### Aims of course/workshop

This workshop is very important in showing the audience the real factors after the increased numbers of vaginal fistulae, not only in the developing countries, but among the well developed countries as well.

### Educational Objectives

Attendees will be able to learn more about the anatomical relations and why different types of fistula may occur and the strategy of repair. This is important to understand the different approaches and avoid complications.

Classification of the vaginal fistulae, how to differentiate between one fistulae and the other, and how to diagnose it will be presented with details.

Attendees will be able to see the different techniques of repair including the tips and tricks of both low and high vaginal fistulae repair and the interposing tissues. This will allow attendees to find out different techniques used for different forms of fistulae including robotic surgeries and other reconstructive procedures for the urethra or ureters.

Attendees will get oriented with the possible complications that may appear after fistula repair. The different problems and persistent leakage or de novo overactive bladder or ureteric injuries and others will be discussed in details. This will enable the audience to know how to deal with every possible complication.

At the end of the course the attendees will have the time to discuss all the aspects of the fistula problems with the speakers and to exchange knowledge with others.

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<table>
<thead>
<tr>
<th>Start</th>
<th>End</th>
<th>Topic</th>
<th>Speakers</th>
</tr>
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<tbody>
<tr>
<td>14:00</td>
<td>14:20</td>
<td>Introduction and Overview</td>
<td>• Sherif Mourad</td>
</tr>
<tr>
<td>14:20</td>
<td>14:40</td>
<td>Epidemiology of Vaginal Fistulas</td>
<td>• Sohier Elneil</td>
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<td>14:40</td>
<td>15:00</td>
<td>Anatomic Aspects &amp; Aetiology</td>
<td>• Hassan Shaker</td>
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<td>Classification of Vaginal Fistulas</td>
<td>• Edward Stanford</td>
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<td>Surgery for Low Vaginal Fistulae</td>
<td>• Dirk de Ridder</td>
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<tr>
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<td>• Sohier Elneil</td>
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<td>17:00</td>
<td>Laparoscopic/Robotic Surgery for Vaginal Fistula Repair</td>
<td>• Hassan Shaker</td>
</tr>
<tr>
<td>17:00</td>
<td>17:20</td>
<td>Ureterovaginal, uterovaginal and other rare cases</td>
<td>• Dirk de Ridder</td>
</tr>
<tr>
<td>17:20</td>
<td>17:40</td>
<td>How to Treat Complications of Fistula Repair</td>
<td>• Sherif Mourad</td>
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<td>17:40</td>
<td>18:00</td>
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**Vaginal Fistula; Lessons Learned**

Workshop # 00 / Monday, 15 October 2012 14:00 – 18:00

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<td>14.15</td>
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<td>Edward Stanford</td>
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<tr>
<td>16.00</td>
<td>16.40</td>
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<td>Dirk De Ridder</td>
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<td>Surgery for High Vaginal Fistula</td>
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<td>17.20</td>
<td>17.40</td>
<td>How to Treat Complications of Fistula Repair</td>
<td>Sherif Mourad</td>
</tr>
<tr>
<td></td>
<td></td>
<td>All Discussion</td>
<td>All</td>
</tr>
</tbody>
</table>

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**Vesicovaginal Fistula in the Disadvantaged, An Overview**

SHERIF MOURAD, MD
Professor of Urology, Ain Shams University, Cairo
President of African Fistula & Continence Society
Chairman of ICS Fistula Committee

**Introduction**

- Vesicovaginal fistula (VVF) is a subtype of female urogenital fistula (UGF).
- VVF is an abnormal fistulous tract extending between the bladder and the vagina.
- It allows continuous involuntary discharge of urine into the vaginal vault.

**Types of Urogenital Fistula**

- Vesicovaginal fistula
- Recto-vaginal fistula
- Urethro vaginal fistula
- Ureterovaginal fistula
- Vesicouterine fistula

Countries from which obstetric vesico-vaginal fistulas have been reported (WHO 2003). The prevalence is actually greater than this map indicates.
Etiology in Developing Countries

- Marriage and conception at a young age, often before full pelvic growth has been achieved.

- Chronic malnutrition limits pelvic dimensions, increasing the risk of cephalopelvic disproportion and malpresentation.

- Few attendances by qualified health care professionals or having access to medical facilities during childbirth.

Percentile chart of V.V.F cases in relation to age in Ethiopia in 2005

- Female circumcision and the practice of harmful traditional medical practices such as Gishiri incisions (anterior vaginal wall incisions).

- The insertion of caustic substances into the vagina with the intent to treat a gynecologic condition or to help the vagina to return to its nulliparous state.
Prolonged impaction of the fetal presenting part in the pelvis causing widespread tissue edema, hypoxia, necrosis, and sloughing resulting from prolonged pressure on the soft tissues of the vagina, bladder base, and urethra.

Complex neuropathic bladder dysfunction and urethral sphincteric incompetency often result, even if the fistula can be repaired successfully.

**Developed Countries**

- VVF is mainly due to inadvertent bladder injury during pelvic surgery (90%).
- Bladder wall injury from electro-cautery or mechanical crushing, and the dissection of the bladder into an incorrect plane, causing avascular necrosis.
- The risk of formation of a hematoma or avascular necrosis after a suture is placed through the bladder wall can lead to infection, abscess, and subsequent suture erosion through the bladder wall.

The time of clinical presentation depends on the etiology of the VVF:

- A VVF secondary to a bladder laceration typically presents immediately.
- Approximately 90% of genitourinary fistulas associated with pelvic surgery are symptomatic within 7-30 days postoperatively.
- An anterior vaginal wall laceration associated with obstetric fistulas typically (75%) presents in the first 24 hours of delivery.
- In contrast, radiation-induced UGFs are associated with slowly progressive devascularization necrosis and may present 30 days up to many years later.

**Causes of V.V.F in South Africa 2001-2006**

- Cervical cancer: 3%
- Complications of gynecological surgeries: 80%
- Advanced carcinoma of cervix: 17%

**Causes of V.V.F in Ghana in 2007**

- Obstetric complications: 91%
- Complications of gynecological surgeries: 9%

**Percentile chart of causes of V.V.F in Nigeria in 2006 (UNFPA report)**

- Obstetric complications: 83%
- Surgical complications: 13%
- Female genitalia mutilation: 4%

**Causes of V.V.F in India in 2007 (UNFPA report)**

- Obstetric complications: 66%
- Gynecological surgical complications: 22%
- Female genitalia mutilation: 12%
Possible Social Consequences

- Stigma and discrimination.
- Social isolation.
- Community/familial rejection.
- Divorce or abandonment.
- Verbal and Physical Abuse.
- Loss of income, extreme poverty.

