2. Preoperative Clinical Management

This chapter focuses on clinical management of obstetric fistula and covers patient assessment, conservative management, holistic care to treat associated conditions/comorbidities and preoperative planning. This chapter details the prerequisite steps that should be taken prior to surgery.

2.1. Patient Assessment

Patients presenting with suspected obstetric fistula are likely to have some of the symptoms and comorbidities listed below. Thorough patient history and physical examinations, according to the criteria outlined in this section, should be applied to assess the patient and make a correct diagnosis.

2.1.1. Obstructed Labour Injury Complex

Symptoms

Depending on whether the patient has a vesicovaginal fistula and/or rectovaginal fistula, the main symptom of obstetric fistula is uncontrollable continuous leakage of urine and/or stool from the vagina.

Associated Comorbidities and Consequences

A fistula severely affects a woman's reproductive system, as well as her entire health and well-being.[37] Therefore, when a fistula patient presents, it is important to investigate the presence of possible consequences and comorbidities associated with obstetric fistula.

Early Comorbidities and Consequences

- Uterine rupture.
- Sepsis.
- Ischaemic changes in pelvic organ tissues.
- Extragenital damage: gastrointestinal damage, anal sphincter damage.
- Damage to or separation of the symphysis pubis.[38]
- Fractured coccyx.
- Neurological damage, foot drop from damage of the L5/S1 spinal nerve roots.[39]
- Intrapartum foetal death.
- Foetal and neonatal complications: hypoxic ischaemic brain injury, sepsis, intracranial and intracerebral haemorrhage.

[37] S. Arrowsmith, E.C. Hamlin, L.L. Wall. Obstructed Labor Injury Complex: Obstetric Fistula Formation and the Multifaceted Morbidity of Maternal Birth Trauma in the Developing World. *Obstet Gynecol Surv* (1996).
[38] W.P. Cockshott. Pubic Changes Associated with Obstetric Vesico Vaginal Fistulae. *Clin Radiol* (1973).
[39] K. Waaldijk, T.E. Elkins. The Obstetric Fistula and Peroneal Nerve Injury: An Analysis of 947 Consecutive Patients. *Int Urogynecol J* (1994).

Delayed Comorbidities and Consequences

- Genital tract scarring leading to vaginal and/or cervical stenosis, and even haematometra.
- Sexual problems caused by vaginal stenosis or occlusion; dyspareunia, apareunia.
- Cervical incompetence, leading to an inability to carry subsequent pregnancies to term.
- Amenorrhea.
- Infertility secondary to Asherman's or Sheehan's syndrome.
- Recurrent urinary tract infections.
- Urinary dermatitis with chronic excoriation, local hyperkeratosis and secondary ulceration.
- Bladder dysfunction, neuropathic bladder.
- Renal damage from recurrent urinary tract infections or due to lower ureter stricture, which may lead to hydronephrosis and loss of renal function.
- Bladder and vaginal stones due to concentrated urine.
- Chronic pain, e.g. pelvic and/or leg pain.
- Ongoing foot drop.
- Lower limb contractures.

Rare Comorbidities and Consequences

- Uterine prolapse.
- Permanent foot drop.

Other Associated Comorbidities and Consequences

In addition to the physical comorbidities and consequences, obstetric fistula has a severe emotional, social and economic impact on the lives of women living with the condition,[40] which must also be assessed and addressed.

- Mental health issues, e.g. depression, psychological disorders, suicidal thoughts or tendencies.
- Social stigma, rejection, family separation and community exclusion.
- Malnutrition.
- Chronic anaemia.
- Severe socioeconomic implications, often resulting in deepening poverty.
- Premature death resulting from poor general health and nutritional status or renal failure.

[40] L.T. Mselle, K.M. Moland, B. Evjen-Olsen, A. Mvungi, T.W. Kohi. 'I Am Nothing': Experiences of Loss among Women Suffering from Severe Birth Injuries in Tanzania. *BMC Womens Health* (2011); K. Weston, S. Mutiso, J.W. Mwangi, Z. Qureshi, J. Beard, P. Venkat. Depression among Women with Obstetric Fistula in Kenya. *Int J Gynecol Obstet* (2011); S. Ahmed, S.A. Holtz. Social and Economic Consequences of Obstetric Fistula: Life Changed Forever? *Int J Gynecol Obstet* (2007); J.K. Barageine. *Genital Fistula among Ugandan Women: Risk Factors, Treatment Outcomes, and Experiences of Patients and Spouses* [PhD thesis]. Makerere University, Kampala and Karolinska Institute, Stockholm (2015).

