### Aims of Workshop

Mid-urethral slings (MUS) are the most widely used surgical treatment options for female stress urinary incontinence (SUI). With widespread use of MUS, recurrent or persistent SUI is becoming an increasingly common condition where its management is challenging. The aims of our workshop are: 1) to elaborate the preoperative and intraoperative causes of MUS failure; 2) to discuss the clinical and urodynamic assessment of patients after MUS failure and; 3) to assess conservative and surgical management options including re-MUS, adjustable slings, pubovaginal sling, retropubic suspension, artificial urinary sphincter and periurethral bulking agents, in patients with recurrent or persistent SUI after MUS.

### Learning Objectives

1) To recognise the pre and intraoperative causes of recurrent SUI after MUS surgery.
2) To identify patients with recurrent SUI after MUS and assess them with clinical and urodynamic tools for further decision-making.
3) To manage recurrent SUI after MUS surgery by utilisation of different conservative and surgical treatment options under the guidance of Evidence Based Medicine.

### Learning Outcomes

After taking part in this workshop participants will be able to:

1) Describe the preoperative and intraoperative causes of MUS failure leading to recurrent SUI that are either patient and/or surgeon and/or mesh related.
2) Diagnose, examine and assess these patients with the proper utilisation of history-taking, physical examination, symptom scores and diaries.
3) Plan and interpret the urodynamic studies in this patient group in order to differentiate between different types and causes of urinary incontinence and bladder/sphincter dysfunction such as intrinsic sphincter deficiency, urethral mobility, detrusor overactivity or detrusor underactivity.
4) List and explain to the patient the advantages and disadvantages of currently available conservative and surgical treatment options for her recurrent SUI.
5) Combine the clinical and urodynamic parameters and suggest the best possible treatment option(s) for the patient under the guidance of Evidence Based Medicine.

### Target Audience

Urologists and uro-gynaecologists.

### Advanced/Basic

Advanced

### Conditions for Learning

This is an interactive course between the audience and speakers including lectures with Q&A and challenging case discussions.

### Suggested Learning before Workshop Attendance
Re-evaluation of the patient after MUS failure

Tufan Tarcan, Urologist, Turkey

Urinary incontinence (UI) may persist or recur any time following the mid-urethral sling (MUS) surgery. The treatment of UI in this patient group constitutes a real challenge for the physician and it is a devastating problem for the patient. The etiology of UI after MUS may be multifactorial and therefore, the evaluation requires a thorough physical, clinical, radiological and urodynamic re-assessment. However, while doing that, every attempt should be made to reach the preoperative clinical data of the patient basically because of two reasons:

1) To re-assess the preoperative decision-making process and the intraoperative surgical reports in order to reveal any possible mistake related to the indication or performance of the previous MUS surgery.

2) To compare the preoperative anatomical, clinical and urodynamic features of the patient with her current findings and so, analyze any influence of the MUS or concomitant surgery (e.g. prolapse surgery) on these futures.

Unfortunately, it is not uncommon that a wrong or sub-optimal indication for surgery leads to a poor surgical outcome. Common examples for poor outcomes are patients with intrinsic sphincteric deficiency and/or immobile urethras or mixed UI (predominant urge) or detrusor underactivity. If it is available, re-analyzing the preoperative urodynamic study is certainly helpful. However, a major drawback of today’s common practice is that few patients undergo urodynamic studies prior to primary MUS because the majority of patients are somehow being mistakenly labelled as index patients with pure stress UI. Studies have shown that the ratio of index patients with pure stress UI are actually much lower than expected.

Another basic step in the reassessment of a patient with persistent or recurrent UI is diagnosing the type of UI. The differential diagnosis mainly includes stress, urgency, overflow and continuous UI due to a fistula. Symptomatic evaluation should include validated questionnaires and bladder diaries. It is to note that if such a discrimination between different UI types is based only on symptoms it may be misleading. Therefore, a careful physical examination with measurement of postvoiding residual urine and flow rate is certainly mandatory. The physical examination should include assessment of pelvic organ prolapse, urethrovaginal angle, urethral mobility, cough-induced stress test and detection of mesh complications. Hematuria and urinary tract infection should be excluded by urine analysis and culture. Trans-labial ultrasound is helpful in the localization of the
synthetic mesh where it is not uncommon to detect the mesh under the bladder neck in failed cases. Cystoscopy should be performed in the presence of hematuria and/or pelvic/bladder pain to exclude mesh intrusion to the urinary tract.

Cystometry with pressure-flow study or a video-urodynamic study may not be necessary prior to conservative management but, they are certainly warranted prior to any secondary surgical or invasive therapeutic intervention for persistent or recurrent stress UI. Stress UI after MUS may not always be associated with urodynamic stress UI. For example, it is possible to detect detrusor overactivity UI, stress-induced detrusor overactivity, detrusor underactivity and even infravesical obstruction in this patient group that will certainly influence the decision for further management.

**Conservative management**

Alex Digosu, Urogynecologist, UK

Stress urinary incontinence (SUI) is a common problem, and to date, no treatment leads to a 100% cure for all patients. With the increasing volume of surgery being performed for the treatment of female SUI, especially with the widespread use of midurethral slings (MUS), recurrent urinary incontinence is becoming an increasingly common condition. Treatment options for failed SUI surgery include conservative management and/or surgical management, which include pubovaginal sling, MUS, retropubic suspension, periurethral bulking agents, and artificial sphincters.

There is not a single best treatment for all patients with recurrent or persistent SUI following prior surgery. There are many considerations and choices that will depend on the etiology of the patient's failure, patient comorbidities, and patient preference.