Marital status after genitourinary fistulae around Africa, 2007

(UNFPA report)

Social effect of V.V.F in Ethiopia between 2001-2005

Fistula Repairs

- Treatment complexity and success depend on multiple factors including:
  - Fistula type
  - Size
  - Degree of scarring
  - Involvement urethra, ureter and bladder
  - Provider capacity
  - Postoperative care and compliance

Fistula Cure

For a 100% cure; the following conditions must be fully satisfied:

- Complete continence by day and night
- Bladder capacity > 200ml
- No SIU
- Normal coitus without dyspareunia
- No traumatic amenorrhea
- Ability to bear children

Outcome of surgery by repair attempt in Zambia, 2005

(Source: Maternity Unit, Monze Mission Hospital, Monze, Southern Province, Zambia Department of Public Health and Epidemiology, The Medical School, University of Birmingham)
Challenges in surgery in Africa as seen by surgeons:

• Severe shortage of surgeons.
• Poor conditions of service / Poor salaries; unclear career structure.
• Concentration of surgeons in towns and cities 80 – 100% in urban areas where only 5 -15% of populations lives.
• Limited opportunities to further education and training.
• Lack of opportunities to research, and learn new techniques.

Challenges in surgery in Africa as seen by surgeons:

• Lack of opportunities for surgeons to improve and keep up with the times.
• Retention and motivation, dedication and devotion.
• Severe shortage of anesthesiologist shortage of nurses / loss of well-trained operating theater veteran nurses.
• Generalized poverty/ economic constraints.
• Lack of appropriate/specialized equipments / instruments.

Challenges in surgery in Africa as seen by surgeons:

• Poor maintenance of available equipment.
• Poor or lack of specialized investigations e.g. CT SCAN, MRI, ....... etc.
• Shortage of consumables.
• Lack of communication facilities/knowledge.
• Shortage of blood supply.
• Absence of high care ward.
• Fluctuating power supply.
• Lack of funds for research.
Recommendations to prevent and solve V.V.F problem:

• The existing cases of VVF in these communities should be repaired, and adequate measures taken to ensure their rehabilitation and reintegration back into the society.
• Future cases of VVF should be prevented and controlled through preventing the occurrence of marriage before 18 yrs.
• Awareness creation and public enlighten on the dangers of early marriage, the importance of antenatal services, as well as, hospital delivery.
• Acceptability and accessibility to modern health facilities should be enhanced.

• Groups, such as Mother-in-Laws, Grand Mothers, as well as, men should be given special focus. This still assist in creating a much more supportive environment, for the women in the household.

• There is need for the creation of more VVF Repair Centers, as well as, the training of Doctors and Nurses to these facilities. This will control the problem of distance and accessibility, as well as, knowledge of existing services.

• The Cost of VVF Repairs should be subsidized through the establishment of a National VVF Fund.
Vaginal Fistula: Epidemiology and Quality of Life Perspectives
Sohier Elneil

Genital tract fistula is a problem commonly encountered in the developing world that affects young women during pregnancy and the labour process, resulting in debilitating urinary and/or faecal incontinence. Historically many women suffered this predicament in Europe and the United States of America, until the middle of the last century. However, with social, economic and health development this problem all but disappeared in the developed world but still poses a major problem in Africa and Asia [1, 2]. Access to modern obstetric care, including caesarean sections, can be limited on these continents. Over the course of a lifetime, 1 in 12 women in Africa will die in pregnancy or labour, particularly in the rural areas [3]. This is a phenomenal figure and akin to three jumbo jets, full of passengers, crashing fatally every 24 hours. More startlingly, for every woman that dies in labour, at least 20 lives are destroyed by terrible injuries sustained during obstructed labour. Long distances combined with high cost of care, and poor nutrition make women more vulnerable to obstetric fistulas, particularly in West Africa [4], the horn of Africa [5] and the Indian sub-continent [6-8].

POSTPARTUM TRAUMA AND GENITAL TRACT FISTULAS

In the developing world early identification of a postpartum or perineal trauma problem soon after childbirth is vital. In many cases, pelvic floor and perineal damage sustained during childbirth can be repaired effectively, if identified and treated as soon as possible. But, when neglected it can lead to debilitating pain, chronic infection and other long-term complications such as faecal and urinary incontinence. In severe cases, the damage can be so severe that a genital tract fistula, an abnormal communication between the vagina and the surrounding pelvic organs, can result.

Social and economic development in the developed world meant that fistulas are no longer a significant cause of morbidity in the post-partum period, but unfortunately, obstetric fistulas still pose a major problem in Africa and Asia [1, 2]. A tremendous disparity exists between risks associated with pregnancy and labour faced by women
in the developing world compared to women from wealthier nations. Over the course of a lifetime, 1 in 30,000 Scandinavian women will die in pregnancy or labour, whereas 1 in 12 will die in Africa, particularly in the rural areas [3]. Furthermore, for every woman that dies in labour, at least 20 lives are destroyed by terrible injuries sustained during obstructed labour. Using the 1:20 ratio, it is estimated that there are up to 2 or 3 million cases of obstetric fistula, still awaiting treatment. This is a conservative estimate by all accounts.

Long distances combined with high cost of care, and poor nutrition make women more vulnerable to obstetric fistulas, particularly in West Africa [4], the horn of Africa [5] and the Indian sub-continent [6-8].

The main treatment for all types of fistulas remains surgery which is carried out under meticulous circumstances. The success of the repair is not only dependant on good surgery, but also on excellent nursing care and prevention of complications [8][9-11]. However, the number of capable and dedicated surgeons remains a major stumbling block in the management of these patients, as well as a lack of consensus on fistula classification, which affects the appropriate treatment of patients, prognostic evaluation and literature reporting; working in isolation and variable care practices; and little or no evidence based medicine in decision making. In addition, training in fistula surgery is often patchy, inadequate and unfocussed. But most importantly, there is no way to assess trainees or determine their suitability. As a consequence, outcomes for some patients have been very poor indeed.