2.1.2. Diagnosis

A detailed history and thorough examination are vital to confirm the diagnosis. It is important to assess the patient for number, size and exact location of fistula(s) before developing a treatment plan. Record and safely store patient information from their first contact with a healthcare professional throughout treatment, discharge and follow-up. This not only ensures continuity of care, but can also help to monitor surgical outcomes, facilitate learning and build a database of patient records, as well as carry out audits and possible research studies. Record keeping should cover the patients' personal and clinical history; physical examination; investigations and results; preoperative assessment, surgery and postoperative care; assessment of outcomes; discharge advice and follow-up appointments after discharge.

The following can be used as a reference for information that should be collected and recorded, although many facilities will already have their own protocols.

Personal and Obstetric History

1. **Patient characteristics:** Name, contact details, age, marital status and age at marriage if relevant, education, occupation, members of household and current circumstances.
2. **Symptoms:** Main problem, characteristics and duration.
3. **Obstetric history:**
    - **Gravidity and parity** including dates and sex of living and dead children.
    - **Labour duration(s)**
    - **Place(s) of delivery and person(s) who assisted**
    - **Mode(s) of delivery** (e.g. spontaneous vaginal delivery, instrumental or vacuum delivery, destructive delivery, symphysiotomy, caesarean section with or without hysterectomy).
    - **Neonatal outcome(s)** (e.g. live birth, stillbirth, early neonatal death, sex of baby).
    - **Other** (e.g. history of menses, vaginal bleeding or discharge, previous confirmed pregnancies and their evolution, inability to walk properly after delivery, when menses resumed after delivery, current and past use of contraception, other medical conditions or previous surgery).
    - **Fistula history** (e.g. details of previous fistula, repair(s), facility and outcomes) to indicate whether the present fistula is new, old or formerly unsuccessfully repaired.
    - **Previous medical history** followed by appropriate investigations (e.g. drug allergies, diabetes mellitus, hypertension, known cardiac diseases, anaemia, tuberculosis, malarial attacks, thyroid disorders).
    - **Previous surgical history** (e.g. blood transfusion, anaesthesia-related complications, type of operation(s) performed including hysterectomy, intraoperative complications, surgeon's recommendations).

