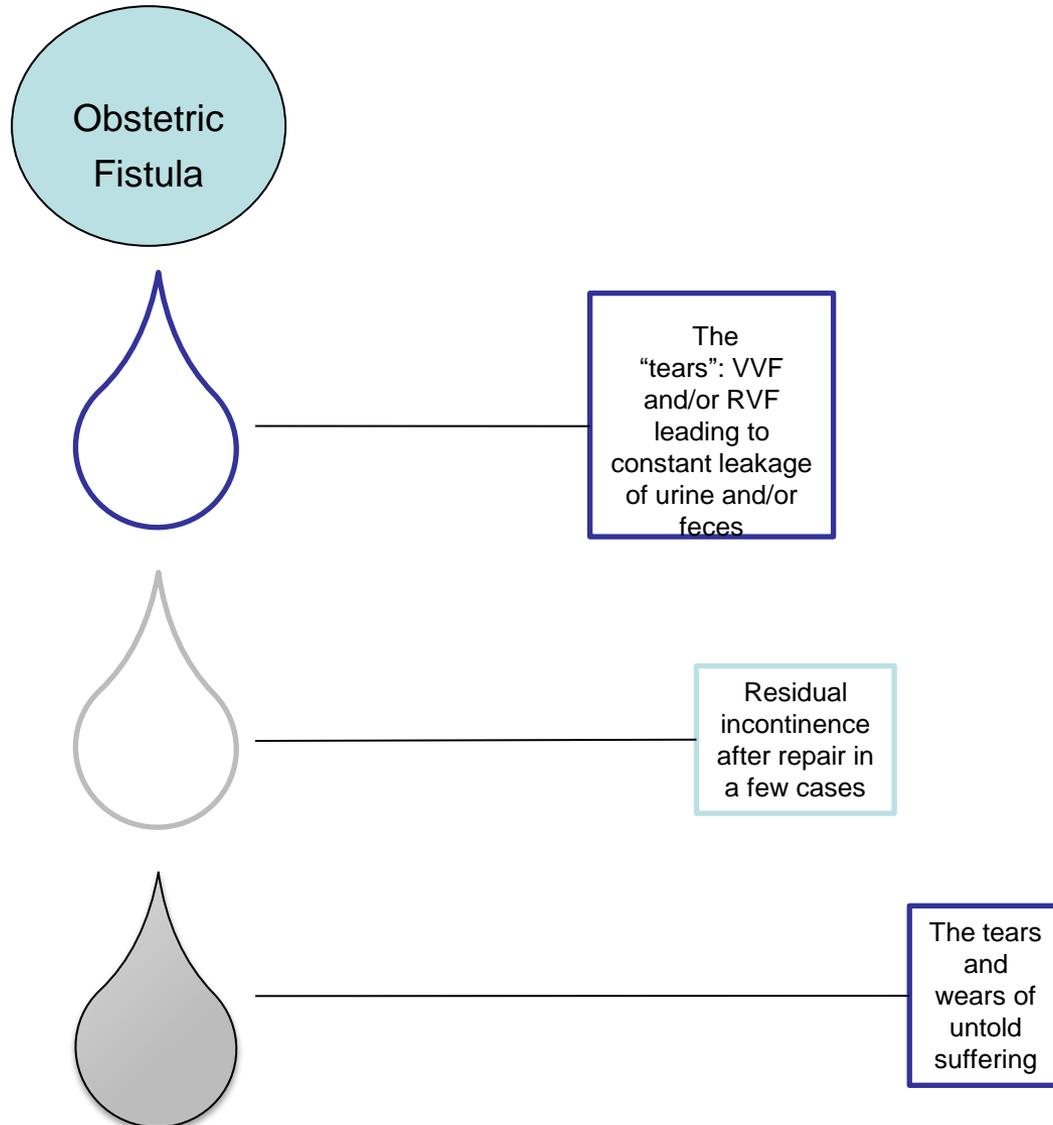
Direct tearing of the soft tissues can also lead to fistula formation during precipitate labour. Episiotomy and instrumental delivery during obstructed labour also contribute, leading to mostly rectovaginal fistulae (Tebeu 2012).

The Tears and Tears of Obstetric fistula

Obstetric fistula is best understood in the context of the obstructed labour complex. Many other systems are afflicted and therefore this should be kept in mind when assessing a patient with fistula (see Table 1.1).

It is logical to think of obstetric fistula as a condition of “tears” and “tears” ([Fig. 1.8](#)). The compromised tissues are likable to a torn leaking container and besides the physical leakage of urine and fecal material, this brings untold suffering (tearing) to victims, wearing down their reproductive and productive capacity and mentally.

Figure 1.8: The Tears and Tears of Obstetric fistula



The Obstructed Labour Complex

Urinary Tract Injuries

Bladder. Apart from vesicovaginal fistula, tissue loss from necrosis reduces bladder volume complicating repair with minimal tissue to work with, or leading to reduced bladder compliance thereafter.

Urethra. A fibrotic or shortened urethra may be the reason for urine incontinence even after closure of the bladder fistula.

Ureters. Substantial damage to the bladder neck may also affect the ureteral orifices. Damage to the ureters may also be the reason for residual incontinence if a uretero-vaginal fistula is missed at the time of the repair. Protection of the ureters is mandatory during fistula repair but instruments, such as stents, may not be available in some settings in developing countries.

Kidneys are affected secondarily in a fistula patient. Ascending infection, hydronephrosis due to distal obstruction- stricture, stones- may lead to renal failure.

The Obstructed Labour Complex

Genital tract injuries

The vagina, cervix and even the uterus may be damaged. Fibrosis and subsequent vaginal stenosis may lead to problematic sexual intercourse and infertility which may contribute to the likelihood that an intimate relationship will end, leading to separation or divorce. Cervical injury may lead to cervical incompetence due to cervical shortening, and haematometra due to severe cervical stenosis as a result of fibrosis (Hancock 2009; Wall 2001).

A sizeable proportion of women develop amenorrhea which is attributable to factors such as severe malnutrition and anaemia, hypothalamic dysfunction, panhypopituitarism, intrauterine scarring and psychological stress. These factors may lead to secondary infertility. In the review by Ahmed and Holtz (2007), amenorrhea was present amongst 41%-84% of women in the studies included.

Though no study differentiated between postpartum and secondary amenorrhea, the reviewers argue that because of the high rate of fetal loss with obstructed labour, postpartum amenorrhea is likely to be shortened, subsequently pointing to fistula as a major contributor (Ahmed 2007).

The Obstructed Labour Complex

Neurologic Injury

Many fistula patients suffer compression damage to the lumbo-sacral plexus. Prolonged squatting during second stage that is obstructed may also compress the peroneal nerve leading to common peroneal nerve palsy. Commonly, the patient may end up with foot drop and loss of sensation on the dorsum and lateral aspects of the foot (Hancock 2009; Wall 2001). Tinel's sign is useful in eliciting nerve injury and in this case, by tapping over the fibro-osseous tunnel over the fibula head.