In the last two years, two highly significant unifying global initiatives were undertaken. The first was by the Federation of Gynaecology and Obstetrics, (FIGO), an international multi-disciplinary body of obstetricians and gynaecologists, who are trying to standardise training and provide an evidence-based training course; and the second was the formation of the International Society of Obstetric Fistula Surgeons (ISOFS), who want to unify surgeons from all over the world in adopting the same
strategy in classification, training and education. This work has been done in conjunction with the UNFPA, WHO and other non-governmental organizations.

Using the agreed information, provided by the fistula surgeons, they were able to formulate and develop learning tools, log-books and objective structured assessments of technical skill for each module. This is the first time such an initiative has been developed for a specific internationally recognised health problem. Using the manual will not only provide a guide to surgical training, but also initiate audit of surgical outcomes thus facilitating research in the field and promoting publication in the medical and nursing literature.

The new way forward in obstetric fistula management is following in the footstep of many other dedicated doctors, nurses and philanthropists in the past. Though, the objectives are to unify the fistula community, develop standardised training programmes, and improve outcomes it must not be forgotten that this condition is completely preventable. Therefore, the issues which are the basis for it, social and economic development of ‘at risk’ girls/women, need to be tackled. This includes universal access to emergency obstetric services, improving medical care and instituting appropriate integrated social, economic and cultural development programmes. This would effectively prevent the problem. In the long-term, social and economic development will be more cost-effective than medical treatment, but more importantly, it will be highly sustainable. In the interim period, a holistic approach to medical and surgical treatment, rehabilitation and follow up in the community would be the most appropriate.

**EPIDEMIOLOGY**

There is a significant problem in that we do not have any idea of how prevalent the problem is. Epidemiological studies on obstetric fistula remain inadequate. At the SIU in Marrakech in October 2010, the International Consultation on Vesico-vaginal fistula was undertaken. It was here that the literature was reviewed and the issues regarding the epidemiology of this condition were studied. There was a paucity of literature, but the main study findings were:
They are mainly institutionally-based, retrospective cases series, often written from the perspective of a single fistula surgeon. The geographical coverage of epidemiological reports is uneven. However, better and more relevant information is emerging.

The major risk factors appear to be age at first marriage, short stature, pregnancy with a male child rather than a female child, failure to attend ante-natal care, low socio-economic status, low social class, lack of employment and illiteracy.

The impact of fistula on the women were devastating and included divorce, social isolation, worsening poverty, malnutrition, sexual dysfunction, mental illness, insomnia, general ill health and thoughts of worthlessness and suicide.

Documentation of the patient’s obstetric history was poor, and in most cases there was little or no documentation of the patient’s labour history. There is doubt that health services were often lacking.

Recommendations to improve on this difficult situation included the promotion of community-based epidemiological studies, the use of standardised collection tools, the use of observational studies and research that identifies the different profiles of women who manage to overcome the obstacles and successfully access health care, compared to those who do not.

**CONCLUSION**

Genital tract fistulas remain a significant problem in the developing world. We need more information about the women suffering this condition, to understand how to better impact and improve on their quality of life. We need to engage the women, their families, their society and their governments to help treat the current problem, but more importantly to prevent it in future generations.
REFERENCES

ANATOMY PERTAINING TO VESICOVAGINAL FISTULA

Hassan Shaker, M.D. MSc.
Ain Shams University

Muscular support:
Pelvic diaphragm.

Fascial support:
Endopelvic fascia.

Anatomy of pelvic support

- Muscular support:
  Pelvic diaphragm.
- Fascial support:
  Endopelvic fascia.
I) Muscular support: Pelvic Diaphragm
- Levator Ani
  - Pubo-coccygeus
  - Ilio-coccygeus
  - Ischeo-coccygeus
- Coccygeus

II) Fascial Support: Endopelvic fascia
- Pubo-urethral
- Urethro-pelvic
- Vesico-pelvic (Pubo-cervical)
- Cardinal.
3) Vesico-pelvic fascia.
4) Cardinal ligament.

Proximal Half of the urethra:
- Intra-abdominal
- Passive continence

Distal Half of the urethra:
- Area of sphincteric activity
- Active continence
Defects in the pelvic fasciae:

1) Central Defect:
   - Bladder herniation in midline

2) Lateral defect (Para-vaginal):
   - Sliding hernia of both the bladder and vesico-pelvic fascia

3) Combination (most common):

   - Uterine prolapse
   - Cystocele
Surgery for low fistula

Dirk De Ridder, MD, PhD, FEBU
University Hospitals K.U.Leuven, Belgium
St. Luc Hospital, Kisantu, RD Congo

Disclosures

• No relevant disclosures

Goals

• Understand the specific nature of vaginal fistula repair
• Understand the surgical principles of fistula repair and prevention of post-operative stress incontinence
- The obstructed labor complex
  - Delay in deciding to seek help
  - Delay in arriving at the health care facility
  - Delay in receiving adequate care

- (Sexual abuse, rape, accidents)
  - (Traditional practices)
    - Gashiri cutting, infibulation

- Injuries sustained during operative interventions
  - Forceps, cesarean section
  - Most prevalent cause in the Western world
    - Hysterectomy, gynecological procedures

- Circumferential fistula
- Urethral loss
- Bladder base prolapse
- Circumferential fistula
- Bladder mobilisation
- Urethro-vesical anastomosis

Courtesy of K. Waaldijk
Vesicovaginal fistula

AFRICA
• Etiology
  – Obstetric etiology
  – Sexual aggression
  – Traditional practices
• Large series
• Basic surgical repairs
  – Simple >80%
  – Complex >50%
• Prevention as biggest challenge

EUROPE
• Etiology
  – Iatrogenic
  – Radiation induced
  – Litigation
• Small series
• Complex surgical procedures
  – Outcome >90%
• Avoiding litigation and achieving 100% success

Fistulas in the Developing World

Editors
D. De Renen (Belgium)

Members
D. T. Brown (USA)
A. Beavers (Europe)
P. Srinivas (India)
I. Suley (Pakistan)
J. L. Shu (Singapore)

4th Edition 2009
Magnetic resonance (MR) imaging and multidetector computed tomography (CT) are currently the imaging modalities of choice for the initial evaluation of patients in whom the presence of a pubic fistula is suspected.

On T2-weighted images, the fistula is typically seen as a high-signal-intensity, fluid-filled communication. Short inversion time inversion-recovery (STIR) images may provide even more elegant depiction of a fistula tract than conventional T2-weighted images.