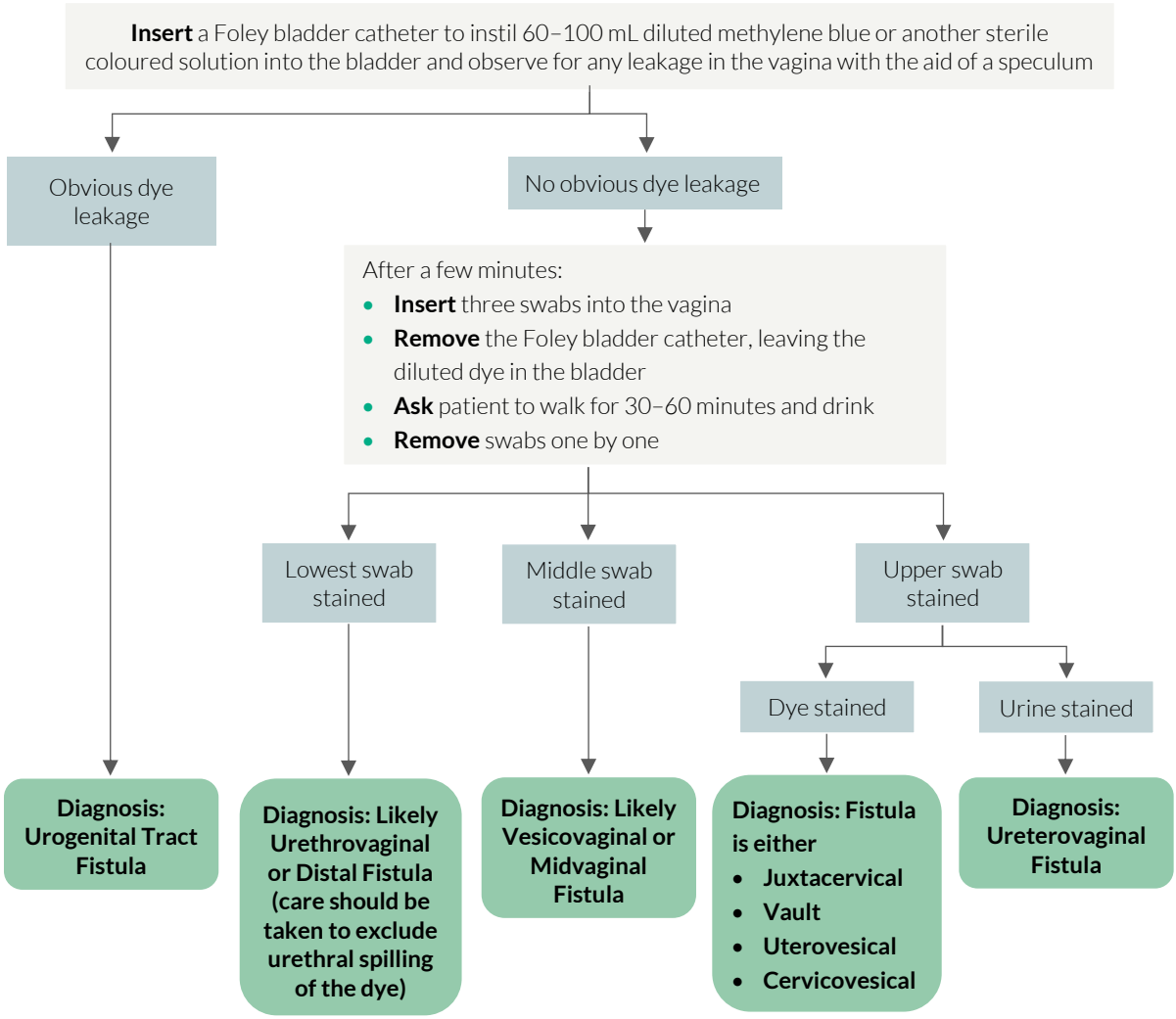
Physical Examination

After recording the patient's personal and obstetric history, a physical examination is important to diagnose, describe and classify the fistula and other morbidities relating to obstructed labour, as well as to identify previous operations or existing conditions that are not related to the fistula.

1. **General:** Nutritional status, e.g. body mass index (BMI) or mid-upper arm circumference (MUAC), mental health status.
2. **Systemic:** Review of respiratory, cardiovascular, abdominal and musculoskeletal functions.
3. **Neurological disorders caused by obstructed labour:** Foot drop (class 1–5), saddle anaesthesia, anal reflex and pudendal nerve function.
4. **Abdominal examination:** Shape of the abdomen, surgical scars, palpable mass, areas of tenderness, fluid thrill and shifting dullness, bowel sounds.
5. **Examination of external genitalia:** Ulceration and excoriation due to hyperkeratosis (i.e. urine dermatitis), bleeding, female genital cutting, perineal tears, sexually transmitted infections.
    - **Digital examination of the genital tract:** Examination facilitates the diagnosis and classification of female genital fistula and its characteristics that may affect treatment and outcomes.
    - **Patency of the reproductive tract** (vagina, uterus or cervix can be occluded by scar tissue, the cervix may be missing).
    - **Presence of vaginal stones, foreign bodies or injuries** such as gishiri cuts.
    - **Location and extent of vaginal scarring** (anterior and/or posterior), which often appears as a thick band of scar tissue on the posterior vaginal wall.
    - **Number, size, location and classification of fistula(s)** according to preferred system (*see* 1.6. Obstetric Fistula Classification Systems; page 7).
    - **Urethral length, whether the urethra is involved, if it has a total or partial circumferential defect and if it is blocked** (if it is possible to palpate the bony symphysis pubis anteriorly then the urethra has been circumferentially affected, i.e. if there is a gap from the urethra to the bladder then it is circumferential).
    - **Bladder capacity** (difficult to evaluate preoperatively, but can be assessed approximately by sounding the bladder with a metal catheter).
    - **Anal sphincter status and anal reflex** (by inspection and palpation to see if it is intact and with digital examination, asking the patient to squeeze to check for tone).
    - **Stress test** (if there is no obvious fistula, ask the patient to cough and check for signs of urinary stress incontinence; this test requires some urine in the bladder).
    - **Dye test** (permits detection of a small fistula, especially in the case of uterovaginal, cervicovaginal fistula and residual uni- and bilateral corner fistulas, which may not be detected on examination).
    - **Any other abnormality of the genital tract**.
    - **Speculum examination** helps to visualise the defect; this will however not be possible in cases of severe vaginal scarring.

Dye Test for Vesicovaginal Fistula

To diagnose a urinary tract fistula and its location, a dye test can be carried out according to the flow chart below.