Different authors have found different rates of foot drop amongst obstetric fistula patients. In one case control study, this was 4.2% (Tennfjord 2014). Arrowsmith, Waaldijk and Elkins, and Williams (cited in Tennfjord 2014) reported a 20%, 26% and 30% respectively, while Waaldijk and Elkins (cited in Wall 2001), found that nearly 65% of 947 fistula patients reviewed prospectively had evidence of peroneal nerve injury.

An explanation given for these variations is self-selection, where severe cases may be referred to expert fistula surgeons or may stay at home, too debilitated, while less severe cases are seen in some specific centers (Tennfjord 2014). Delay in seeking treatment may also explain the discrepancy in foot drop rates, due to spontaneous recovery.

In the case control study by Tennfjord and colleagues (2014) in which 70 women with obstetric fistula and 100 controls without fistula were studied, leg pain was more common among cases compared to controls, 20% versus 7% ($p = 0.02$).

The Obstructed Labour Complex

Musculoskeletal Injury

Perineal support structures may undergo ischaemic damage when they are crushed against the inferior pubic rami. Levator ani avulsion may also be present (Dietz 2012).

Nutritional deficiency has been identified as a cause and consequence of obstetric fistula. Nutritional deficiency causes stunting and arrested development of the pelvis, a precursor to cephalo-pelvic disproportion and obstructed labour (Ahmed 2007).

Likewise, the mental anguish and isolation as a result of fistula, immobility and economic deprivation during puerperium, leads to poor nutritional intake. In one study, marked weight loss and malnutrition were evident in 36.6% of the women with fistulae and limb contractures were present in 8.5% (Ahmed 2007).

Tennfjord and colleagues (2014) observed that patients with obstetric fistula had reduced function in the ankle and knee joints and increased motion and strength in the hip, compared to the controls. Increased degree of movement and strength in the hip is thought to have been compensatory.

In about 30% of cases of obstetric fistula, a pelvic X-ray will reveal damage to the region of the pubic symphysis (Hancock 2009).

Ahmed S, Holtz SA. Social and economic consequences of obstetric fistula: life changed forever? *Int J Gynaecol Obstet.* 2007 Nov;99 Suppl 1:S10-5.

Dietz HP, Tekle H, Williams G. Pelvic floor structure and function in women with vesicovaginal fistula. *J Urol.* 2012 Nov;188(5):1772-7.

Hancock B, Browning A. *Practical Obstetric Fistula Surgery.* London; Ashland, Ohio: Royal Society of Medicine Press; 2009.

Tennfjord MK, Muleta M, Kiserud T. Musculoskeletal sequelae in patients with obstetric fistula – a case–control study. *BMC Women's Health.* 2014 Nov 8;14(1):136.

Table 1.1: The obstructed labour injury complex

Urological injury	<p>Vesicovaginal fistula Urethrovaginal fistula Ureterovaginal fistula Uterovaginal fistula Complex combined fistulas Urethral damage, including complete urethral destruction Bladder stones Stress incontinence Marked loss of bladder tissue from extensive pressure necrosis Secondary hydronephrosis Chronic pyelonephritis Renal failure</p>
Gynecological Injury	<p>Loss of uterus Amenorrhoea Vaginal stenosis Cervical injury, including complete cervical destruction Secondary pelvic inflammatory disease Secondary infertility</p>
Gastrointestinal injury	<p>Rectovaginal fistula formation Rectal stenosis or complete rectal atresia Anal sphincter incompetence</p>
Musculoskeletal injury	<p>Osteitis pubis</p>
Neurological injury	<p>Foot-drop from lumbosacral or common peroneal nerve injury Complex neuropathic bladder dysfunction</p>
Dermatological injury	<p>Chronic excoriation of the skin from maceration by urine or faeces</p>
Fetal injury	<p>Fetal case-fatality rate of about 95%</p>
Social injury	<p>Social isolation Divorce Worsening poverty Malnutrition Depression (sometimes with suicide) Premature death</p>

The Obstructed Labour Complex

Dermatologic Injury

In a meta-analysis of the consequences of obstetric fistula, almost 80% of women develop chronic excoriation of the skin from the direct irritation caused by urine.

Socio-economic consequences

Women with fistula are often ostracized by their husbands, families and the community. In one study in Nigeria, more than half of the women considered themselves rejected. Many women become divorced because of their situation. In the meta-analysis by Ahmed and Holtz (2007), random-effect estimate showed a 36% (95% CI, 27%-46%) (47% with fixed-effect estimate) rate of divorce or separation amongst women with fistula.

In a prospective study from a number of countries, living with fistula significantly interfered with women's daily lives: inability to attend community gatherings (85.3%), have sexual relations (85.2%), attend religious gatherings (83.6%), earn money (80.0%), work (72.1%), and eat with others (68.7%). Women who had lived with fistula for over a year were more likely to say that their condition interfered with their ability to work and earn money (Landry 2013).

Carrying a fetus to term only to lose it while delivering has long term psychological impact on the mother, which is complicated by the fistula that follows. Depression, anger, and disappointment with life have been reported (Ahmed 2007).

In Addis Ababa, one study found that 39% of women depended on relatives for food, while 22% lived off begging (Farid 2013).

Prevention

Prevention of obstructed labour therefore remains the ultimate strategy in reducing the number of women developing obstetric fistulae, apart from reducing maternal deaths. The following are strategies aimed at prevention:

Reducing the risk of becoming pregnant

Family planning programmes can reduce the number of pregnancies in a given population and hence morbidities related to becoming pregnant in general (Wall 2012).

Because teenage pregnancies constitute a large proportion of pregnancies in developing countries (7-30%), and because teenage pregnancy is associated with cephalopelvic disproportion, efforts in reducing obstetric fistulae should focus on prevention of teenage pregnancy (Tebeu 2012).

Tebeu PM, Fomulu JN, Khaddaj S, de Bernis L, Delvaux T, Rochat CH. Risk factors for obstetric fistula: a clinical review. *Int Urogynecol J*. 2012 Apr;23(4):387-94.

Wall LL. Overcoming phase 1 delays: the critical component of obstetric fistula prevention programs in resource-poor countries. *BMC Pregnancy Childbirth*. 2012 Jul 18;12:68.

Prevention

Reducing the risk of complications during pregnancy

Many 'at-risk' women will deliver normally and many 'low-risk' women will suffer complications (Browning 2014).

Though a vast majority of complications cannot be predicted, antenatal screening should aim to minimize later complications (Browning 2014).

A number of technology-independent ways of screening women have been proposed. For example, a height < 155 cm led to a 4.9 times increased chance of caesarean section in Burkina Faso, and also if the mother was <19 years of age and shorter than 150 cm (Browning 2014).