Clinical examination under anesthesia

Simple, accessible fistula
Complex fistula
- Circumferential lesion
- Urethral loss

Simple fistula (<3-4 cm, urethra intact)
- First operation has the best chance
  - Closure rates 82.8% - 93%
- Wide mobilisation, identifying of the ureters, tension free repair
- Single layer absorbable sutures 4 mm apart
- Catheter drainage 10-14 days
- Value of a Martius flap is questioned
- If an episiotomy is needed, adequate closure should be performed


Complex fistula
- Diameter > 3-4 cm
- Urethral involvement
- Vaginal scarring
- Multiple or combined fistula
- Intravaginal ureters
- Circumferential fistula
- More difficult repair
- High postoperative incontinence rates 50-100%

Kelly 1193, Carey 2002, Murray 2002
## Prevalence

<table>
<thead>
<tr>
<th>Type</th>
<th>Description</th>
<th>Nigeria (%)</th>
<th>Congo (%)</th>
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<tr>
<td>I</td>
<td>Urethra not involved</td>
<td>18.4%</td>
<td>46%</td>
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<tr>
<td>II A a</td>
<td>Closing mechanism involved without urethral involvement, no circumferential defect</td>
<td>37.2%</td>
<td>16.5%</td>
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<td>II A b</td>
<td>Circumferential</td>
<td>30.7%</td>
<td>8.5%</td>
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<tr>
<td>II B a</td>
<td>With urethral involvement, not circumferential</td>
<td>5.2%</td>
<td>14%</td>
</tr>
<tr>
<td>II B b</td>
<td>Circumferential</td>
<td>3.2%</td>
<td>13%</td>
</tr>
<tr>
<td>III</td>
<td>Ureter fistulas &amp; exceptional fistulas</td>
<td>0.9%</td>
<td>2%</td>
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In Congo most women undergo cesarean section, which leads to another distribution of the fistula types.
# Relation to outcome

results as to fistula type in 1,718 consecutive early closure patients (1992-2001)

<table>
<thead>
<tr>
<th>type</th>
<th>number</th>
<th>healed first attempt</th>
<th>final healing</th>
<th>incontinent</th>
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<tr>
<td>I</td>
<td>243</td>
<td>238 (97.9%)</td>
<td>242 (99.8%)</td>
<td>1 (0.4%)</td>
</tr>
<tr>
<td>IIa</td>
<td>888</td>
<td>888 (97.4%)</td>
<td>888 (100%)</td>
<td>11 (1.2%)</td>
</tr>
<tr>
<td>IIb</td>
<td>366</td>
<td>333 (91.0%)</td>
<td>353 (96.4%)</td>
<td>30 (8.5%)</td>
</tr>
<tr>
<td>IIIa</td>
<td>87</td>
<td>80 (94.4%)</td>
<td>86 (98.9%)</td>
<td>14 (16.3%)</td>
</tr>
<tr>
<td>IIIb</td>
<td>132</td>
<td>114 (86.4%)</td>
<td>121 (91.7%)</td>
<td>69 (48.8%)</td>
</tr>
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</table>

Waaldijk 2008

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# Predicting the risk of failure of closure of obstetric fistula and residual urinary incontinence using a classification system

<table>
<thead>
<tr>
<th>Closed/failed</th>
<th>Continent/incontinent</th>
<th>after fistula closure</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</tr>
<tr>
<td>Total (n=487)</td>
<td>960/27</td>
<td>731/229</td>
</tr>
<tr>
<td>Type 1 (n=356)</td>
<td>340/11</td>
<td>35/11</td>
</tr>
<tr>
<td>Type 2 (n=182)</td>
<td>199/3</td>
<td>40/3</td>
</tr>
<tr>
<td>Type 3 (n=171)</td>
<td>166/5</td>
<td>11/5</td>
</tr>
<tr>
<td>Type 4 (n=278)</td>
<td>269/9</td>
<td>13/12</td>
</tr>
<tr>
<td>Size a (n=247)</td>
<td>241/6</td>
<td>213/6</td>
</tr>
<tr>
<td>Size b (n=245)</td>
<td>241/1</td>
<td>198/1</td>
</tr>
<tr>
<td>Size c (n=405)</td>
<td>474/20</td>
<td>326/19</td>
</tr>
<tr>
<td>Special considerations (6-44)</td>
<td>p=0.04</td>
<td>p=0.01</td>
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<tr>
<td>i (456)</td>
<td>447/9</td>
<td>412/35</td>
</tr>
<tr>
<td>ii (127)</td>
<td>134/3</td>
<td>101/12</td>
</tr>
<tr>
<td>iii (394)</td>
<td>379/13</td>
<td>218/13</td>
</tr>
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</table>
**Conservative treatment**

- Fresh fistula can close spontaneously with catheter
  - Only small fistula
  - Healthy well vascularized tissue

**Surgical repair**

- Definition of success?
  - Successful closure of the fistula?
  - Successful treatment of the entire obstructed labor injury complex?
  - Persisting incontinence after successful closure

- Timing of operation
  - 3 months?

- Preferably vaginal approach under spinal anesthesia
  

**Abdominal or vaginal approach**

- Most fistula can be closed vaginally
  - Minimally invasive
  - Short procedure time
  - High success rate in trained hands
- Abdominal approach for high fistula and some complex fistula
  - Need for omentum, augmentation etc...
  - Depending on your training
- Laparoscopy/ Robot
  - Experimental
Our Experience with Genitourinary Fistulae

<table>
<thead>
<tr>
<th>Method of repair</th>
<th>Patients</th>
<th>Failures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transurethral closure</td>
<td>42</td>
<td>2 (4.7)</td>
</tr>
<tr>
<td>Transurethral closure with vaginal flap reattachment</td>
<td>20</td>
<td>1 (5.0)</td>
</tr>
<tr>
<td>Martius flap repair</td>
<td>35</td>
<td>0</td>
</tr>
<tr>
<td>Transperitoneal layered closure</td>
<td>50</td>
<td>2 (4.0)</td>
</tr>
<tr>
<td>Transurethral layered closure with ureteric reimplantation</td>
<td>15</td>
<td>0</td>
</tr>
<tr>
<td>Bladder mucosal autograft</td>
<td>32</td>
<td>2 (6.2)</td>
</tr>
<tr>
<td>O’Connor’s repair</td>
<td>42</td>
<td>1 (2.4)</td>
</tr>
<tr>
<td>O’Connor’s repair with ureteric reimplantation</td>
<td>56</td>
<td>1 (1.8)</td>
</tr>
<tr>
<td>Free perforated graft</td>
<td>27</td>
<td>3 (11.1)</td>
</tr>
<tr>
<td>Bony patch repair</td>
<td>46</td>
<td>2 (5.4)</td>
</tr>
<tr>
<td>Anterior rectosigmoidectomy</td>
<td>35</td>
<td>2 (5.7)</td>
</tr>
<tr>
<td>Urinary diversion</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>396</td>
<td>17 (4.3)</td>
</tr>
</tbody>
</table>

Guidelines of how to manage vesicovaginal fistula


Guidelines of how to manage vesicovaginal fistula

N=37 from 1980-1995 for 11 authors
Some patients need more than 1 attempt.