Dye Test for Rectovaginal Fistula

In most cases, the diagnosis of a rectovaginal fistula is made on digital rectal and vaginal examination, also checking for rectal stenosis and/or a circumferential defect. Occasionally, if a patient complains of passing flatus or stool per the vagina but no fistula is evident, a rectal dye test is necessary. This is more likely if there is dense scarring with posterior bands so that the rectovaginal fistula is hidden in the scar.

If a dye test is necessary:

- Inject 200 mL of dye through a Foley catheter passed 10 cm into the rectum. If necessary, to prevent the dye from leaking out, either use a swab to compress the anus, or inflate the Foley catheter balloon.

- Observe the vagina for any leakage of dye. If there is no leakage, then try the swab test (*see* Dye Test for Vesicovaginal Fistula; page 16). The patient may need to wear a pad throughout to catch any anal leakage.

2.2. Conservative Management, Holistic Care and Preoperative Planning

2.2.1. Conservative Management for At-Risk and Fresh Vesicovaginal Fistula Cases

When a patient presents or is referred shortly after prolonged obstructed labour and is at risk of a fresh vesicovaginal fistula, either with or without signs of urinary incontinence, conservative management – catheterising the bladder with an indwelling Foley catheter – can promote healing and prevent the need for a surgical repair at a later stage.[41]

It is essential to note however that there is a limited timeframe in which this treatment can be effective and cure rates vary.[42] Conservative management can close around 15%–20% of simple or small vesicovaginal fistula cases,[43] and some expert fistula surgeons say success rates can be significantly higher, especially if patients are treated immediately after or within a few days of delivery.

Even if conservative management does not completely close a vesicovaginal fistula, importantly it can reduce the diameter of the fistula, thereby facilitating surgical repair subsequently. All health facilities should have a protocol in place for conservative management of at-risk and fresh vesicovaginal fistula cases and any trained staff, including medical or clinical officers, midwives and nurses can provide this critical care. It is important to note however that sometimes the Foley catheter can sit in or through the fistula, thereby keeping it open. As such, the placement of the catheter should always be checked.

Conservative Management after Prolonged Obstructed Labour for At-Risk Cases (no urinary leaking through the vagina)

All women who have suffered prolonged obstructed labour and in particular women who had a stillbirth (with or without a caesarean section), and who are likely to have ischaemic compression injuries in situ, but who are **not** yet experiencing urinary leakage from the vagina, should receive the following treatment as soon as possible after labour:[44]

- Insert an indwelling Foley catheter (size 16–18), which should be kept on free drainage and should stay in place for **14 days**.
- The patient can remain in hospital during this time but could also be discharged home if they live nearby and if communication via telephone is possible. All patients should be encouraged to drink sufficient fluids to ensure urine is clear at all times.
- Any intercurrent infections should be treated, according to local protocols.
- After removal of the Foley catheter, if the patient has no urinary leaking through the vagina in the next 24 hours and can pass urine normally, it can be assumed that the conservative management

[41] Waaldijk. The Immediate Surgical Management of Fresh Obstetric Fistulas with Catheter and/or Early Closure.
[42] M. Breen, M. Ingber. Controversies in the Management of Vesicovaginal Fistula. *Best Pract Res Clin Obstet Gynaecol* (2019).
[43] Lewis and de Bernis. *Obstetric Fistula: Guiding Principles for Clinical Management and Programme Development Documents*.
[44] Lewis and de Bernis. *Obstetric Fistula: Guiding Principles for Clinical Management and Programme Development Documents*. 34.

has been successful, i.e. any ischaemic injuries have healed spontaneously and a vesicovaginal fistula has therefore not formed. In this case, the patient can return home with routine predischarge advice. This should cover family planning, and for subsequent pregnancies, antenatal care and all future deliveries to take place in facilities where Emergency Obstetric Neonatal Care (EmONC) services are available.

- If on removal of the Foley catheter the patient experiences urinary leaking from the vagina, a new Foley catheter should be inserted. It is important to meticulously check the correct placement of the catheter to ensure it is not sited in the vagina or through the fistula, thereby keeping it open and the bladder kept on free drainage for a further **14 days**.
- If on removal of the Foley catheter after the second period of **14 days** the urinary leakage persists through the vagina, it can be assumed that the patient has a vesicovaginal fistula and she should be referred to a trained, skilled fistula surgeon for surgical repair. The referring facility should keep a record of the patient's contact details so that she receives appropriate support and care.