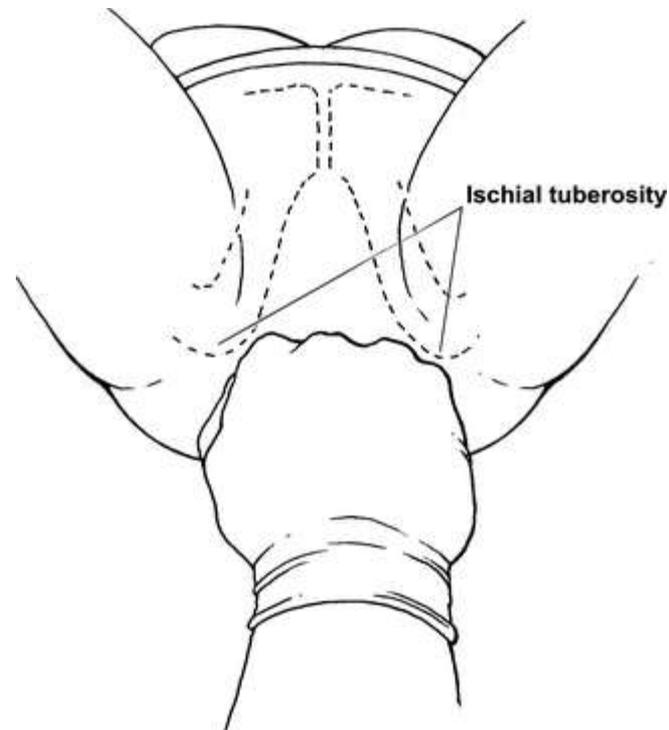
Two separate studies on pelvic measurements, one from Congo (looking at the transverse diagonal diameter) and a second in Tanzania (determining the 'reachability' of the sacral promontory), were both mildly predictive for obstructed labour (Browning 2014).

Prevention

Reducing the risk of complications during pregnancy

In a small cohort study involving participants from Tanzania and Sierra Leone testing the use of knuckles, height, and the product of the two known as the “fistula index” to predict obstetric fistula, height alone was a weak predictor.

Figure 1.9: Measuring the intertuberous space using knuckles.



Prevention

Reducing the risk of complications during pregnancy

The knuckle test was 92.3% sensitive (95% CI 79.7–97.3%) and 91.4% specific (95% CI 81.4–96.3%) for a measurement of up to three knuckles while the fistula index had sensitivity of 94.9% (95% CI 83.1–98.6%) and specificity of 91.4% (95% CI 81.4–96.3%) for a fistula index ≤ 507.5 .

Differences in knuckle sizes of examiners warrants standardization in centimeters if this testing was to be recommended and a larger prospective study with obstructed labour as the end-point would be required.

Prevention

Improving outcomes for women who develop complications

Caesarean section improves outcomes for both mother and fetus in women with obstructed labour if provided expeditiously and done well (Wall 2012).

Urinary catheterization to prevent obstetric fistula

For a woman who has had obstructed labour, this can be used as tertiary prevention for OF and implemented by primary health care workers including community health extension workers if properly trained (Fistula Care 2013).

Table 1.2: Proposed indicators for monitoring and evaluating fistula prevention and treatment

Epidemiologic

- Prevalence: The estimated number of women living with obstetric fistulas
- Incidence: The estimated number of new cases of obstetric fistulas per year
- Estimated rate of obstetric fistulas per 1000 deliveries
- No. of women treated for obstetric fistula per year
- Estimate of unmet need for fistula repair

Service delivery

- No. of midwives, nurses, and physicians with midwifery skills per 1000 births
- No. of physicians or midlevel providers able to perform a cesarean delivery per 1000 births
- Proportion of births managed with a partograph
- No. of facilities providing simple fistula treatment services
- No. of centers providing specialist fistula services
- Number of fistula treatment services which include social reintegration activities
- No. of surgeons able to undertake simple repairs
- No. of surgeons able to undertake complex repairs

Training

- No. of training facilities (preservice and in-service) including obstetric fistula prevention and treatment as part of the core syllabus
- No. of surgeons who undergo simple fistula repair training per year
- No. of in-country surgeons who undergo specialist fistula training (either in country or elsewhere) per year

Quality of care

- Proportion of women who have a successful first repair at each facility. Ideally, the closure rate should be 85%, with continence achieved in 90% of women with a closed fistula (this success rate can also be disaggregated into different types of fistulas).
- Proportion of women who have had 2 or more unsuccessful repairs
- Percentage of women successfully reintegrated in their community following treatment

Recommendations in Prevention: 5th International Consultation on Incontinence

Strong community support is required to develop solidarity groups that include village volunteers working with trained, skilled and traditional birth attendants, depending on the local customs and resources.

The components of the “3 Delays” need to be identified and targeted in order to minimize the effects of obstructed labour. By this process there will be other benefits for maternal and child health.

There should be provision of adequate health facilities and birthing centres to which women move either as soon as they go into labour, or if labour is delayed. Such facilities must provide emergency obstetric care, including caesarean section.

National policies for maternity care should be developed for all countries whether or not VVF is a common complication of childbirth.

Data collection by local, national and regional bodies should help to define the incidence of birth complications, and factors leading to the “3 Delays”.

Recommendations in Prevention: 5th International Consultation on Incontinence

The components of the “3 Delays” need to be identified and targeted in each community where there is a high prevalence of complications of childbirth.

Girls, women and communities should be educated about normal and abnormal labour, and facilities such as waiting houses should be available for pregnant women at risk for complicated deliveries.

Solidarity groups, including local volunteers and skilled and trained traditional birth attendants, should be developed for maternal care.

Birthing centers with the capability for caesarean section should be accessible and sufficiently affordable for women to use.

Funding should be made available to retain adequate trained staff for waiting houses and birthing centers.

Partographs should be employed to track the progress of delivery in order to identify problems and for data collection.

Conclusion

Obstetric fistula has several causes. In developing countries, obstructed or prolonged labour is the most common cause. As a result, it forms part of the obstructed labour complex and it is the most devastating comorbidity of obstructed labour. Vesico-vaginal fistulas are the most common while recto-vaginal and combined forms also exist.

In developed countries, causes are mostly iatrogenic. While obstetric fistula has been eradicated in developed countries, its burden is still bigger in developing countries where maternal mortality is still high. Subsequently, it is effectively an indicator of weak health systems in the developing world. It equally shares many characteristics of neglected conditions of poverty. Despite this, the condition can be prevented through both primary, secondary and tertiary strategies.

Module II: Diagnosis and Classification of Obstetric Fistula

By the end of this module, the learner should be able to:

- Take a comprehensive history surrounding obstetric fistula
- Gain knowledge on examining a fistula patient
- Understand the various investigations useful in evaluating a woman with obstetric fistula
- Understand the different classification systems and the need for a standardized system
- Analyze, challenge, critique or discuss the current evidence on any of the subtopics covered in the module, with the aim of improving research geared towards eradication of the problem.