Management of Radiation-Induced Vesicovaginal Fistula

Dmitri Y. Pushkar*, Vladimir V. Dyachenko, Georgiy Kasyan

N=210

Abdominal approach

Transperitoneal Laparoscopic Repair of Iatrogenic Vesicovaginal Fistulas: Heilbronn Experience and Review of the Literature

Ali Serdar Gözen, M.D., Dogu Teber, M.D., Abdullah Erdem Carda, M.D., and Jens Rassweiler, M.D.
Vaginal Fistula repair

- Identifying the fistula
- Gaining access and exposures
- Incision, dissection and mobilisation
- Closure of the fistula
- Continence
- Post-op care

Gaining access and exposure

- Traction sutures
- Specula
- Episiotomy
- Blue dye
- Catheter/sound

Incisions

- Latzko / circumferential incision
- J-shaped incision
- Horizontal incision at fistula base
Circumferential incision

J shaped incision
Horizontal incision at fistula base

Anterior dissection as wide as needed

Entering Retzius' space if needed

Identify ureters if needed and possible and catheterize them.
Closure of the fistula

- No need to resect the fistula tract!
- Absorbable sutures 2/0
- Strong bites in pubocervical fascia, no need to close the urothelium separately
- Single layer, separate sutures 4mm apart
- Martius flap is optional
- Supporting sutures can be used
- Check watertight closure
Complex fistula

- Postoperative incontinence
  - Urethral involvement OR 8.4
  - Large size: for each cm OR 1.34
  - Vaginal scarring OR 2.4
  - Low bladder capacity OR 4.1

- Principles of closure
  - Same as for simple fistula
  - Additionally
    - Maintain urethral length
    - Urethra < 2.4 cm, urethral defect > 4 mm: add sling procedure
    - If done so: reduction of postop incontinence by 50%

Suburethral fibro-muscular sling

- Bilateral lateral vaginal wall tissue
- Vascular
- Bring over midline and suture

Urethra without support  Dissection of fibromuscular flap
### Post-op care

- Bladder drainage 10-14d
- Preferably silicon catheters
  - Larger internal diameter
- High fluid intake
  - Prevent cloth formation, hematuria
- No need for standard antibiotics
- Supervise/train nursing staff
- Provide pelvic floor therapy

### Vesicovaginal fistula repair using tunneled gluteal cutaneous fat-pad flap

- Waaldijk 2008

<table>
<thead>
<tr>
<th>fistula healed</th>
<th>540 (98.4%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>with full continence</td>
<td>818 (97.2%)</td>
</tr>
<tr>
<td>with incontinence ili</td>
<td>15 (1.8%)</td>
</tr>
<tr>
<td>defaulted at 1.0 mmh</td>
<td>7 (0.8%)</td>
</tr>
<tr>
<td>defaulted at 2.6 mmh</td>
<td>4 (0.8%)</td>
</tr>
<tr>
<td>not healed</td>
<td>5 (0.8%)</td>
</tr>
</tbody>
</table>

1 impermeable and 4 defaulted
However 5 still living with husband

Fig. 1 - Upper panel: graft, inferior to pubis, anterior to rectus abdominis
Fig. 2 - The flap was used to repair vaginal defect with 5 cm anterior to vaginal defect

---

4-6-2012
Ureterovaginal, uterovaginal and other rare fistula

Dirk De Ridder, MD, PhD, FEBU
University Hospitals K.U.Leuven, Belgium
St. Luc Hospital, Kisantu, RD Congo

Utero-vesical fistula
Epidemiology of iatrogenic fistula

- Fistula cause
  - Gynecologic surgery 82%
  - Obstetric procedures 8%
  - Irradiation 6%
  - Trauma 4%

Continuous discharge from vagina or wound / decreased urine output should raise strong suspicion of an obstetric fistula

Routine inspection to assess integrity of ureter in difficult cases with extensive adhesions, bleeding, and in individuals with difficult access is recommended

If injury is suspected dissection of the ureter should be performed if necessary aided with retrograde passing of a stent or injection of indigo carmine dye to localise the site of injury

Routine use of Cystoscopy to check ureteric integrity is cost effective in complex cases and very difficult dissections

<table>
<thead>
<tr>
<th>Types of operation</th>
<th>Hysterectomy</th>
<th>Subtotal hysterectomy</th>
<th>Radical hysterectomy</th>
<th>Cesarean</th>
<th>Vaginal hysterectomy</th>
</tr>
</thead>
<tbody>
<tr>
<td>IU (case)</td>
<td>4</td>
<td>7</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>The incidence</td>
<td>0.03%</td>
<td>0.32%</td>
<td>0.71%</td>
<td>0.03%</td>
<td>0</td>
</tr>
</tbody>
</table>

Bladder injuries

<table>
<thead>
<tr>
<th>Types of operation</th>
<th>Hysterectomy</th>
<th>Subtotal hysterectomy</th>
<th>Radical hysterectomy</th>
<th>Cesarean</th>
<th>Vaginal hysterectomy</th>
</tr>
</thead>
<tbody>
<tr>
<td>IU (case)</td>
<td>5</td>
<td>2.16%</td>
<td>12.27%</td>
<td>6.152</td>
<td>206</td>
</tr>
<tr>
<td>The incidence</td>
<td>0.032%</td>
<td>0.184%</td>
<td>0.981%</td>
<td>0.39%</td>
<td>0</td>
</tr>
</tbody>
</table>

Ureteric injuries

Lee 1988
**Epidemiology**

- **Incidence**
  - Hysterectomy for benign disease
  - 1.3% bladder injury, <1% ureteral injury
  - Higher risk for larger cystotomies, larger uterus and more operative bloodloss
  - No difference between open or laparoscopic
  - 50% of fistula complex
  - 1/3 also ureteral reimplantation