A recent review and metaanalysis suggests that there is a lack of high quality evidence assessing the various treatments for recurrent SUI as well as there are still no high-quality data exists to recommend or refute any of the different management strategies for recurrent or persistent SUI after failed MUS surgery. Their review highlights the need for well-designed clinical trials evaluating the efficacy of different surgical procedures, as well as comparing conservative treatment and surgical treatment for patients with recurrent SUI. Conservative treatment for recurrent SUI following antincontinence surgery includes pelvic floor muscle training (PFMT), which is often attempted prior to performing a repeat surgery. Other conservative measures include pelvic floor physiotherapy, incontinence pessary dish, commercially available devices (Uresta", Impressa") or medical therapy. Unfortunately, these options have not been well-studied in the context of MUS failure. A national survey performed in the UK found that 77% of practicing gynaecologists and urogynaecologists would recommend PFMT prior to repeat surgery. There is, however, a lack of evidence that performing PFMT in patients who have failed SUI surgery is effective. Despite this paucity of data, the clinical guidelines from most of the national and international scientific societies recommend conservative management options as the first line of therapy for patients with recurrent urinary incontinence following pelvic floor surgery thus it is reasonable to encourage patients with residual or recurrent minimal leakage pursuing conservative measures prior to considering repeat surgery.

**Re-MUS and Adjustable Slings**

Ervin Kocjanic, Urologist, USA

Stress urinary female incontinence (SUI) is primary due to intrinsic sphincter deficiency (ISD) and urethral hypermobility. Despite a lack of standardized international definition, ISD needs to be clearly diagnosed in order to be correctly treated. Although there is no international consensus definition, we can consider that the ISD is a composite concept combining urodynamic data (MUCP < 20 or 30 cmH20) and one or more clinical information (no urethral mobility, negative urethral support test, failure of a first surgery, leakage during abdominal straining, high stress incontinence scores). Imaging can provide additional evidence for intrinsic sphincter deficiency diagnosis, but the correlation between imaging and function remains low. ISD should be diagnosed by a composite of Clinical history, urodynamic evaluation, anatomic findings at physical examination and the severity of the incontinence.

For the treatment of ISD and recurrent SUI a retropubic or trans obturator midurethral sling can be performed as a first surgery. In the past there was a misconception that the retropubic option works better for the patients with ISD. However the meta-analysis by Pan-Feng group, show that TVT doesn’t offer better results than TOT in recurrent SUI and another RCT showed that TVT and TOT offer similar results in patients with VLPP<60 and also in patients with VLPP>60.

One possible treatment for sever forms of ISD is represented by the Artificial Urinary Sphincter. However the Long term outcome of AUS in women is associated with a significant complication rate such as: erosion, infection, device malfunctioning, persistence of urinary Incontinence. These are the reasons of a very high re-intervention rate of approximately 50 to 60%. The lower efficacy rate of the traditional MUS and high complication rates of the AUS makes the Adjustable MUS an interesting solution for a difficult problem. Adjustable MUS are slings with mechanical properties that permit their re-tensioning in the immediate post-op (24-48 hrs after surgery). In the presentation the different adjustable solution will be presented, including the success and the complication rates.
Conclusion:
There is no clear definition neither consensus on what ISD is.
Sever forms:
- evaluation is easy and particularly in previous operated patients
- conventional therapies are probably not recommended
Moderate forms:
- cure rates are probably reduced
- validated evaluation and comparative studies are still needed
Mild forms:
- no modification of prognosis and management
Re-do sling
may be an option for recurrent SUI after MUT failure but there is no sense to do another MUT is the previous one was properly carried out
Tension:
- treatment of ISD requires more than urethral support
Re-adjustable slings
provide better outcome and long-term consistency
Bulking agents
- provide poor and not long-lasting outcome
Artificial sphincter
- provide good outcome but very high complication rate.

Pubo-Vaginal Slings (PVS)
Alex Digesu, Urogynecologist, UK

Traditionally, the pubovaginal slings (PVS) were reserved for recurrent stress urinary incontinence (SUI) due to intrinsic sphincter deficiency because of the technical difficulty involved and the special surgical skills required for performing the procedure. More recently, the operation has been successfully used for primary SUI, as continence rates were better with greater patient satisfaction despite the higher incidence of postoperative voiding dysfunction compared with Burch colposuspension. This finding is supported by results of a recent meta-analysis of 15,855 patients showing that both synthetic and PVS had similar objective cure rates that were superior to Burch colposuspension. During increased abdominal pressure with coughing the rectus muscle contracts, pulls the sling slightly forward (anteri orly), with rotation of the bladder base posteriorly and inferiorly thus causing compression and kinking of the bladder outlet and preventing incontinence. Understanding this selective dynamic continence mechanism is essential to the pelvic surgeon to avoid excessive tightening of the sling, which will lead to voiding dysfunction. The pros and cons of PVS, including additional incision to harvest the fascia and more storage symptoms than with mesh slings, should be addressed.

Patients with persistent or recurrent SUI following placement of a prior sling represent a complex patient population. Treatment choice is often dependent on a multitude of factors including surgeon preference and training, patient preference, coexisting urologic problems, anatomic features, and other comorbidities related to the patient. For primary SUI, mid-urethral slings (MUS) are currently considered first line surgical treatment with cure rates as high as 84% at 5 years of follow-up. However, there remains limited data further examining and verifying the utility of MUS used in secondary repair for patients who have failed a prior MUS procedure.

Secondary repair with a retropubic sling is a durable and effective procedure with an objective cure rate of 61-74% without significant differences in outcomes noted between retropubic MUS and PVS. Conversely, the incidence of storage LUTS is significantly higher in PVS compared to MUS. The reported urinary retention rates following secondary repair is 6–13.8% and denovo urgency rate 6–30%. In conclusion there is still no consensus on the management of persistent or recurrent stress incontinence after a failed synthetic MUS. Usually after a mesh complication or sling failure many women and surgeons prefer to avoid a repeat mesh procedure and may choose an autologous PVS as a salvage operation for recurrent SUI after a failed MUS in view of the reported good and durable long-term results.