Conservative Management after Prolonged Obstructed Labour for Fresh Vesicovaginal Fistula

Conservative management for a fresh vesicovaginal fistula is most effective when it is:

- Implemented for smaller vesicovaginal fistulas.
- Started immediately or as soon as possible after prolonged obstructed labour, while the injuries are fresh, before tissue granulation takes place.

However, even if a patient presents 4–5 weeks after delivery with a recently acquired vesicovaginal fistula, conservative management should always be attempted.

For a woman who has suffered prolonged obstructed labour (with or without a caesarean section), and who **is experiencing urinary leakage from the vagina** afterwards, it can be assumed that the patient has a fresh vesicovaginal fistula. As stated above, there is a limited window of opportunity to provide conservative management for such cases.

It is therefore extremely important that the patient receives the following treatment as soon as possible after labour:

- Insert an indwelling Foley catheter (size 16–18), which should be kept on free drainage for **4–6 weeks** and should be carefully replaced with a new catheter every 10–14 days.

N.B. If the Foley catheter falls out or is found to be in the vagina, it can be assumed that the patient has extensive compression damage and resulting tissue loss, hence a large vesicovaginal fistula. In this case, the following care and hygiene measures should be offered, after which the patient should be referred to a trained, skilled fistula surgeon for assessment and surgical repair.

- The patient should remain in hospital during this time and should be encouraged to drink sufficient fluids to ensure her urine is clear at all times.

- Sitz baths with salty water should be taken twice daily by the patient, to clean the perineum and vagina.
- Under aseptic conditions, a speculum examination of the vagina should be carried out by a surgeon or health professional who has been trained in fistula care. Any necrotic tissue should be carefully excised and this debriding may need to be repeated until the vagina is healthy, with no further evidence of sloughing or necrotic lesions.
- Any intercurrent infections should be treated, and routine antibiotic prophylaxis should be given for urinary tract infections, according to local protocols.
- After **4–6 weeks**, when the Foley catheter is removed, if the patient has no urinary leaking through the vagina in the next 24 hours and is able to pass urine normally, it can be assumed that the conservative management has been successful and the vesicovaginal fistula has healed. In this case, the patient can return home with routine predischarge advice. This should cover family planning and future pregnancies, including the importance of antenatal care and delivery by elective caesarean section.
- If on removal of the Foley catheter the patient leaks urine from the vagina, a new Foley catheter should be inserted and the bladder kept on free drainage for a further **14 days**.
- If on removal of the Foley catheter after the additional period of **14 days** the urinary leakage returns through the vagina, it can be assumed that the vesicovaginal fistula is still present and the patient should be referred to a trained, skilled fistula surgeon for surgical repair. Nevertheless, it is hoped that conservative management will have reduced the diameter of the fistula, thereby making a successful surgical repair more likely subsequently. The referring facility should keep a record of the patient's contact details to ensure that she receives appropriate support and care.

If conservative management fails, there is no clear consensus on the optimal timing for fistula surgery. While some fistula surgeons prefer to operate as soon as the vagina is clear of necrotic tissue and the patient is fit for surgery, most prefer to wait for 2–3 months after the development of the fistula.[45]

2.2.2. Holistic Care to Treat Associated Conditions/Comorbidities

Patients affected by obstetric fistula inevitably suffer from multiple other debilitating comorbidities and ill-effects as a result of the prolonged, obstructed labour. If the patient is not in good general health, it is essential that any existing comorbidities that could jeopardise surgical outcomes and the patient's recovery are treated before surgery is considered. A holistic care approach that addresses the fistula and associated health problems, as well as the emotional and economic well-being of the patient, is therefore recommended in fistula treatment.[46] If possible, comprehensive, holistic care should be offered from a patient's first point of contact with health services, throughout the hospital

[45] Lewis and de Bernis. *Obstetric Fistula: Guiding Principles for Clinical Management and Programme Development Documents*; Waaldijk. The Immediate Surgical Management of Fresh Obstetric Fistulas with Catheter and/or Early Closure; Raassen, Verdaasdonk, Vierhout. Prospective Results after First-Time Surgery for Obstetric Fistulas in East African Women.
[46] A.M. El Ayadi, C.E. Painter CE, A. Delamou, *et al.* Rehabilitation and Reintegration Programming Adjunct to Female Genital Fistula Surgery: A Systematic Scoping Review. *Int J Gynecol Obstet* (2020); I.M. Campbell, I.S. Asiimwe. *Nursing Care For Women With Childbirth Injuries*. Carlisle: UCIF, FIGO (2021).

stay and, ideally, it should be continued as necessary after discharge. Such services greatly enhance the patient's physical and psychological recovery, as well as her future well-being.