  Song 2011, Chapron 1996, Duong 2009, Mondet 2001

**Risk factors**

- Cancer
- Inflammation
- Endometriosis
- Previous surgery
- Radiation therapy
- Cervical myomas
- Broad ligament myoma
- Inadequate incision
- Inadequate retraction
- Inadequate lighting
- Inexperienced surgeon
Ureterovaginal fistula

**Recommendations**

<table>
<thead>
<tr>
<th>Recommendation</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>Suspect fistula after pelvic surgery if fluid leak or renal dilatation occurs</td>
<td>A</td>
</tr>
<tr>
<td>Analyse fluid leak after pelvic surgery for creatinine level</td>
<td>A</td>
</tr>
<tr>
<td>Persistent ureterovaginal fistula should be repaired by open techniques</td>
<td>A</td>
</tr>
<tr>
<td>Laparoscopic or robotic treatment for persistent ureterovaginal fistula can be offered according to availability and competence</td>
<td>B</td>
</tr>
<tr>
<td>Surgeons should be competent at identifying, preserving and repairing the ureter</td>
<td>A</td>
</tr>
<tr>
<td>Do not use ureteric stents as prophylaxis</td>
<td>B</td>
</tr>
<tr>
<td>Conservative and endoluminal treatment as initial treatment</td>
<td>B</td>
</tr>
</tbody>
</table>

Evidence statements

The risk of injury to the bowel or urinary tract and of subsequent fistula formation is higher in women with malignant disease undergoing radical surgery than in women with benign disease undergoing simple surgical procedures.

Several modifications to conventional radical hysterectomy are described, although they have not consistently been shown to mitigate this risk.
Bilateral ureteral obstruction

Unilateral psoas hitch of both ureters

Psoas hitch
Laparoscopic Ureteroneocystostomy and Psoas Hitch for Post-Hysterectomy Ureterovaginal Fistula

Punjal Modi, Rahul Gupta and S. J. Rizvi

Table 2: Intraoperative and postoperative data for 17 patients

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Mean (range)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operative time (hrs)</td>
<td>2.5 (1.0-3.9)</td>
</tr>
<tr>
<td>Blood loss (ml)</td>
<td>200 (600-1000)</td>
</tr>
<tr>
<td>Time to oral intake (hrs)</td>
<td>6.2 (4.1-8.9)</td>
</tr>
<tr>
<td>Time to ambulation (hrs)</td>
<td>14 (12-28)</td>
</tr>
<tr>
<td>Hospital stay (days)</td>
<td>5.3 (4-7)</td>
</tr>
<tr>
<td>Time to nephrostomy removal (days)</td>
<td>7</td>
</tr>
<tr>
<td>Time to catheter removal (days)</td>
<td>7</td>
</tr>
</tbody>
</table>

Post-operatively reflex 1/18 no obstruction

Robotic-Assisted Ureterovaginal Fistula Repair: Report of Efficacy and Feasibility

Rakesh Gaurani, MD; Nishu Paliwal, MD; Luis S. Brana, MD; Ajay K. Harmal, MD, S. Nachwadi, MD; and Roni Bener, MD

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age group</td>
<td>Data</td>
</tr>
<tr>
<td>Ethnicity</td>
<td>Data</td>
</tr>
<tr>
<td>Diagnosis</td>
<td>Data</td>
</tr>
<tr>
<td>Time from diagnosis to repair (days)</td>
<td>Data</td>
</tr>
<tr>
<td>BUN (mg/dl)</td>
<td>Data</td>
</tr>
<tr>
<td>Creatinine (mg/dl)</td>
<td>Data</td>
</tr>
<tr>
<td>Operative robotic time (hrs)</td>
<td>Data</td>
</tr>
<tr>
<td>Outcome</td>
<td>Data</td>
</tr>
</tbody>
</table>

JOURNAL OF LAPAROSCOPIC & ADVANCED SURGICAL TECHNIQUES
Volume 14, Number 9, 2008
A modified Mainz II pouch technique for management of refractory vesicovaginal fistulas: Patient focused outcomes

Andy M. Norman, Kimberly A. Gerten, Jilani Ibrahim, Holly E. Richter

Objective: To follow-up the quality of the outcomes in 2 women who underwent a modification of the Mainz II pouch procedure for refractory vesicovaginal fistulas. Method: Two Hispanic patients were involved after undergoing a modified form of pouch reconstruction. They were interviewed 1-3 years postoperatively regarding subsequent sexual function, pregnancy outcomes, and daily life. Result: After undergoing the procedure the patients had resumed sexual function, had become pregnant, and had delivered viable neonates. They were also able to provide for their families. Conclusion: A modified Mainz II procedure for management of refractory vesicovaginal fistulas can restore quality of life.
Urethrovaginal fistula

<table>
<thead>
<tr>
<th>Traumatic</th>
<th>Iatrogenic</th>
<th>Medical</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct trauma</td>
<td>Bulking agents</td>
<td>Bečhet’s disease</td>
</tr>
<tr>
<td>Foreign body</td>
<td>Sling surgery</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Urethral diverticula repair</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Catheterisation</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Irradiation</td>
<td></td>
</tr>
</tbody>
</table>

Success rates

<table>
<thead>
<tr>
<th>Author</th>
<th>N patients</th>
<th>Success at first surgery</th>
<th>Success at second surgery</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blaivas</td>
<td>24</td>
<td>79%</td>
<td></td>
</tr>
<tr>
<td>Goodwin</td>
<td>24</td>
<td>70%</td>
<td>92%</td>
</tr>
<tr>
<td>Lee</td>
<td>50</td>
<td>92%</td>
<td>100%</td>
</tr>
<tr>
<td>Keetel</td>
<td>24</td>
<td>87.5%</td>
<td></td>
</tr>
<tr>
<td>Pushkar</td>
<td>71</td>
<td>90.1%</td>
<td>98.6%</td>
</tr>
<tr>
<td>Benchekroun</td>
<td>186</td>
<td>53%</td>
<td>Mostly obstetrical</td>
</tr>
<tr>
<td>Henriksson</td>
<td>6</td>
<td>67%</td>
<td>100%</td>
</tr>
<tr>
<td>Kumar</td>
<td>43</td>
<td>95.4%</td>
<td>100%</td>
</tr>
</tbody>
</table>