Cadaveric courses that offer numerous opportunities for practice and hands-on experiences via a mentor–mentee dynamic model can provide the most suitable platform for acquiring these skills, similar to other antiincontinence procedures. The autologous PVS remains a valuable surgical option for both primary and recurrent SUI in women, showing high cure rates and minimal side effects. The operation restores continence through a dynamic hammock mechanism that works mainly during increased intra-abdominal pressure, with minimal effect on resting bladder-outlet resistance. With the recent decline in the use of synthetic MUS, the demand for PVS is expected to increase in urogynecological practice, and this requires specific training in procedural surgical skills during fellowship programs.
When do I go for AUS or Bulking Agents?
David Castro-Díaz, Urologist, Spain

Periurethral or transurethral injection of urethral bulking agents are a feasible option for the management of female stress urinary incontinence (SUI) after a failed midurethral sling. Because its efficacy is rather limited and there are more effective alternative surgical options, bulking agents are best reserved for patients who do not wish major invasive therapy and who are aware that efficacy and duration are inferior to surgery. Many injectable materials have been used although no one has been demonstrated to be better than another. The procedure can be carried out as an office-based procedure and local anesthesia that can be offered to patients with significant ISD (intrinsic sphincter dysfunction) who are not surgical candidates due to co-morbidities or who are not interested in further surgeries. The reported subjective cure rate is lower than 40%. Although many patients express improvement after the procedure, efficacy is not long lasting and multiple reinjections are likely to be needed. Complications include injection of the material in the unintended place, unwanted tissue reaction, de novo retention, exposure and erosion of the implant, pain, urgency urinary tract infection, granuloma and periurethral abscess.

The artificial urinary sphincter (AUS) is an alternative to slings or bulking agents in the management of SUI after a failed midurethral sling if ISD is present and is the main reason for SUI. The AUS enhances higher intraurethral pressures by increasing pressure circumferentially around the urethra, lessening the transmission of intraabdominal pressures. Therefore, the AUS may benefit women with urethral weakness and good anterior vaginal wall who have sphincter dysfunction. The AUS provides uniform circumferential compression of the bladder neck, without changing its position. The AUS is indicated for incontinent women with proven ISD and, can be particularly useful in those patients who have undergone previous unsuccessful anti-incontinence procedures. The AUS should be contraindicated after pelvic radiotherapy.

The AUS may be placed either with a transvaginal or transabdominal approach. The transvaginal approach affords direct visualization of the difficult dissection of the urethra-vaginal plane, and the option of a supra-meatral incision to allow in the anterior dissection of the urethra. The retropubic approach is recommended over the vaginal approach because of a lower infection rate. Advantages of the transabdominal approach include lack of a vaginal incision and improved exposure of the endopelvic fascia and anterior bladder neck dissection. Additionally, transabdominal exposure allows the opportunity to perform a deliberate cystotomy to assist in a particularly difficult dissection. The endoscopic implantation of the AUS is feasible providing similar outcome in the hands of surgeons who are very experienced in laparoscopy or robotics. Regardless of operative approach, emphasis should be placed on meticulous surgical approach as intraoperative complication places the patient at risk for postoperative problems such as infection and erosion with eventual device explantation. The AUS compares well to the success of more traditional procedures for urinary incontinence (>85%). The data suggests that placement of the AUS is a safe and effective treatment option for the carefully selected patient with ISD.
**MANAGEMENT OF FEMALE SUI AFTER A FAILED MIDURETHRAL SLING**

WS 12

Tufan Tarcan, Istanbul, Turkey

David Castro Diaz, Tenerife, Spain

Alex Digesu, London, UK

Ervin Kocjancic, Chicago, USA

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Step 2. Locate workshop

Step 3. Scroll to find evaluation button

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**Re-evaluation of the patient after MUS failure**

Tufan Tarcan, MD, PhD

Professor of Urology

Marmara University School of Medicine and

Koç University School of Medicine

Istanbul

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- A shortened version of the handout has been provided on entrance to the hall
- A full handout for all workshops is available via the ICS website.
- Please silence all mobile phones
- PDF versions of the slides (where approved) will be made available after the meeting via the ICS website so please keep taking photos and video to a minimum.
**Epidemiology & Help Seeking Behavior**

- 20% of women undergo surgery for UI.
  - Smith et al, NU&U 2010
- More than 50% of incontinent women have pure SUI and a further 30% experience mixed incontinence.
  - Reynolds et al, Curr Urol Rep 2011
- High proportion of women do not seek medical advice
  - Stecker et al, Obstet Gynecol 2011

**Mid-urethral synthetic slings**

- TVT was a game changer!
  - Ulmsten&Petros, 1992
- Equal efficacy as Burch, but less morbidity
- Considered as "Gold Standard", until today!

**A gold standard indicates the best tool available at that time to compare different measures**

**Have we got a perfect treatment option for SUI?**

No!

**Why?**

- **MUS fail**: recurrent SUI after MUS is between 2-23% depending on the definition of failure
- **De novo voiding dysfunction/retention** in up to 40%
- **Mesh complications** leading to restrictions of MUS in several countries

**The long-term data** does not provide the highest level of evidence in terms of efficacy and safety of MUS

**The dilemma: Index patient of SUI**

- A retrospective analysis of 6276 women with UI has shown that only 5.2% had pure SUI.
  - Agur et al, BJU 2009
- A multicenter database study on 2053 patients indicated that only 1/3rd could have been diagnosed as having an “uncomplicated” SUI according to ValUE trial inclusion criteria
  - Serati et al NU&U 2016

**Real life is different than studies!**

*A major drawback of today’s common practice is that few patients undergo urodynamic studies prior to primary MUS because the majority of patients are somehow being mistakenly labelled as index patients."

**The dilemma: Index patient of SUI**

- Failure can be defined in many different ways, e.g. also including mesh-related complications and de novo urgency

For purposes of this WS, failure is defined as recurrent or persistent SUI after MUS for which additional treatment is being sought by the patient
Predictors of failure

Patient related
Obesity, (BMI>30)
Patient age,
Preoperative urgency incontinence
Concomitant vaginal prolapse

Surgery related
Intraoperative bleeding, (> 1 L)
Concomitant pelvic surgeries (vaginal hysterectomy)
Surgical complications
Poor indication and technique

RE-EVALUATION OF THE PATIENT AFTER MUS FAILURE

• Reach the preoperative clinical data
  • To re-assess the preoperative decision-making process and the intraoperative surgical reports.
  • To compare the preoperative anatomical, clinical and urodynamic features of the patient with her current findings

RE-EVALUATION OF THE PATIENT AFTER MUS FAILURE

• Rule out:
  • Other types of UI
  • Obstruction
  • Detrusor contractility problems
  • Mesh-related complications
  • Infection/UTI
  • Is the tape in correct place?
  • Why has the operation failed?

Thorough re-assessment is required!