A holistic package of care can be delivered by dedicated professionals and/or through task shifting of trained healthcare staff, e.g. nurses. Alternatively, holistic care services can be provided by or in collaboration with local partner organisations. However, due to limited or transient resources, services may only be partially or intermittently available in fistula treatment facilities.

Treatment for Malnutrition

Treatment for malnutrition should be provided for moderately or acutely malnourished patients, as well as those who are anaemic or have other medical conditions.

Often coming from impoverished rural settings, although context specific, many fistula patients are malnourished. If they have been malnourished since childhood, some will have suffered stunting and may have poor pelvic development, leading to an increased risk of cephalopelvic disproportion and obstructed labour.[47] Malnutrition can also become more severe as a result of the deepening poverty, social isolation and depression often experienced by women with fistula.

Malnutrition may not only increase the risk of a woman developing an obstetric fistula, it can also impede good postoperative healing and recovery following surgical repair.

> It is therefore important that for a malnourished patient, fistula surgery (like all other elective surgical procedures) should be postponed until the patient is in an optimal state of health and nutrition.

To prepare the patient preoperatively, a high-protein, high-calorie diet that is rich in vitamins, and iron supplements if necessary, should be provided until the patient's weight has increased to an acceptable level. This regime should be continued postoperatively and in the recovery period.

Physiotherapy

Physiotherapy can help to address a variety of fistula-related comorbidities, including foot drop, muscle contractures and weakness, neurological damage, chronic pain, small bladder capacity, pelvic floor weakness and ongoing incontinence after surgery.[48]

Many women with obstetric fistula experience varying degrees of motor difficulty following delivery.[49] Prolonged obstructed labour can lead to peroneal nerve injury caused by compression to the lumbosacral plexus, in particular the L4–5 and S1 roots, which may result in leg muscle weakness and

[47] T. Capes, C. Ascher-Walsh, I. Abdoulaye, M. Brodman. Obstetric Fistula in Low and Middle Income Countries. *Mt Sinai J Med* (2011).
[48] Lewis and de Bernis. *Obstetric Fistula: Guiding Principles for Clinical Management and Programme Development Documents*; L. Keyser, J. McKinney. *Implementing Physical Rehabilitation Services into Comprehensive Fistula and Maternity Care: A Training Guide for Health Care Workers*. USAID, EngenderHealth, Fistula Care Plus, Mama LLC (2020).
[49] M.K. Tennfjord, M. Muleta, T. Kiserud. Musculoskeletal Sequelae in Patients with Obstetric Fistula – a Case–Control Study. *BMC Womens Health* (2014).

foot drop.[50] In very severe cases, paraplegia can develop in patients immediately after delivery, but this tends to be temporary.[51] Immobility may be compounded by saddle anaesthesia, with possible loss of anal reflex and the development of pressure sores. Lower limb muscle contractures may also develop if patients lie in the same position for an extended period of time in the hope of halting the incontinence and because of difficulty mobilising if they have foot drop. Severe contractures may need to be treated with orthopaedic surgery and significant physiotherapy prior to fistula repair.

Physiotherapy is therefore an essential component of holistic care services and can significantly improve the quality of life of fistula patients.[52] It should be started in the preoperative phase and should continue postoperatively, as effectiveness often increases with long-term application.

On admission, all women who present with an obstetric fistula (or following prolonged, obstructed labour) should be assessed to establish their individual requirements for physiotherapy.[53] A physiotherapist or other suitably trained health professional will be best placed to assess patients and prescribe the most appropriate course of treatment.[54] Individually prescribed exercises, including appropriate bladder training that can be easily replicated at home, should be included in the postoperative rehabilitation phase in hospital (*see* Bladder and Fluid Schedule; page 232), as well as in discharge advice. It is vital that patients are aware of the importance of continuing with recommended physiotherapy activities over several months or even years to assist their recovery.[55] Patient progress should be assessed and recorded throughout, preferably using specially developed assessment tools if available[56] and should be reviewed at regular intervals, including at follow-up appointments.