Urethrovaginal fistula repair may necessitate secondary surgery

- A vaginal approach to urethrovaginal fistula repair is most commonly used
- Post-operative stress incontinence can occur despite successful fistula closure
- A vaginal advancement flap is sufficient to cover the fistula closure site, but low level evidence exists that pedicled vaginal skin and bulbocavernosus flaps can be used as alternatives or when there is considerable tissue loss and in urethral reconstruction
- Although only low level evidence exists, the Martius flap is commonly used as interposition material to protect the fistula closure site
- Alternative autologous interposition material can be used
Radiation fistula

Epidemiology

• Irradiation
  – Higher in post-op EBRT then in brachytherapy
    • 1.9% vs 0.8%
  – No clear predictive factors

Kucera 1984; Biewenga 2010
Evidence statements radiotherapy related fistula

<table>
<thead>
<tr>
<th>Evidence statement</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>The rate of fistula formation following radiotherapy for gynaecological cancer appears to be of the same order as that following surgical treatment</td>
<td>3</td>
</tr>
<tr>
<td>The risk of fistula formation following radiotherapy for locally recurrent malignancy is higher than following its use in primary disease</td>
<td>3</td>
</tr>
<tr>
<td>The use of neoadjuvant or adjuvant therapies is likely to be associated with a greater risk of fistula development than the primary treatment alone</td>
<td>3</td>
</tr>
<tr>
<td>The development of fistula following radiotherapy for primary treatment should trigger a search for evidence of tumour recurrence</td>
<td>4</td>
</tr>
</tbody>
</table>

Radiation fistula

<table>
<thead>
<tr>
<th>Evidence statement</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>Whilst diversion is used more widely in radiation-associated fistulae of all types, there is low level evidence that repair procedures can achieve successful fistula closure and continence in appropriately selected cases</td>
<td>C</td>
</tr>
<tr>
<td>Where urinary and/or faecal diversion is required, attempts should be made to avoid using irradiated tissues wherever possible, and to minimise the potential for anastomotic complications</td>
<td>C</td>
</tr>
<tr>
<td>There is low level evidence to support the use of interposition grafts when repair of radiation-associated fistula is undertaken</td>
<td>C</td>
</tr>
</tbody>
</table>

Management of Radiation-Induced Vescovaginal Fistula

Dmitri Y. Pushkov, Vladimir V. Dzyalosh, Georg R. Kassyn

Some patients need more than 1 attempt
WHO classification 2006

**Simple fistula with good prognosis**

- Single fistula < 4cm
- Vesicovaginal fistula
- Closing mechanism not involved
- No circumferential defect
- Minimal tissue loss
- Ureters not involved
- First attempt to repair

**Complex fistula with uncertain prognosis**

- Fistula > 4cm
- Multiple fistula
- Rectovaginal, mixed fistula, cervical fistula
- Closing mechanism involved
- Scarring
- Circumferential defect
- Extensive tissue loss
- Intravaginal ureters
- Failed previous repair
- Radiation fistula

**Leakage of urine from vagina/perineum**

- Clinical examination
- Urethro-cystoscopy
- Imaging (Xray/CT/MRI/US)
- Evaluate upper urinary tract

**Primary simple**

- Vaginal repair
  - Consider timing
  - Martius flap optional

**Primary complex**

- Vaginal or other approach
  - Consider timing
  - Use interposition flaps

**Recurrence**

- Vaginal repair or other approach
  - 2-3 months
  - Martius flap or interposition flaps

**Post-irradiation**

- Vaginal repair or other approach
  - 6-12 months
  - Martius flap

**Assess fistula closure & assess continence status**

**Ureteric fistula**

- Endoluminal technique (stenting, nephrost) for at least 6 weeks

- Unable to stent (initially)

- Re-evaluate for fistula closure, ureteric obstruction

- Healed
  - Persisting fistula or ureteric obstruction

- Ureteric reimplantation (open, laparoscopic or robotic)
New type of fistula

- Mesh and sling related fistula
  - Bladder
  - Urethra
  - Bowel
  - Uterus

Conclusions

- Rare and complex fistula can be difficult to treat
  - Team approach
  - Reference centers
  - Document all steps in the decision making and treatment
Complications of VV Fistula Repair

Sherif Mourad, MD

Why Should we improve our skills?

1. Do we really need more fistulae surgeons?
2. Any advantage of having the fistula fixed from the very first time?
3. Are VVF repair results good right now?
4. Is there any room for improvement?

Do we really need more fistulae surgeons?

- Problem Magnitude:
  - WHO 2003 estimation:
    - 2 million women with VVF
    - 50–100 thousands are affected yearly.
- Treatment → surgical
- Waiting time:
  - 1–2 years
- Training programs for fistulae surgery

Advantage of having the fistula fixed from first time?

- First repair success rate: 70–90%
- 2nd repair success rate: 50–60%
- > than 2 procedures: <40%

Are VVF results good right now?

- Success rate of uncomplicated → 70–80%
- Success rate of complicated VVF → 50–60%

Is there a room for improvement?

- Definitely yes:
  - Improve surgical skills.
  - Improve working environment.
  - Improve general condition of the patient.
  - New concepts → fibrin glue
Complications of Fistula and Repair
2. Infections: wound, UTI and Pyelonephritis and Urosepsis
3. Voiding Dysfunction: Outlet obstruction (meatal stenosis, Urethral stricture, BNO)
4. Bladder contracture/dyfunctionalization
5. Ureteric obstruction
6. Sexual dysfunction
7. Vaginal Stenosis
8. Infertility
9. Neurological complications: Drop foot, Neuropathic Bladder
10. Psychological trauma

Remember
› Most complications are avoidable
› Best chance is the first chance

Re–Fistulation
Aetiology
› Ischemia/unhealthy tissues
› No interposition flaps
› Opposing suture lines
› Distal obstruction
› Bad drainage
› Infection
› Collection/hematoma
› Poor healing (general/local)

Wound Infections
› Prophylaxis: asepsis, good debridement + limited tissue dissection and trauma, preop abs!!.
› C.O.: Strept fecalis, Aneorobes, MRSA
› Discovery: pain, fever, redness, tenderness, discharge, odor…
› Treatment: Abs (C&S Specific), local drainage, local agents…Diversion!!