• Patient expectations
• Symptoms
  • Type of UI
  • Other LUTS
• Physical examination
  • Urethral mobility
  • Emptying or a urodynamic deformity at the bladder neck or urethra?
  • Cough stress test
    • ICS teaching module, Guralnick et al, 2018
    • POP ?
• Radiology
  • Transabdominal US
  • (Video) Urodynamics
    • Diagnose Urodynamic SUI and ISD
    • R/O DU,DO and obstruction
  • Cystoscopy

Diagnosis of ISD by (video) UDS

An open bladder neck at rest that is fixed in position with abdominal straining and is associated with a low leak point pressure or urethral closure pressure is strongly suggestive of ISD.

MacLachlan & Rovner, Curr Urol Rep (2014)

Co-existence of SUI and BOO

SUI and BOO have been shown to coexist in up to 18 % of women with urodynamic proven SUI.

Bradley CS, Rovner ES. J Urol. 2004

...should have their BOO addressed either by urethroplysis or sling incision.
Patient counselling for further treatment

- What is available?
  - Conservative management
  - Re-MUSI
  - Retropubic suspension
  - Pubovaginal sling
  - Adjustable slings
  - Bulking agents
  - Artificial urinary sphincter

Patient counselling

- Considerations
  - Patient expectations
  - Severity of UI
  - Surgeon's experience
  - Anatomical findings (Urethral mobility, length and scarring etc.)
  - Urodynamic findings
  - Co-morbidities (Obesity, cognitive impairment etc.)

Management of female SUI after a failed midurethral sling

The cause is multifactorial!
Complete re-evaluation is needed!
There is no easy solution!
There is no single best solution!
The level of evidence for any treatment is low!

Thank you!
Case 1: 47-year female patient

Mixed UI (SUI abundant)

2 VD, hysterectomy

Active sexual life

DM: regulated by one OAD

PE: Mild cystocele, mobile urethra Q-tip 60°, CST supine (-) standing (+)

Normal urine analysis, RFT and US T1T,

Bladder diary

Pure SUI

Maximum VV 420 ml

No nocturia, normal frequency

Normal Uroflowmetry, PVR: 0 ml

Cystometry: No DO, maximum capacity 414 ml, (semi-supine) ALPP 104 cmH2O

What would you do?

Surgery: TVT in February 2010

Outcome: Completely dry, very happy
**2018: Left groin pain, dyspareunia**

- She is now 55
- No UI or other LUTS
- No dysuria
- Normal US and urine analysis
- PVR 0 ml
- PE: Painful paraurethral vaginal palpation

**Normal MRI**

**Translabial USG: Normal**

**What would you do?**

**February 19, 2018**

**After partial excision of the tape and repair of urethra: No pain, no dyspareunia**

**But, SUI +**

Dry during the night, dry at home with frequent emptying, using pads when going out

PE:
- No fistula, mobile urethra

Cystometry at 1st month:
- CST + over 200 ml of bladder capacity
- Urodynamic SUI
What would you do and When?

- Conservative management
- Re-MUSS
- Retropubic suspension
- Pubovaginal sling
- Adjustable slings
- Bulking agents
- Artificial urinary sphincter

Case 2: 59-year-old lady early after TOT + native tissue cystocele repair

Postoperative 3rd day
No preoperative UDS
Preop complaint: pure SUI

Her SUI is significantly increased and she is not happy with her emptying, either.

Evaluation

PE:
- No POP
- UI with even a small effort
- Urethra mobile, 30°

PVR 0 ml
Normal US and urine analysis
The patient is extremely nervous!

Urodynamic study

Medicolegal obligation?
Findings:
- Urodynamic SUI
- Normal detrusor function and compliance, non-obstructive voiding
- PVR 0
- Very low ALPP

Translabial USG

The Tape is under bladder neck

What would you do

Removal of the tape?
Re-MUSS?
PVS?
Other?
Tape was removed.
She refused PVS (too invasive and morbid)
Re-TOT was applied
Now, she has very mild SUI
Happy
Management of Female Stress Urinary Incontinence After a Failed Midurethral Sling

Pubo-Vaginal Slings (PVS)

ALEX DIGESU
Imperial College London - UK

Failure after SUI surgery is not a rare occurrence (2-16%).
Merlin 2001

Treatment options include conservative management (PFMT) and surgery.

Twelve studies were identified.

There are no data to recommend or refute any of the different management strategies for recurrent/persistent SUI after failed MUS.

Evidence from high quality RCTs is urgently required.

Conservative management

The clinical guidelines from the Society of Obstetricians and Gynaecologists of Canada recommend conservative management as the first line of therapy for patients with recurrent SUI
Lovatsis 2010

A national survey performed in the UK found that 77% of gynecologists & urogynecologists would recommend PFMT prior to repeat surgery.

There is, however, a lack of evidence that performing PFMT in patients who have failed SUI surgery is effective.
Riad 2011

Pubovaginal slings

Rectus fascia or fascia lata are used to create a hammock on which the bladder neck and urethra can rest.

Placed at the bladder neck and proximal urethra generally through a combined vaginal and retropubic approach.

Applicable to patients with and without urethral hypermobility and are also effective in those with intrinsic sphincter deficiency.

Traditionally used as the procedure of choice after failed incontinence surgery with reported subjective cure/improvement in up to 86% of patients
Dmochowski 2010, Lovatis 2010, Petrou 2001

SUCCESS RATE AFTER FAILED MUS

<table>
<thead>
<tr>
<th></th>
<th>Success Rate</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>PARKER 2016</td>
<td>52.5%</td>
<td>14.7 MONTHS</td>
</tr>
<tr>
<td>MILOSE 2015</td>
<td>69.7%</td>
<td>14.5 MONTHS</td>
</tr>
<tr>
<td>PETROU 2016</td>
<td>76.2%</td>
<td>74 MONTHS</td>
</tr>
<tr>
<td>PETROU 2016</td>
<td>52.4% DRY OR SLIGHT UI 85.7% RECOMMEND PVS</td>
<td>14.7 MONTHS</td>
</tr>
<tr>
<td>WELK 2012</td>
<td>64%</td>
<td>14.7 MONTHS</td>
</tr>
<tr>
<td>WALSH 2012</td>
<td>71%</td>
<td>5 YEARS</td>
</tr>
</tbody>
</table>
Pubovaginal slings

**COMPLICATION RATE**

| URGENCY | 16 - 27% |
| OBSTRUCTION REQUIRING CIC | 8.5 - 18% |

Post-op Urine retention resolve after 4 weeks in 61.5% cases
Reversal surgery in 15% cases


Autologous rectus fascia for recurrent SUI seem to be equally effective as when done with synthetic MUS, but with higher rates of adverse outcomes, including suprapubic pain, pelvic abscesses, a longer hospital stay

Conclusions

A recent meta-analysis of 15,855 patients confirmed that both MUS and PVS had similar objective cure rates (61-74%) that were superior to Burch colposuspension.