Diagnosis

History and physical examination

The patient with obstetric fistula should be assessed fully, with the scope of injury (obstructed labour complex) in mind. The diagnosis of a simple vesico-vaginal fistula is based on patient history and a clinical assessment (Lassey 2007).

In centers that do not offer specialized fistula care, a provisional diagnosis is made based on the following (Fistula Care 2013):

History

- The patient must complain of the constant leakage of urine, 24 hours per day, no matter what activity she might be engaged in.
- Onset of this incontinence must have occurred directly after labor and delivery, or immediately after pelvic trauma (for example, from surgery).

Examination

- Examination must include direct observation of urine passing from the vagina.
- Optional findings could include observation or palpation of a defect in the anterior vagina leading to the bladder or observation of urine passing from the cervical os.

Diagnosis

History and physical examination

After a careful history, a general examination is conducted. Patients with obstetric fistula may often be poorly nourished and nutritional support may be necessary before surgery.

It is also important not to overlook mental status examination, as obstetric fistula bears psychological and emotional consequences to victims. Depression, suicidal thoughts or even post-traumatic stress disorder have been associated with obstetric fistula. These findings should be factored into the management plan of the patient, apart from surgical repair.

A vaginal speculum (Sims) examination is done to confirm that the vaginal loss is urine draining through the anterior vaginal wall. The site and number of fistulas are documented (Lassey 2007).

The diameter, depth, mobility, and mucosa of the vagina must all be assessed. Concomitant prolapse and urethral hypermobility should be assessed. If visualization of the opening is impaired by localized erythema and edema, passage of a Foley catheter into the bladder and identification of the balloon may help (Rutman 2008).

Diagnosis

History and physical examination

Methylene blue dye test is used in cases that are not too obvious from a simple speculum examination or the other simple tests mentioned. The patient may also be asked to ambulate with a vaginal pack, which will be stained blue (Lassey 2007, Rutman 2008).

If with methylene blue a VVF is still not identified but still suspected, the patient should be given oral phenazopyridine hydrochloride, which stains the urine orange. The vagina is then packed, and orange staining confirms a fistula. This will require several hours of waiting before examination. A positive phenazopyridine test result with a negative methylene blue test result strongly suggests a ureterovaginal fistula (Rutman 2008).

Examination under anaesthesia may also be necessary to confirm the location, size, and accessibility of the fistula (Lassey 2007).

Diagnosis

History and physical examination

Site (in relation to the bladder neck and ureteral orifices), size and degree of scarring determine the complexity of obstetric fistula. In arriving at this conclusion, the following are ascertained: number of fistulous tracts, degree of scarring of the vagina and urethral sphincter (Genadry 2007).

Other considerations include length of residual urethra (which determines the degree of urethral reconstruction to be performed and the patient's future continence), residual bladder capacity, and status of the ureters (Genadry 2007).

A vesico-cervical or vesico-uterine communication should be ruled out. When present, methylene blue dye is seen to drain through the cervix. The size and status of the vagina dictate the need for vaginal augmentation and/or reconstruction (Genadry 2007).

To assess bladder mobility and sphincteric function, the bladder is filled with water using 50-mL and the catheter is raised at the level of the symphysis pubis. In the absence of Valsalva maneuver, any rise in the water level suggests a bladder contraction, whereas leakage through the urethral meatus during a Valsalva maneuver suggests sphincter insufficiency (Genadry 2007).

Complementary test(if available): cystoscopy can be useful to better understand the location of the tract in small fistula with retracted bladder and also to rule out bladder stone or malignancies.

Kidneys ultrasonography is a quick and useful test to detect hydrophrosis secondary to ureteral involvement in fistula patients (Rochat 2011)

The completed comprehensive evaluation then determines the patient management approach.

Diagnosis

Laboratory Tests

To confirm that the leaking fluid from the vagina is urine, the fluid can be sent for creatinine analysis. A blood sample for urea, electrolytes and creatinine may also be necessary in the preoperative evaluation. Elevated levels of creatinine in the fluid relative to serum establish the diagnosis of a communication between the vagina and urinary tract (Rutman 2008).

A stool specimen is assessed to rule out parasitic infections. In the fistula patient with concomitant helminthic infection, this should be treated before surgery (Ng'ang'a 2014).

A urine sample is also taken to exclude urinary tract infection. The perineum of an obstetric fistula patient may be constantly soiled, predisposing them to urinary tract infections. A cross-sectional study at Gonder, Ethiopia found a high prevalence (53%) of bacteriuria amongst 53 post-repair obstetric fistula patients (Wondimeneh 2014). The prevalence amongst new patients may be higher.

Other than urea, electrolytes and creatinine, blood testing includes a complete blood count, HIV, VDRL, and Hepatitis B and C where possible.

Ng'ang'a N, Echols K, Ilupeju F, Kalumbi R. Management of soil-transmitted helminthiasis in surgical candidates for obstetric fistula repair. *Lancet Glob Health*. 2014 Jul;2(7):e393-4.

Rutman MP, Rodríguez LV, Raz S. Chapter 81 - VESICOVAGINAL FISTULA: VAGINAL APPROACH. In: Rodríguez SRV, ed. *Female Urology* (Third Edition). Philadelphia: W.B. Saunders; 2008:794-801.

Wondimeneh Y, Muluye D, Alemu A, Atinafu A, Yitayew G, Gebrecherkos T, Alemu A, Damtie D, Ferede G. Urinary tract infection among obstetric fistula patients at Gondar University Hospital, Northwest Ethiopia. *BMC Women's Health*. 2014 Jan 17;14(1):12.

Classification

Many classification systems exist to date, some as old as fistula surgery itself, pioneered by Sims. A number of these systems focus on the anatomic location and size or extent of the fistula (Arrowsmith 2007).

While older classification systems focus on anatomical location only (Sim's, Lawson), newer systems (Waldijk, Goh, Tafesse) give more detail including fistula size, and a grading system that tries to predict prognosis (Frajzyngier 2013). For example, a surgeon who is new to VVF repair should definitely select cases with a favorable prognosis at first and refer those with a poorer prognosis to a more experienced colleague (Arrowsmith 2007).

A WHO system classifies fistulae into two groups based on operative difficulty:

- Good prognosis/simple fistula reparable by fully trained, competent surgeons able to undertake uncomplicated fistula repairs.
- Uncertain prognosis/complicated fistula requiring referral to, and repair by, a specialist fistula surgeon.

None of the systems however has a scoring component and all are based on clinical judgment rather than firm evidence (Frajzyngier 2013).

To generate this kind of evidence, one study in Bukavu, DRC enrolled 202 women undergoing fistula repair to compare the prognostic value of two commonly used classification systems (Waldijk and Goh). In Waldijk's system, no single component was more predictive of successful closure than another (Capes 2012).