Treatment.... Prophylaxis
<table>
<thead>
<tr>
<th>Cause</th>
<th>Avoid</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ischemic–unhealthy edges</td>
<td>Debridement, wait for 3 months, freshen edges</td>
</tr>
<tr>
<td>Opposing suture lines/No flaps</td>
<td>Avoid opposing sutures + FLAPS can help</td>
</tr>
<tr>
<td>Faulty Suture</td>
<td>Type: Absorbable PGA or monofilament, Size: , Pattern: Cont or Interrupted!!</td>
</tr>
<tr>
<td>Suture under tension</td>
<td>Never</td>
</tr>
<tr>
<td>Bad Drainage</td>
<td>Adequate caliber, good material, frequent check, acidification</td>
</tr>
<tr>
<td>Distal Obstruction</td>
<td>Check the outlet!!</td>
</tr>
<tr>
<td>Poor Healing</td>
<td>General condition/Nourishment/Hg/Albumin</td>
</tr>
<tr>
<td>Hematoma</td>
<td>Hemostasis</td>
</tr>
<tr>
<td>Infection</td>
<td>Sterile before/Perioperative umbrella/minimal tissue handling</td>
</tr>
</tbody>
</table>

Voiding dysfunctions
› Incontinence
› OAB
› Obstruction
Ureteric Obstruction

- Transfixing sutures during closure of fistulas near the or involving the trigone.
- May occur during Transvaginal or transabdominal repair of VVF
- MANDATORY to stent both ureters prior to repair.

*They are much closer than you think!!*

Diagnosis

- Renal Pain
- Hydronephrosis

Treatment

- Early Diagnosis: (first few days) Explore...
- Later Divert and Manage Later...
- Is there a place for endoscopic treatment?

Bladder Contracture

- Rare
- Following repeated surgeries
- Long standing large fistulas (dysfunctionalized bladder)

Treatment

- Augmentation: Ileocystoplasty ± continent cutaneous tube
- Others..??

Voiding Dysfunction

<table>
<thead>
<tr>
<th>Type</th>
<th>Aetiology</th>
<th>Treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>ISD - Sphincteric</td>
<td>Direct injury from trauma, from repair</td>
<td>Injections, Tapes, PVS</td>
</tr>
<tr>
<td>Incontinence</td>
<td></td>
<td></td>
</tr>
<tr>
<td>UUI - Vesical</td>
<td>Small bladder, DO, UTI, (2ry to BOO)</td>
<td>The cause: Abs, AntiMusc, Botox, Augmentation</td>
</tr>
<tr>
<td>Incontinence</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Freq-Urgency</td>
<td>UTI, OAB, small bladder</td>
<td>Abs, Ams, Augmentation</td>
</tr>
<tr>
<td>Obstruction</td>
<td>Stricture, Infection, Ischemia, iatrogenic, Slings</td>
<td>Release, urethrolysis, meaplasty, urethroplasty</td>
</tr>
</tbody>
</table>

Sexual Dysfunction

- Dysparunia
- Poor excitation
- Delayed or absent orgasm
Vaginal Stenosis

**Cause:**
- Scarring and fibrosis

**Treatment**
- Dilatation
- Vaginolysis...
- Augmentation...
- Replacement...

Psychological Aspects

**Should always be considered**
- Preoperative Counseling...
- Postoperative Management
- **REINTGRATION +++**

How to reduce your complications rate?

Objectives: Good Evaluation

- Site
- Size
- Number
- Fibrosis and Scarring
- Recurrence
- Involvement of ureteric orifices
- Involvement of sphincteric mechanism
- Associated vagino-rectal fistula.

Evaluation 1

- **History:**
  - Etiology
  - Time of occurrence
  - Attempts of repair.
  - Co-morbidities.
- **Examination:**
  - Palpate anterior and posterior wall
  - Use speculum.

Evaluation 2

- **Vaginal gauze test:**
  - Insert Vaginal gauze
  - Insert a Foley catheter and inflate the balloon.
  - Fill the bladder with methylene blue.
  - Pull the Foley catheter.
- **Interpretation:**
  - Stained gauze → VVF
  - No staining → no VVF
  - Wet but not stained → ?? Uretero–vaginal fistula.
Evaluation 3
- Cystogram → of limited value.
- IVP → only if uretero–vaginal fistula is suspected.
- Cystoscopy very valuable:
  - Site of fistulae
  - No of fistulae
  - Involvement of ureteric orifices

Site
1. Supratrigonal
2. Trigonal
3. Involving bladder neck
4. Involving urethra

Size
- The bigger the size the more the fistula is complicated
- Larger fistulae → worse outcome → use tissue interpositioning
- Large fistulae repair → contracted bladder
- Cut-off size → 4 cm ??

Number
- All fistulae should be recognized.
- Missing a fistulae → failure.

Simple fistulae:
- Uretero–vaginal
- Vesico–vaginal
- Recto–vaginal

Complicated fistulae:
- Vesico–uterine
- Uretero–vaginal
- Extensive sloughing of bladder mucosa & trigone
- Extensive scarring of vagina

Surgical Tips for Vaginal Fistula Repair
Proper Examination
- Assurance
- Relaxation
- Gentle examination
- Size
- Location: High – Low
- Associated conditions: Prolapse – Urethra
- External Genitalia

Proper Approach
- Vaginal
- Abdominal
- Laparoscopic
- Urethral Re-Construction
- Anti-incontinence procedure
- POP repair

Huge Fistulas:
- Secure both ureters with ureteric catheterization

Proper Dissection

Recurrent Complicated Cases
- ? Urethral Injury
- ? Multiple fistulas
- Post operative Bladder capacity
- Possible augmentation
- Voiding Dysfunction

Proper Closure
Proper Tissue Interpositioning
- Omental Flap
- Martius Flap
- Fibrin Glue

Use of Fibrin Glue in VVF
- Fibrin glues help in:
  - Hemostasis.
  - Wound healing.
  - Tissue adhesion.
- Fibrin sealants consist of the plasma derivatives at the end of the coagulation pathway.
  (Thomas, 2003)

Packing
- 48 hours
- Minimize ambulation

Surgical guidelines
- Adequate exposure of the operative field.
- Repair:
  - Tension-free
  - Watertight and uninfected
- Minimize bleeding and hematoma.
- Avoid ureteral obstruction.
- Interposition flap if required.
- Highest success (1st attempt)

Other factors
- Involvement of sphincteric mechanism → anti-incontinence procedure later.
- Associated Vagino–rectal fistulae → should be repaired spontaneously ± colostomy.
Notes
Record your notes from the workshop here