Fusco 2017

There is still no consensus on the management of persistent/recurrent SUI after a failed synthetic MUS.

No high-quality studies exist to provide guidance in this population.

Bakali 2013

Conclusions

ARFPVS not uncommon to be surgeon preference in absence of robust data - aim avoid repeating the same operation while hoping for a different outcome

Surgical skills required for performing the procedure.

Additional incision to harvest the fascia and more storage symptoms than.

The PVS can be used in patients when placement of a synthetic MUS is contraindicated, such as with:
- concomitant urethral diverticulectomy
- repair of urethrovaginal fistulae
- prior pelvic radiation
- history of prior or concurrent mesh erosion.

If the high residual urine or urinary retention resulting from voiding dysfunction does not resolve after 3 months postoperatively, a sling incision may be required.

Conclusions

Should be managed in a tertiary centre

~40% of patients having a repeat procedure will have had or are having concomitant tape removal

No significant differences between PVS and synthetic MUS in
- Subjective cure rates 60.8% vs 61.9%
- Objective cure rates 69.7% - 79.3%
- complication rates 16.9% vs 17.7%

37.9% had complete cure with no stress or urgency incontinence

Patients with pure SUI were significantly more likely to be cured (62.5%) than those women with preoperative MUI (30.0%) (p=0.006).

Milose 2015, Nikolopoulos 2015, Aberger 2016

Conclusions

The autologous PVS remains a valuable surgical option for both primary and recurrent SUI in women, showing high cure rates and minimal side effects.

With the recent decline in the use of synthetic MUS, the demand for PVS is expected to increase in clinical practice.

Specific training during fellowship programs as well as cadaveric courses allowing hands-on experiences via a mentor–mentee dynamic model can provide the most suitable platform for acquiring these skills, similar to other antiincontinence procedures.
67 years
P1 – SVD
TAH BSO 1995
TVT 2004

Presenting complaint:
- Urgency
- Hesitancy
- Leaking all the time
- Pain to pass urine
- Yellow / green discharge

O/E vaginal tenderness
Mesh erosion palpable lateral to the urethra
Urethral-vaginal & vesical-vaginal Fistula suspected

**How will you manage this case?**

- Videourodynamics
- Retrograde urethrocystogram
- EUA / Urethro - Cystoscopy
- MDT

**EUA**

**Urethro-Cystoscopy**

**Urethro-cystoscopy**
EUA findings:
- Tape transecting the urethra – not adherent
- Bilateral urethrovaginal fistula
- Unable to carry out cystoscopy
- Stenosed and retracted bladder neck

VUDS findings:
- Difficult catheterization
- Severe SUI
- Fixed urethra
- MUCP < 20 cm/H20
- U-V and V-V fistulas confirmed

Any idea how to manage this case?
- Insertion of supra-pubic catheter to rest tract
- MRI pelvis
- Mesh Removal only
- MDT
- 1-stage procedure to deal with fistula and SUI
- 2-stage procedure to deal with fistula and SUI
- Martius Flap
- PVS
Re-MUS and Adjustable slings

ERVIN KOCJANCIC
Lawrence S. Ross Professor Urology
Vice Chair of Department of Urology
Director of Pelvic Health and Reconstructive Urology
University of Illinois at Chicago

No technique is perfect for SUI

6%–68%
57%–90%
66%–90%
76%–89%
30%–40%
60%–90%

Fascial Sling

Fascial Sling is superior to Burch Colposuspension

SISTEr – Serious adverse events

Pubovaginal Sling

• Success rates ranging from 50 to 90% in the treatment of women with persistent or recurrent SUI
• A trial of the pubovaginal sling in patients with all types of SUI, after 1-year follow-up, SUI was cured in 183 women (73%) and improved in 48 (19%). After a >10-year follow-up in 20 women, the success rate was 95%
• Outcomes of patients treated with the pubovaginal sling after failed MUS have not been reported

Urethral weakness-Intrinsic Sphincter Dysfunction

- Bony-Mesh / TVT Test
- Q-Tip Test
- Valsalva Leak Point Pressure
- LPP-MUP
- Bladder neck morphology

Pubovaginal Sling

• Success rates ranging from 50 to 90% in the treatment of women with persistent or recurrent SUI
• A trial of the pubovaginal sling in patients with all types of SUI, after 1-year follow-up, SUI was cured in 183 women (73%) and improved in 48 (19%). After a >10-year follow-up in 20 women, the success rate was 95%
• Outcomes of patients treated with the pubovaginal sling after failed MUS have not been reported
ICS Definitions:

- SUI is the complaint of involuntary loss of urine on effort or physical exertion or sneezing or coughing ...
- Clinically, one will observe leakage of urine per urethra provoked by activity that increases intra-abdominal pressure
- Causes: multifactorial, to some degree is due to HYPERMOBILITY, IMPAIRED SPHINCTERIC FUNCTION OR A COMBINATION OF THE TWO

**Typical patient with ISD:**

- Low urethral closure pressure
- Stovepipe apparence on cystoscopy
- Opening or funneling of the urethra at rest on cystography

---

**Can Intrinsic Sphincter Deficiency be Diagnosed by Urodynamics?**

Lisa M. Parrillo, MD,† Panati Ramchandani, MD,‡, Ariana L. Smith, MD,

http://dx.doi.org/10.1016/j.uctr.2014.04.006
0094-0143/145 – see front matter © 2014 Elsevier Inc. All rights reserved.