Arrowsmith SD. The classification of obstetric vesico-vaginal fistulas: a call for an evidence-based approach. *Int J Gynaecol Obstet.* 2007 Nov;99 Suppl 1:S25-7.

Capes T, Stanford EJ, Romanzi L, Foma Y, Moshier E. Comparison of two classification systems for vesicovaginal fistula. *Int Urogynecol J.* 2012 Dec;23(12):1679-85.

Frajzyngier V, Li G, Larson E, Ruminjo J, Barone MA. Development and comparison of prognostic scoring systems for surgical closure of genitourinary fistula. *Am J Obstet Gynecol.* 2013 Feb;208(2):112.e1-11.

Classification

In Goh's system (2004), type 4 fistulae were more likely to have failed closure compared to those with type 1 or 2 ($p = 0.0144$). When comparing ROC curves, Goh's system had significantly better ability to predict successful closure than the Waaldijk's system (1995), $p = 0.0421$. These findings are however limited by the small sample size and short follow-up duration (Capes 2012).

Waaldijk Classification System	Goh Classification System
I fistula not involving the closing mechanism	Type 1: Distal edge of fistula > 3.5 cm from external urinary meatus
II fistula involving the closing mechanism	Type 2: Distal edge of fistula 2.5–3.5 cm from external urinary meatus
1. (A) Without (sub)total urethral involvement (a) without circumferential defect* (b) with circumferential defect	Type 3: Distal edge of fistula 1.5 – < 2.5 cm from external urinary meatus
2. (B) With (sub)total urethral involvement (a) without circumferential defect (b) with circumferential defect	Type 4: Distal edge of fistula < 1.5 cm from external urinary meatus
III miscellaneous, e.g. ureteric and other exceptional fistula	(a) Size < 1.5 cm, in the largest diameter
	(b) Size 1.5–3 cm, in the largest diameter
	(c) Size > 3 cm, in the largest diameter
	i. None or only mild fibrosis (around fistula and/or vagina) and/or vaginal length > 6 cm, normal capacity
	ii. Moderate or severe fibrosis (around fistula and/or vagina) and/or reduced vaginal length and/or capacity
	iii. Special consideration e.g. postradiation, ureteric involvement, circumferential fistula, previous repair.
Sub-classification according to size	
Small <2 cm	
Medium 2-3 cm	
Large 4-5 cm	
Extensive >6 cm	
* Circumferential defect: the complete separation of the urethra from the bladder	

Capes T, Stanford EJ, Romanzi L, Foma Y, Moshier E. Comparison of two classification systems for vesicovaginal fistula. *Int Urogynecol J.* 2012 Dec;23(12):1679-85.

Goh JTW. A new classification for female genital tract fistula. *Aust N Z J Obstet Gynaecol.* 2004 Dec;44(6):502-4.

Waaldijk K. Surgical classification of obstetric fistulas. *Int J Gynaecol Obstet.* 1995 May;49(2):161-3.

Classification

WHO Classification System

Criteria based on the degree of anticipated difficulty of the repair

Defining criteria	Good prognosis/Simple	Complicated/Uncertain
Number of fistula	single	multiple
Site	vesico-vaginal (VVF)	recto-vaginal (RVF) mixed VVF/RVF involvement of cervix
Size (diameter)	<4cm	>4cm
Involvement of the urethra/ continence mechanism	absent	present
Scarring of vaginal tissue	absent	present
Presence of circumferential defect*	absent	present
Degree of tissue loss	minimal	extensive
Ureter/bladder involvement	ureters are inside the bladder, not draining into the vagina	ureters are draining into the vagina, bladder may have stones
Number of attempts at repair	no previous attempt	failed previous attempts of repair

* the complete separation of the urethra from the bladder.

Classification

A larger multi-center prospective cohort study aimed at testing the diagnostic performance of Lawson, Tafesse, Goh, the World Health Organization (WHO) and Waaldijk classification systems, and a prognostic scoring system derived empirically by the authors to predict fistula closure three months following surgery.

The WHO, Goh and Tafesse classifications had the highest predictive accuracy, and were not statistically different from each other nor the empirically-derived prognostic scoring system. Still, the predictive accuracy of all these systems were poor to fair.

Some of the components in the systems failed to independently predict fistula closure, suggesting that they were unnecessary. These include ureteric involvement, fistula diameter, mixed RVF/VVF, and cervical fistulas which were not statistically significant and prior repair was only marginally significant.

On the other hand, the empirically-derived system included significant predictors of closure found in the other classification systems, but contained fewer, non-overlapping components.

Conclusion

The diagnostic approach for obstetric fistula should take a comprehensive account of the precipitating factors for better management of the patient. Therefore, the psychological/mental assessment of the patient is just as important as the physical evaluation. The physical assessment is aimed at establishing whether the patient is fit for operation, and involves grading the fistula based on the surgical difficulty of repairing and hence triaging the patients.

While many classification systems exist and are important in evaluating the prognosis of fistula repair, there is no standard system in place. Many of the systems are based on clinical judgment and lack solid supporting evidence, and many have components that have poor prognostic value. An evidence-based classification system that is simple, has high predictive value and inter- and intra-observer correlation and a patient scoring component is needed.

Module III: Management of Obstetric Fistula

By the end of this module, the learner should be able to:

- Understand modalities of conservative management and which patients can benefit from them
- Understand the preoperative checklist for a fistula patient
- Understand the basic principles of surgical technique
- Understand the post-operative management of a fistula patient
- Analyze, challenge, critique or discuss the current evidence on any of the subtopics covered in the module, with the aim of improving research geared towards eradication of the problem.

Management

Findings from history and examination plus preliminary investigations are important in informing treatment options. These should be explained to the patient and family, including the husband. Counseling may be necessary for both the patient and family before considering the different options (De Bernis 2007).

At an MSF Fistula Treatment Center in Burundi, a social worker assesses the psychosocial impact of fistula on the woman on admission, and individual and group counseling is offered. Peer support activities such as singing are useful in restoring self-esteem (Tayler-Smith 2013).

Conservative management

It has been understood that some carefully-selected patients with VVF may benefit from conservative management with early bladder catheterization, by-passing the need for surgery and the extra burden this puts on strained resources. Some experts estimate this figure to be about 25% of the women (Fistula Care 2013). Tayler-Smith (2013) and colleagues reported an 11% success rate at a fistula center.

Vulvar dermatitis and irritation during conservative management can be treated with zinc oxide barrier ointment or sitz baths. Experts agree that four weeks after initial injury is the window of opportunity after which chances of success progressively diminish. Four weeks is also the duration after which failure of closure is considered (Fistula Care 2013, Sung 2007).

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Fistula Care. Urinary Catheterization for Primary and Secondary Prevention of Obstetric Fistula: Report of a Consultative Meeting to Review and Standardize Current Guidelines and Practices, March 13-15 at the Sheraton Hotel, Abuja, Nigeria. New York: EngenderHealth/Fistula Care; 2013. Sung VW, Wohlrab KJ. Chapter 26 - Urinary Tract Injury and Genital Tract Fistulas. In: Sokol AISR, ed. *General Gynecology*. Philadelphia: Mosby; 2007:639-61.