Psychological Care and Support

Due to the trauma of developing and living with an obstetric fistula, as well as having delivered a stillborn baby in many cases, a substantial number of patients require extensive psychological care and support.[57] Counselling should begin from the patient's first point of contact with health professionals, and should continue throughout their hospital stay and, if needed, beyond. Social workers, mental health professionals and psychologists may be needed to help the patient come to terms with the physical, emotional and social consequences of obstetric fistula and its multiple sequelae.

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[50] Hancock and Browning. *Practical Obstetric Fistula Surgery*; Waaldijk, Elkins .The Obstetric Fistula and Peroneal Nerve Injury: An Analysis of 947 Consecutive Patients.
[51] Hancock and Browning. *Practical Obstetric Fistula Surgery*.
[52] Y.J. Castille, C. Avocetien, D. Zaongo, J.M. Colas, J.O. Peabody, C.H. Rochat. One-Year Follow-up of Women Who Participated in a Physiotherapy and Health Education Program before and after Obstetric Fistula Surgery. *Int J Gynecol Obstet* (2015).
[53] Keyser and McKinney. *Implementing Physical Rehabilitation Services into Comprehensive Fistula and Maternity Care: A Training Guide for Health Care Workers*.
[54] Keyser and McKinney. *Implementing Physical Rehabilitation Services into Comprehensive Fistula and Maternity Care: A Training Guide for Health Care Workers*.
[55] Castille, *et al*. One-Year Follow-up of Women Who Participated in a Physiotherapy and Health Education Program Before and After Obstetric Fistula Surgery.
[56] Keyser and McKinney. *Implementing Physical Rehabilitation Services into Comprehensive Fistula and Maternity Care: A Training Guide for Health Care Workers*.
[57] Ahmed and Holtz. Social and Economic Consequences of Obstetric Fistula: Life Changed Forever?; M.H. Watt, S.M. Wilson, K.J. Sikkema, *et al*. Development of an Intervention to Improve Mental Health for Obstetric Fistula Patients in Tanzania. *Eval Prog Plann* (2015); M.H. Watt, M.V. Mosha, A.C. Platt, *et al*. A Nurse-Delivered Mental Health Intervention for Obstetric Fistula Patients in Tanzania: Results of a Pilot Randomized Controlled Trial. *Pilot Feasibility Stud* (2017).

Psychological care should also encompass helping the patient prepare for her future, beyond the hospital and adapting back into a positive and fulfilling life in her community.

Special enhanced psychological help and hygiene support are essential for the most vulnerable patients, including those who are left with some degree of ongoing incontinence and those with injuries that are deemed incurable. It is vital to help such severely affected patients understand, manage and adapt to their situation while in hospital and after discharge, via follow-up appointments and intermittent phone calls by social support staff to check on their well-being, as done by the specialist local nongovernmental organisation, Fistula Foundation Nigeria.[58]

During hospitalisation, many patients find great solace in peer support from close contact and sharing experiences with other fistula patients, and group therapy has been shown to have a significant therapeutic effect.[59] The realisation of shared trauma can often promote profound bonding and many patients find unparalleled comfort in meeting other women who have had similar experiences (prolonged labour, stillborn baby, incontinence, social isolation and exclusion). This can lead to the development of strong social connections, which substantially contribute to patients' well-being and rehabilitation.

A suitably qualified healthcare professional should also advise patients on general health, nutrition and family planning, as this will also further aid their general and psychological well-being.

Education and Income-Generating Activities

As part of the holistic care package, some treatment facilities also offer income-generating and educational activities for women who have been affected by fistula, or they work closely with local women's groups or nongovernmental organisations that are able to provide these services. Such activities include practical skills development, which can be crucial for overcoming economic hardship, as well as for developing a sense of well-being and social inclusion.[60] While these kinds of activities are often offered to patients in the postoperative period, they can also start preoperatively, especially for patients likely to need a long hospital stay.

Some health facilities also have fistula ambassador programmes, where certain patients become ambassadors to sensitise their communities on obstetric fistula prevention and treatment, as well as to help identify other affected women.[61]

It is important to be aware that income-generating and educational activities may not suit the needs of all women, therefore participation in such programmes should be offered, but should always be optional.

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[58] Campaign to End Fistula [website]. Fistula NGO Receives Health Award in Nigeria (2012); Premium Times Nigeria [website]. How Thousands of Women Get VVF Treatment in North-West Nigeria (2018).
[59] O.A. Ojengbede, Y. Baba Y, I.O. Morhason-Bello, *et al.* Group Psychological Therapy in Obstetric Fistula Care: A Complementary Recipe for the Accompanying Mental Ill Health Morbidities? *Afr J Reprod Health* (2014).
[60] Comprehensive Community Based Rehabilitation in Tanzania [website]. Towards a Fistula-Free Generation; TERREWODE [website]. Social Reintegration; Catherine Hamlin Fistula Foundation [website]. Rehabilitation and Reintegration; R.H. Mohammad. A Community Program for Women's Health and Development: Implications for the Long-Term Care of Women with Fistulas. *Int J Gyneceol Obstet* (2007).
[61] Freedom From Fistula [website]. Fistula Ambassadors.