**ISD**

- Low MUCP (< 20 cm H2O)
- Low ALPP (< 60 cm H2O)

---

**Good Urodynamic Practices:**

Werner Schfer,* Paul Abrams, Limin Liao, Anders Mattiasson, Francesco Pesce,
Anders Spangberg, Arthur M. Sterling, Norman R. Zinner, and Philip van Kerrebroeck

---

**Standardisation of Urethral Pressure Measurement: Report from the Standardisation Sub-Committee of the International Continence Society**

Gunnar Lose,1 Derek Griffths,2 Gordon Hosker,3 Sigurd Kulseng-Hanssen,4 Daniele Perucchi,5 Werner Schfer,6 Peter Thind,7 and Eboo Versi

The parameters in common use are previously defined by the ICS Standardization Committee (Abrams et al., 1998). At the present moment, the clinical utility of urethral pressure measurement is unclear.

There are no urethral pressure measurements that (1) discriminate urethral incompetence from other disorders, (2) provide a measure of the severity of the condition; (3) provide a reliable indicator to surgical success.
MUCP varies with:
- Bladder volume
- Patients position
- Catheter size (7 – 10ch)
- Catheter type (air charge vs microtip)
- Speed of catheter withdrawal
- Viscosity of bladder fluid
- Patient’s Age

With aging
- Reduced density of circular smooth muscle (25 – 30% higher in pts 20’s and 30’s vs 70s)
- Lower number of striated cell muscles in the ventral wall of the urethra just distal to the BN
- Thinner mucosa
- Less proteoglycans with a decreased urethral wall apposition

ALPP
- Valsalva or Cough???
- Position: Standing /seating/ semi reclined
- Bladder volume (150 – 250)
- Different cut offs in the literature
  - 100
  - 90
  - 60
  - 50

Diagnosing intrinsic sphincteric deficiency: Comparing urethral closure pressure, urethral axis, and Valsalva leak point pressures

Definition of ISD:
MUCP < 20 cm H2O
ALPP < 52 cm H2O
Urethral Axis < 22 degrees
Key Points

- The mid-urethral sling (MUS) procedure is the most common treatment for women with stress urinary incontinence (SUI).
- 5–20% of patients undergoing MUS experience persistent or recurrent SUI
- Little is known about methods to evaluate and manage patients who fail MUS procedures.

Non-surgical management of failed MUS

- Pelvic floor muscle exercise is an option, the effects of such exercise after MUS failure have not been examined
- Trials have demonstrated the efficacy of duloxetine in primary SUI
- BUT many women prefer not to perform pelvic floor exercise or take drugs daily for SUI on a long-term basis

➢ Surgery remains the main treatment for most women with MUS failure

Surgical management of failed MUS

- Periurethral injection therapy
- Shortening of pre-implanted tape
- Repeat Mid Urethral Sling
- Re-Adjustable Sling
- Pubovaginal Sling
- New options for MUS failure

Shortening of pre-implanted tape

Pros:
- quick procedure
- local anesthesia

Cons:
- No studies with a significant number of patients
- No long term follow-up studies
- No consensus on surgical procedure: dissection or shortening of tape? At what extent?

Repeat Mid Urethral Sling

- Most studied secondary procedure
- Cure rates ranging from 55 to 92% (differences in the definition of cure and the surgical approach to secondary MUS)

First sling surgery vs Second sling surgery

Retropubic and transobturator approach, the difference is not statistically significant

Repeat transobturator approach cure rate was significantly lower than for repeat retropubic approach.

Conclusion:
Transobturator approach has poorer outcomes than the retropubic approach in repeat sling surgery.
Treatment of ISD and Recurrent SUI

Traditional MUS

• Is TVT better than TOT?
  – Meta-analysis by Pan-Feng group show that TVT doesn’t offer better results than TOT in recurrent SUI
  – Meta-analysys by Agur and Pradhan groups show TVT doesn’t offer better results than TOT in recurrent SUI
  – RCT showing TVT and TOT offer similar results in patients with VLPP<60 and also in patients with VLPP>60


Re-Adjustable Sling: AMI

AMI adjustable suburethral sling (Agency for Medical Innovation GmbH, 6800 Feldkirch, Austria)
A prospective study on the AMI adjustable suburethral sling implanted through the retropubic route in 25 patients with recurrent urodynamic SUI showed that 21 of the patients were urodynamically continent after 12 months.

Re-Adjustable Sling: SAFYRE T Plus Sling

The Safyre T plus sling is a transobturator crossover re-adjustable sling used in a salvage procedure for failed anti-incontinence procedures and it consists of a monofilament polypropylene mesh between two self-anchoring columns. Re-adjustments are easily performed under local anesthesia by moving the washers until there is no urine leakage during Valsalva maneuver. After 12 months, the overall cure rate was 93.7% (15/16), with only one patient requiring re-adjustment.

Re-Adjustable Sling: Remeex

• Use of a re-adjustable sling for recurrent SUI with sphincteric deficiency is currently under investigation
• Use of the Remeex re-adjustable sling showed that, after 3 years, 109 of 125 (87.2%) women were continent under stress after initial surgery, including 49 of 55 (84%) with recurrent SUI and 60 of 70 (85.7%) with Intrinsic Sphincter Deficiency
• 19 of these patients showed additional benefit from a subsequent re-adjustment

Remex Adjustable Sling

Gilbert, C, et al BUIJ 2011; 108:1140-4

• 5 year retrospective study of 30 women with severe SUI, fixed urethra and low MUCP/ALPP
• Improved patients: “Readjustment was refused by the two improved patients because of their satisfaction”
• Ensen: “No cases of urethral erosion”
• Complications: “Seroma formation (3%) and de novo urgency (7%) were easily treated”
• “No complication In the mid-term follow-up”
A re-adjustable sling for female recurrent stress incontinence and intrinsic sphincteric deficiency: Long-term results in 205 patients using the Remecx sling system

Carlos Ermindo-Snezhko | Cristina Gutiérrez Ruiz | Pedro Álvaro Bueno | Humberto Villavicencio Mavich

N. Of Patients: 205 (96 recurrent SUI)
Follow up: 89 months (26 – 159)
Cure rate: 71%
Failure rate: 17%
De Novo OAB: 15%
Need for re-adjustment: 81%
82 patients increased tension (persistent SUI)
6 patients reduced tension (Outlet obstruction)
Overall Complication rate 28%
3% Clavien III (Urethral Erosion/Infection)