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Conservative Management

Treatment Pathway: Conservative Treatment of Fistula in Settings With and Without Specialized Fistula Care Services

Fistula Care has developed a treatment pathway to assist healthcare workers in the provision of conservative treatment for fistula. In implementing this strategy, it is important that the healthcare worker is skilled and approved to insert a Foley catheter, the patient presents within four weeks after injury/labor and that the process is explained to the patient and consent obtained.

Patients with fistulae falling under the following categories are excluded from this pathway:

- Isolated rectovaginal fistula.
- Fistula resulting from pelvic malignancy, radiation therapy, or infection (such as lymphogranuloma venereum).
- Women suffering from incontinence after a failed attempt at fistula repair.
- A woman with a known fistula between the ureter and vagina would not benefit from this treatment.

A Foley catheter size 16 or 18 is inserted observing sterile procedures and ballooned with 10cc of normal saline. If the catheter passes from the bladder through the fistula into the vagina, the patient is excluded from the pathway, the catheter is removed and patient is referred for definitive management.

Once in place, the catheter is managed through an 'open-drainage system' and the patient asked to drink plenty of water but not exceeding 5 l/day, as well as to be active.

Conservative Management

Treatment Pathway: Conservative Treatment of Fistula in Settings With and Without Specialized Fistula Care Services

Follow-up

A follow-up is made after 24 hours to ensure that the catheter is in the bladder, not in the vagina, and draining, and that the patient is compliant with instructions to be active and drink 5l/day of water. Subsequent follow-ups are on a weekly basis during which the above conditions are ascertained.

Failure of conservative approach is considered if the catheter is found inside the vagina, or lack of compliance by the patient and to remain active, or if the patient is still wet at the fourth weekly visit.

The catheter is removed at the fourth week after insertion whether the patient is dry or wet. If wet, the patient is referred for formal repair. For the dry patient, a fifth-week follow-up is arranged and if found wet or incontinent, she is again referred to a center with repair capability. If dry, conservative management is considered successful.

During the last visit, the patient is educated on the importance of delayed resumption of sexual activity (preferably 6 months), family planning options and advised that the preferred mode of delivery for subsequent pregnancies is Caesarean Section.

Facilities implementing this protocol should document how many women are treated with catheter as first option, are dry after five weeks, and are referred to facilities capable of repairing the fistula.

Conservative Management

Fulguration, plugs and glue

For VVFs a few millimeters in diameter, fulguration may be useful. In fistulas less than 3.5 mm, Stovsky and colleagues reported success with fulguration as the sole treatment modality in 9 of 12 patients (75%) and as an alternative intervention after failure of an open surgical repair in 2 of 3 (66%). Fulguration is followed by decompression of the bladder with a Foley catheter for 2 weeks and anticholinergic medications (Stovsky 1994).

Small VVFs may also be managed with fibrin therapy (Dangal 2014, Rutman 2008). For small rectovaginal fistulas with minimal fibrosis endoanal plugs may be an option. These alternative procedures should however be performed at fistula centers by an experienced fistula surgeon (Dangal 2014).

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Surgical Management- General Principles

Timing of repair

Traditionally, fistulas were given about 3-6 months to mature before repair was undertaken. However, the psychosocial consequences accompanying fistula may not warrant this waiting period. Many surgeons have subsequently performed early repairs and reported excellent results (Rutman 2008, Sung 2007).

For example, of a total 1716 patients presenting with obstetric fistula between 3-75 days of injury, Waaldijk (2004) reported a 98.5% closure with early management: 1633 (95. 2%) through first attempt and 57 (3.3%) through repeat attempt(s). Of those with closed fistula, 1575 (93.2%) were continent while 115 (6.8%) were incontinent.

Malnourishment, helminthic infections, schistosomiasis, lymphogranuloma, tuberculosis, bladder stones and other infections may require urgent attention before repair. Footdrop and hip contractures may mean prolonged physiotherapy before eventual repair (Creanga 2007).

Timing should therefore be individualized, considering the following factors: no evidence of infection (systemic and local); no induration or inflammation; mature fistula tract; good tissue quality; good nutritional status. Fortnightly assessments should be made to inform when the timing is appropriate (Sung 2007).

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Surgical Management- General Principles

The route of repair

The location of the fistula dictates its surgical approach. Juxta-urethral and mid-vaginal fistulas are repaired vaginally, whereas juxta-cervical fistulas are repaired vaginally or transabdominally (Rutman 2008).

The surgeon's own experience and the extent of injury are also important determinants of the route that is chosen. However, most vesico-vaginal fistulas are repaired vaginally. Advantages of the vaginal approach include less bladder dissection and blood loss, less postoperative pain, reduced hospital stay and improved patient satisfaction (Creanga 2007, Rutman 2008, Sung 2007).

In certain cases a combined approach is decided preoperatively or during the procedure. A patient with a complex fistula should be always prepared and draped to allow a double access (Rochat 2011).

The abdominal approach gives the surgeon the ability to perform simultaneous procedures including augmentation cystoplasty, ureteral reimplantation, and repair of bowel fistulas (Rutman 2008, Sung 2007).

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Surgical Management- General Principles

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 for better visibility. 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 (De Bernis 2007, Rutman 2008).

Preventing infection

Many fistula surgeons use prophylactic antibiotics (single dose preop), or use them empirically, and the choice depends on local availability and clinician's judgment. However, the most common choice is an aminoglycoside. The benefit of prophylaxis in fistula repair has always been a gray area, with some surgeons not using antibiotics at all but with good results, and with few studies available to answer the concerns (Arrowsmith 2010).

In one randomized controlled study in Benin, there was no significant difference between one group that received a single dose of intravenous ampicillin before VVF repair and one group that didn't in terms of operative failure. Even though there was reduced use of other antibiotics and urinary tract infections in the intervention group, the sample size in this study was small (n=79) and other studies have disputed the benefit of preoperative prophylaxis in post-operative urinary infection (Tomlinson 1998).

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Surgical Management- General Principles

Preventing infection

In a larger, randomized controlled trial, there was no significant difference between the group that received a single dose of intravenous gentamycin (80 mg IV) before VVF repair and the group receiving extended use of either or a combination of Amoxicillin, Chloramphenicol and Cotrimexazole. Fistula closure (primary outcome) was not significantly different between the groups as well as hospital stay, proportion of women with fever, post repair infection and post operative stress incontinence (Muleta 2010).

Despite this paucity of data, some authors argue that a large, complex trial testing the benefit of prophylaxis before fistula repair would be a waste of resources, since research examining the use of antibiotics with "contaminated" wounds and other types of pelvic surgery already exists (Arrowsmith 2010).