2.2.3. Preoperative Planning

Once a diagnosis of obstetric fistula has been made and the patient's comorbidities and other medical conditions have been identified and are being addressed, the appropriate surgical procedure should be planned and the patient suitably prepared. Detailed planning and management will help to ensure that the patient is fully fit for surgery, and that there are no contraindications that might negatively affect her well-being or surgical outcomes.

Investigations

The following investigations should be carried out, although the extent will be determined by available resources and context. Any identified issues should be treated as necessary prior to surgery.

- **Baseline observations:** Temperature, pulse, blood pressure, weight/height (or mid-upper arm circumference, MUAC).
- **Pregnancy test:** Note: if the patient is pregnant, any fistula-related surgery should be postponed until after the pregnancy.
- **Blood tests:**
  - Full blood count or haemoglobin
  - Serum glucose
  - Serology: HIV, hepatitis, syphilis
  - For certain operations, such as high/scarred rectovaginal fistula, large vesicovaginal fistulas and significant abdominal operations, blood group and cross-matching (two units) are recommended as these procedures are likely to require blood transfusions
- **Stool sample examination** for ova and parasites.
- **Consider colostomy assessment** for patients with rectovaginal fistula.

If available, the following tests can also provide useful information:

- **Renal function test.**
- **Ultrasound scan** for previously repaired fistula or after caesarean section or hysterectomy (can also detect hydroureter, hydronephrosis or stones or obstruction).
- **Cystoscopy:** while a cystoscope may not be available in the treatment facility, if there is one, as well as personnel trained in its use, a cystoscopy can be performed to confirm the side and site of injury in a ureterovaginal fistula. Sometimes there is a role in stenting the ureter in an early ureterovaginal fistula. A cystoscopy can also confirm the presence and site of a small vesicovaginal fistula and the proximity of the ureters to it. It can furthermore confirm the presence of a uterovesical fistula in cases of menuria.
- **Intravenous urogram** to assess renal excretion/function if ureteric involvement and fistula are suspected.

Surgical Approach

After the preoperative planning phase, a decision should be made regarding the most appropriate surgical approach and the patient should be informed accordingly. Depending on the type of fistula and associated injury, the surgical approach may be vaginal or abdominal and occasionally combined.

In the case of an abdominal repair, it might be good to ask the patient if she would like a tubal ligation or tubectomy (the latter will reduce the chance of ovarian carcinoma as well) in the same operation if she does not wish to have any further pregnancies.

Preparing the Patient

- Ensure the patient is fit for surgery, with no comorbidities.
- Ensure the patient has been counselled and has provided informed consent, based on previous physical findings, and therefore has realistic expectations regarding surgical outcomes.
- All patients should receive an anthelmintic such as mebendazole.
- Shave the surgical site according to local protocols and preference of the surgeon.
- Bowel preparation:
  - For urinary tract fistula cases: full bowel preparation is generally not needed preoperatively, but this practice varies and depends on the individual preference of the surgeon.
  - For rectovaginal fistula cases: the bowel should be prepared appropriately according to the preference of the surgeon, to ensure that the patient has an empty bowel before the operation. Usually, this will include a fluid diet and enemas morning and evening on the day before surgery. If the patient is breastfeeding, the diet can be changed from clear fluids to thick fluids or even a light diet.
  - The patient should be nil by mouth from midnight the night before surgery.

On the day of surgery:

- Bowel preparation: some surgeons prefer the patient to have an enema preoperatively on the day of surgery. This is more common for rectovaginal fistula cases, but is optional for vesicovaginal fistula cases (according to the preference of the surgeon).
  For all cases, the patient should always be asked to evacuate her bowel just before going to theatre. Optimal evacuation of bowel contents and enema fluids is always important as spillage regularly occurs when the anaesthesia starts taking effect and soiling of the surgical field should be prevented.
- Premedication should be administered according to the wishes of the anaesthetist and surgeon.
- Insert an intravenous cannula/drip and preload the patient before the spinal anaesthetic.