TABLE 2  Stress urinary incontinence (SUI) results

<table>
<thead>
<tr>
<th></th>
<th>cSUI (n = 187)</th>
<th>ISD (n = 123)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inception to treat analysis, N=380</td>
<td>15 (15.76%)</td>
<td>84 (68.75%)</td>
</tr>
<tr>
<td>No SUI</td>
<td>80 (79.57%)</td>
<td>25 (20.35%)</td>
</tr>
<tr>
<td>SUI</td>
<td>15 (14%)</td>
<td>25 (20.35%)</td>
</tr>
<tr>
<td>Lost follow-up</td>
<td>11 (10%)</td>
<td>14 (11.4%)</td>
</tr>
</tbody>
</table>

There is no clear definition neither consensus on what ISD is
Sever forms:
- evaluation is easy and particularly in previous operated patients
- conventional therapies are probably not recommended
Moderate forms:
- cure rate are probably reduced
- validated evaluation and comparative studies are still needed
Mild forms:
- no modification of prognosis and management

Conclusion

- Re-do sling may be an option for recurrent SUI after MUT failure but there is no sense to do another MUT is the previous one was properly carried out
- Treatment of ISD requires more than urethral support
- Re-adjustable slings provide better outcome and long term consistency
- Bulking agents provide poor and not long lasting outcome
- Artificial sphincter provide good outcome but very high complication rate.
More than 100 procedures are described in the medical literature, leading to confusion rather than clarification.

I'm so wet even my makeup runs.

I've had 3 operations and I'm still wet.

I've had 3 patients waiting to see you.

I'm so wet even my makeup runs.

I need a holiday.

Are these patients waiting to see you?
Management of Female Stress Urinary Incontinence
After a Failed Midurethral Sling

When do I go for AUS or Bulking Agents?

David Castro-Díaz
Hospital Universitario de Canarias / Universidad de La Laguna
Santa Cruz de Tenerife (ES)

Funding for speaker to attend:

- Self-funded
- Institution (non-industry) funded
- Sponsored by:

Urethral Bulking Agents

- Autologous fat
- Polymethylmethacrylate (Teflon)
- Collagen (Contigen)
- Ethylene vinyl alcohol (Tagra/Stylet)
- Hyaluronic acid (Zuidex)
- Duraphere (Carbon coated titanium beads)
- Cograft (Calcium hydroxyl apatite)
- Macroplastic (Polyethylene/ultrasound)
- Permacol (Porcine dermal implant)
- Urostech (combination of PMMA+tetrapropoxylate, silicone, titanium dioxide radiopacifying agent)
- Bulkamid (Polyacrylamide gel)

Optimum attributes for the ideal bulking agent

- Biocompatibility
- No immunogenicity
- Integrity of the material formulation
- Adequate viscosity
- Minimal fibrinolysis
- Little inflammatory response
- Volume should be retained after injection
- No re-injections needed over time
- Total incorporation in the tissue

Surgical procedures for recurrent SUI

Offered surgical procedures and their ranking for persistent or recurrent SUI after failed MUS

- Autologous fat
- Polymethylmethacrylate (Teflon)
- Collagen (Contigen)
- Ethylene vinyl alcohol (Tagra/Stylet)
- Hyaluronic acid (Zuidex)
- Duraphere (Carbon coated titanium beads)
- Cograft (Calcium hydroxyl apatite)
- Macroplastic (Polyethylene/ultrasound)
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- Total incorporation in the tissue

Efficacy of Bulking Agents

Efficacy reduced over time

7 – 52.5% (all bulking agents)

Many patient studies have been performed within the ‘salvage’ category or on those who were not suitable for a surgical procedure.
Outcome of bulking agents

<table>
<thead>
<tr>
<th>Objective success</th>
<th>Modest improvement/ cure</th>
<th>Re-injection required often</th>
<th>Complications exist</th>
</tr>
</thead>
<tbody>
<tr>
<td>25.4% - 73.3%</td>
<td>25.4% - 73.3%</td>
<td>25.4% - 73.3%</td>
<td>25.4% - 73.3%</td>
</tr>
</tbody>
</table>

Siddiqui ZA 2017

- Outcomes are similar regardless of bulking agent used
- No single bulking agent demonstrating superiority to bovine collagen.
- No difference whether the transurethral or perirethral technique is used
- Bulking is inferior to surgical therapy for both primary and recurrent SUI
- Benefit of bulking therapy in special populations (ex. following radiotherapy)
- Low complication rate but unknown long-term implications

Complications of Bulking Agents

<table>
<thead>
<tr>
<th>Complication</th>
<th>Bulking Agent</th>
</tr>
</thead>
<tbody>
<tr>
<td>UTI</td>
<td>Bulkamid</td>
</tr>
<tr>
<td>Implantation site pain</td>
<td>Bulkamid</td>
</tr>
<tr>
<td>De novo urgency</td>
<td>Bulkamid</td>
</tr>
<tr>
<td>Dysuria</td>
<td>Bulkamid</td>
</tr>
<tr>
<td>Persistent UI</td>
<td>Bulkamid</td>
</tr>
<tr>
<td>Hematocrit</td>
<td>Bulkamid</td>
</tr>
</tbody>
</table>

Siddiqui ZA 2017

- Bulking is inferior to surgical therapy for both primary and recurrent SUI
- Benefit of bulking therapy in special populations (ex. following radiotherapy)
- Low complication rate but unknown long-term implications

Urethral bulking agents

<table>
<thead>
<tr>
<th>Indications</th>
<th>Advantages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physically frail</td>
<td>Minimally invasive approach</td>
</tr>
<tr>
<td>Anaesthetic risk</td>
<td>May be performed under local anaesthesia</td>
</tr>
<tr>
<td>Mild stress incontinence</td>
<td>May be performed in clinic setting</td>
</tr>
<tr>
<td>Family incomplete</td>
<td>Low morbidity</td>
</tr>
<tr>
<td>High risk of retention after sling operation</td>
<td>Reduced voiding difficulties and de novo UUDDOA</td>
</tr>
<tr>
<td>Venousocclusion therapy</td>
<td>Suitable in women with medical co-morbidity</td>
</tr>
<tr>
<td>*SUI with inadequate bladder emptying</td>
<td>Patient choice</td>
</tr>
</tbody>
</table>