However, strict asepsis should be ensured by using antiseptic wash, sterile drapes and employing an aseptic technique (De Bernis 2007, Rutman 2008).

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Surgical Management

Once a decision to operate has been made, it is good practice for the surgeon to work within the limits of his/her skills, leaving cases beyond his/her grasp to more experienced fistula experts. This is because the first attempt at repair offers the best chance for success. This is the importance of a grading system, as earlier explained.

Preoperative evaluation includes identification of patients with coexisting stress urinary incontinence. Simultaneous sling procedure or bladder neck suspension can be performed, avoiding the need for a second procedure. Concomitant repair for stress incontinence does not increase the fistula recurrence rate.

Consent signed by the patient should be sought and recorded if she agrees to surgical management.

Preoperative management

- The timing of washing and shaving of the perineum. Timing of shaving may vary from one center to another sometimes being carried out just before the operation, or in some centers by the nursing staff before the patient is wheeled to theatre.
- The use of enemas before the operation. While some surgeons do not use enemas before operations for simple vesico-vaginal fistula (VVF) repair, the majority do, as spinal anesthesia relaxes the anal sphincter with resultant soiling of the operative field. Enemas are recommended for the repair of a recto-vaginal fistula (RVF).

Surgical Management

Preoperative management

- Some surgeons prefer the women to be 'nil by mouth' from midnight before the operation but others encourage a high fluid intake before surgery for those women who will be having their fistula repaired under spinal anaesthesia.
- The optional use of preoperative sedation such as 10 mg midazolam or 100 mg phenobarbitone the night before and just prior to her surgery.
- Her preoperative anaesthetic check.

Surgical Management of Vesico-vaginal Fistula- General Principles

Vaginal Approach

In general, excellent exposure with watertight, tension-free closure using multiple, non-overlapping suture lines provide an approximately 90% chance of cure on the first attempt (Rutman 2008).

The bladder should be drained continuously with a size 16-18 catheter. Larger sizes may cause urethral irritation and smaller sizes may be by-passed if urine output is high. The catheter should be held firmly but gently in place by tape on the thigh or sutures at the introitus to keep it in place and to avoid pulling on the repair site (De Bernis 2007, Rochat 2011).

The ureters should be protected. 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 (De Bernis 2007).

Excision of fistulous tract is not necessary. Once thought to improve outcome, excellent results have been achieved without excision. Moreover, excision enlarges the tract, encourages bleeding and hemostatic techniques may be counter-productive to healing, and may cause ureteric damage if close (Rutman 2008).

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Surgical Management of Vesico-Vaginal Fistula- General Principles

Vaginal Approach

In the majority of the cases, one-layer closure for the bladder is used but some surgeons use a two-layered closure. 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 (De Bernis 2007, Rutman 2008).

An interpositional graft is supposed to optimize the chance of cure if the integrity of the repair is in question. The Martius flap is used in vaginal repairs while the omentum is used in abdominal repairs (Rutman 2008, Sung 2007). Nevertheless the recent tendency is to have very selected indication in the use of the Martius flap (Browning 2006).

It is also important to consider the sexual function of the patient and ensure preservation of vaginal depth in the sexually active patient. This can require cutaneous rotational flaps in patients with large fistulas and vaginal stenosis (Rutman 2008).

Abdominal Approach

This can be intra- or extra-peritoneal. The intra-peritoneal approach is preferred because it gives a larger access and the uterus can be easily mobilized in order to better expose the bladder. The omentum can be mobilized if an interpositional flap is needed and of course the ureters can be exposed.

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Surgical Management- Basic Principles (Based on WHO guidelines)

Recto-vaginal fistula (RVF)

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

- Care should be taken not to cause an inadvertent stricture of the rectum.
- Preoperative bowel preparation should be more thorough than for VVF alone. This can be achieved by the use of enemas.
- A temporary colostomy may be required for large, high or severely scarred RVF.
- A previously failed repair may also require a colostomy.
- In the opinion of many surgeons, RVF repair requires prophylactic antibiotic coverage to prevent intra-operative infection, although no case-control studies have been undertaken to evaluate this.
- Postoperative women who have had an RVF repair that has not required a colostomy, should remain on a fluids-only diet for the first two days and then a low-residual diet but with a high fluid intake for a few more days.

Combined fistula

Combined vesico- and recto-vaginal fistula should be repaired at the same time, usually commencing with the vesico-vaginal fistula, but circumstances and common sense should determine the most practical approach.

Post-Operative Care

The immediate postoperative period

The vital signs (blood pressure, pulse and temperature) should be regularly observed and recorded as per the unit protocol.

The woman should be observed for excessive blood loss both vaginally and through the catheter.

Intravenous fluids should be given until fluids can be taken orally as per the unit protocol.

The fluid balance should be regularly monitored, including both fluid input and output.

The woman should be kept comfortable with adequate analgesia.

The woman should be mobilized as soon as possible if she has had a simple repair.

After 24 hours and during the following days:

Fluid intake: The woman should be encouraged to maintain a high oral-fluid intake level to enable her to produce two to three liters of urine per 24 hours.

The vaginal pack, if used, should be removed within 24 to 48 hours, according to the local protocol and daily vaginal irrigation started.

Post-Operative Care

Catheter drainage: The duration that an indwelling catheter is retained postoperatively, to a good extent, determines the length of hospital stay. This duration has traditionally varied from one surgeon to the other, determined by the local protocol or the type of fistula. In a cross sectional study, fistula surgeons reported to retain the indwelling catheter for 12 days on average (a minimum of five days to 21 days) for a "simple" fistula, while for a "difficult" fistula, the average was 21 days but could go as long as 42 days (Arrowsmith 2010).

However, a multicenter randomized controlled trial established that there is no significant difference in fistula repair breakdown between 8 days and 3 months, the trial's primary endpoint, between 7-day and 14-day bladder catheterization groups (ten [4%] of 250 patients in the 7 day group had repair breakdown vs eight [3%] of 251 in the 14 day group). There were also no significant differences in urinary retention after catheter removal, infections and febrile episodes potentially related to treatment, catheter blockage, extended hospital stay and residual incontinence at 3 months (Barone 2015).

The importance of this finding is the possible reduction in hospital stay and associated costs and therefore, potential to serve more patients. Plus, on the patient's side, it decreases the time of discomfort due to catheterization.

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Post-Operative Care

Many surgeons use open-drainage and it is important to ensure that neither the drainage tube or urinary catheter become kinked, and that the drainage receptacle is always at a lower level than the bladder (De Bernis 2011).

The woman should be encouraged to be mobile as soon as possible, depending on the type of repair she has received. Women who have had a simple repair can start to be mobilized within a day of operation; those who have undergone complicated fistula repairs, e.g. those requiring a ureteric re-implantation, will need bed rest for up to seven days after surgery depending on the type of operation and the surgeon's own preference (De Bernis 2011).

Relevant physiotherapy exercises should be started the day after the operation. A physiotherapy and education program has been demonstrated to be integral in improving residual incontinence after surgery, and may also be important in closure of small residual fistulas when combined with proper nutrition (Castille 2015).

Any non-absorbable sutures should be removed when the tissues are healed. The woman should be observed for possible anemia and, if necessary, have a post-operative Hb check (De Bernis 2011).

Recommendations in Reintegration: 5th International Consultation on Incontinence

Social reintegration is important for all women with obstetric fistula. It is the process by which women learn, with help, how to overcome physical, psychological and socioeconomic challenges, freely identified by themselves, in order to enhance their level of social functioning in communities and social networks of their choosing, so that the risk of having another fistula is minimized.

Social reintegration should be used for all women. However this series of interventions can be performed by any trained care worker, providing it focuses on making the woman part of her social fabric again, or the one she chooses given that some women might not wish to go back home for a variety of reasons, and commences from the time leaking of urine becomes manifest.

Social reintegration should be designed to break the fistula recurrence cycle in which the woman's physical state is inextricably connected to her mental state and her socio-economic situation.

Early successful surgical repair or catheter management is highly recommended and is likely to be the only thing needed for social reintegration. Surgery should be performed as soon as possible by a skilled surgeon, and preferably within 3 months of developing the fistula, as this is likely to limit the length of time the woman is stigmatized by her family or community and thus perceived as an outcast.

Module IV: Social Reintegration

By the end of this module, the learner should be able to:

- Understand the importance of social integration
- Examine in detail the components of integration
- Understand the levels of integration through the social integration matrix
- Analyze, challenge, critique or discuss the current evidence on any of the subtopics covered in the module, with the aim of improving research geared towards eradication of the problem.

Social Reintegration

Social integration is defined as:

“Appropriate interventions that help women with obstetric fistula overcome physical, psychological and socio-economic challenges, freely identified by themselves, in order to enhance their return to the communities and social networks of their choosing, such that the risk of them presenting with another fistula is minimized” (Abrams 2013).

Many women report improved quality of life and reintegration into society after successful repair of obstetric fistula. There is however a proportion in which the repair fails. Long term follow-up of patients who have undergone repair is therefore an important aspect of the fistula program.

After treatment, women often go back to the communities from which they came. They could be concerned about issues such as going back to work, resumption of sexual intercourse with the spouse and future reproductive function. These women could also be considered as ambassadors in the community, and as peer educators.

Patients therefore need adequate pre-operative counseling and education aimed at improving their psychological being and physical health. Through a counseling program in Eritrea, self-esteem for women with fistula significantly improved, were more willing to be around others, were willing to practice healthy behavior, and talk to their families and the community about fistula (Johnson 2010).

Social Reintegration

Due to the scarcity of resources, long-term follow-up is virtually non-existent and patients' rehabilitation and community reintegration are difficult to accomplish.

Social Reintegration

Due to the scarcity of resources, long-term follow-up is virtually non-existent in many settings, and patients' rehabilitation and community reintegration is difficult to accomplish (Creanga 2007; Ahmed 2007)

Reintegration, apart from restoring a woman's physical, psychosocial and economic state before fistula, should aim at improving all three, in order to prevent the vicious cycle. A matrix has been suggested, highlighting the various levels of integration (see Fig. 4.1).

Figure 4.1: Reintegration Matrix (Abrams 2013)

ELEMENT	LEVEL		
	Facility	Community	Political
Physical Improved physical health	Early detection Rehabilitation Skilled surgeon Timely repair Designated space	Outreach Health education Follow up	Allocate funds for treatment
Psychological Improved mental health	Psychosocial therapy e.g. stigmatisation	Advocacy and sensitisation Follow up	Raise awareness on issues of counselling
Socio-economic Increased social connection	Vocational skill training Linkage with Existing programmes	Microcredit or finance Follow up	Link up with ongoing national poverty alleviation programmes

Abrams P, De Ridder D, De Vries C, Elneil S, Emasu A, Esegbono G, Gueye S, Hilton P, Mohammad R, Mourad S, Muleta M, Pickard R, Rovner E, Stanford E. Fistula. In: Incontinence: 5th International Consultation on Incontinence, Paris February, 2012. Paris: ICUD-EAU; 2013. 5th Ed. p. 1529-82.
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Recommendations in Reintegration: 5th International Consultation on Incontinence

Social reintegration should start in a designated space where women can recuperate, perhaps within the repair facility or nearby, rather than going home and encountering risky behaviors which may make it more likely for fistula to reoccur, either due to an exacerbating physical event such as early sexual intercourse or heavy work. Also, peer counseling is more likely to be available in this space.

Surgeons and other care workers should consider social reintegration as not just a social tool but also as a means of ensuring that adequate follow-up of the postsurgical improvement in quality of life is done and reported on. At the least, there should be a review of individually defined success of surgery and surgical outcomes, including continence and return to fertility and/or sexual life, as desired by the woman.

Appropriate counseling messages about the risk factors and causes associated with fistula should be targeted at family members (including husbands) and the community, as this can help to overcome the stigma, discrimination and misconceptions surrounding the condition and enhance her community inclusion. There is then an opportunity to make changes so that the woman does not present with another fistula in the future.

Counseling should be seen as an opportunity for health providers to understand the socioeconomic, psychological and physical experiences that are faced by girls and women living with fistula, before and after surgery, so that they may give meaningful help. This will also help to generate knowledge on social reintegration processes and will help in the planning of a broader range of outcomes for women living with fistula.

Recommendations in Reintegration: 5th International Consultation on Incontinence

Social reintegration should include assistance with education and life skills, and encouragement of private initiatives through vocational skills development and microcredit support. If this is freely chosen, it will not keep a woman away from her community unduly, and will help her regain or improve her previous economic status and enhance her self-sufficiency and community inclusion.

Social reintegration should include vocational skills training with the aim of providing women with alternative ways to generate income, without jeopardizing their recuperation, by teaching them a trade which is economically viable within their community.

Institutional reintegration services should be incorporated into existing community activities or programmes directed to empower women (e.g. education, skills training, income generation, self-esteem).

Reintegration programmes should develop criteria to determine where support with socioeconomic interventions should be given, as funds may be limited and fistula consequences can vary dramatically by country and region. They should also be careful not to increase the burden of stigma and therefore inadvertently impede reintegration. Of particular concern should be women who are still incontinent, those who are deemed incurable, those who have no children and those who have lived with fistula for a long period of time.

Recommendations in Reintegration: 5th International Consultation on Incontinence

Social reintegration programmes need to consider the potential ethical dilemmas in reintegration such as providing targeted financial support or high value goods to women with fistula in poor communities, other than as part of a community approach.

Social reintegration should seek to involve women who have been successfully reintegrated into their communities. These women can be termed motivational mobilisers and can contribute to community mobilization movements for safe motherhood, fistula case mapping and referrals for treatment.

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