EAU Guidelines Recommendations (2018)

<table>
<thead>
<tr>
<th>Recommendations</th>
<th>Strength</th>
</tr>
</thead>
<tbody>
<tr>
<td>Offer a MUS to women with uncomplicated SUI</td>
<td>Strong</td>
</tr>
<tr>
<td>Inform women undergoing colposuspension that there is a longer duration of surgery, hospital stay and recovery, as well as a high risk of development of pelvic organ prolapse and voiding dysfunction post-operatively.</td>
<td>Strong</td>
</tr>
<tr>
<td>Only offer new devices, for which there is no level I evidence base, as part of a structured research programme.</td>
<td>Strong</td>
</tr>
<tr>
<td>Only offer adjustable MUS as a primary surgical treatment for SUI as part of a structured research programme.</td>
<td>Strong</td>
</tr>
<tr>
<td>Offer bulking agents to women with SUI who request a low-risk procedure with the understanding that repeat injections are likely and long-term durability is not established.</td>
<td>Strong</td>
</tr>
</tbody>
</table>

North-American Bulkamid study achieves efficacy and safety endpoints

- Primary endpoint achieved (p<0.0003)
- 76.5% of patients were subjectively improved with Bulkamid versus 70.6% with Contigen
- 50% of patients achieved “zero SUI episodes”
- There were no serious adverse events related to Bulkamid

Complications of Bulking Agents

<table>
<thead>
<tr>
<th>Bulking Agent</th>
<th>Complication</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Durasphere</td>
<td>9.4</td>
<td>0.003</td>
</tr>
<tr>
<td>Coaptite</td>
<td>7.4</td>
<td>0.0016</td>
</tr>
<tr>
<td>Zuidex</td>
<td>8.0</td>
<td>0.2745</td>
</tr>
<tr>
<td>Bulkamid</td>
<td>0.8</td>
<td>0.2745</td>
</tr>
<tr>
<td>Tegress</td>
<td>5.9</td>
<td>0.0071</td>
</tr>
<tr>
<td>Macroplastique</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Contigen</td>
<td>1.8</td>
<td></td>
</tr>
</tbody>
</table>

Siddiqui ZA 2017

- Of the 24 women at baseline, 1 patient did not respond and 4 responders reported removal of the Urolastic implant
- Urolastic (combination of PDMS+tetrapropoxylate, siloxane, titanium dioxide radiopacifying agent)

Complications of Bulking Agents

- Of the 24 women at baseline, 1 patient did not respond and 4 responders reported removal of the Urolastic implant
- Urolastic (combination of PDMS+tetrapropoxylate, siloxane, titanium dioxide radiopacifying agent)
Adjustable Continence Therapy (ACT®)

Two balloons each attached to an injectable port placed in the labia majora

- 8 studies between 2007-2013
- Mean age: 62-73
- 40–100% had previous surgery
- Mean F-U: 1-6 years
- Significant reduction on number of pads used per day after ACT
- Pad test reduction from 48.6 to 77.3 g preoperatively to 11.2-25.7g after ACT
- 44% considered cured & 66–78.4% were satisfied
- QoL improvement
- Vaginal erosion: 8.7-10.6%
- Explication rate between 18.7% and 30.8%

Phx. V. 2014 (systematic review)

Artificial Urinary Sphincter

- Indications: Intrinsic sphincter dysfunction
  - Highly motivated personality
  - Good manual dexterity
  - Absence of urinary tract infection
  - Realistic expectations

Minimal requirements

- Pressure-regulating balloon
- Control port
- Silicone cuffs
- Valve

Surgical approach for AUS implantation in females

Vaginal (Abbassian)

Retropubic

Endoscopic

- The most crucial step
- Need to dissect through urethral-vaginal septum on both sides of the urethra
- No anatomical plane
- 2 specific instruments used to facilitate the dissection: angle clamp and scissors

Success Rates for Laparoscopic Implantation of AUS-800

<table>
<thead>
<tr>
<th>Author</th>
<th>No. of patients</th>
<th>Success</th>
<th>Complications</th>
<th>Revisions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hoda</td>
<td>2</td>
<td>100%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mandran et al</td>
<td>25</td>
<td>92%</td>
<td>1 vaginal perforation</td>
<td>1 vaginal erosion</td>
</tr>
<tr>
<td>Hosseini et al</td>
<td>12</td>
<td>88%</td>
<td>20% infection</td>
<td>45% urinary incontinence</td>
</tr>
<tr>
<td>Tedaldi et al</td>
<td>38</td>
<td>61%</td>
<td>30% acute infection, 2 pump migration, 1 vaginal erosion</td>
<td>1 vaginal erosion</td>
</tr>
<tr>
<td>Yates et al</td>
<td>6</td>
<td>100%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Less general morbidity
- To decrease prosthetic infection rate
- To reduce surgical trauma with limited and improved dissection

Laparoscopic route
- Nothing has been designed for bladder neck dissection
- We use the traditional angle clamp even with the laparoscopic approach

Less general morbidity
- To decrease prosthetic infection rate
- To reduce surgical trauma with limited and improved dissection

Need for vaginal palpation
- Complex to use with laparoscopic and moreover robotic route
- Need for trained surgical assistants

Laparoscopic tools
- Nothing has been designed for bladder neck dissection
- We use the traditional angle clamp even with the laparoscopic approach

Robot-assisted artificial urinary sphincter implantation in female patients: A multicentre study

<table>
<thead>
<tr>
<th>Author</th>
<th>No. of patients</th>
<th>Success</th>
<th>Complications</th>
<th>Revisions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ngninkeu et al</td>
<td>4</td>
<td>75%</td>
<td>1 vaginal replacement</td>
<td></td>
</tr>
<tr>
<td>Hoda et al</td>
<td>2</td>
<td>100%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mandron et al</td>
<td>25</td>
<td>92%</td>
<td>1 vaginal perforation</td>
<td>2 vaginal erosions</td>
</tr>
<tr>
<td>Rouprêt et al</td>
<td>12</td>
<td>88%</td>
<td>2 conversions</td>
<td>88% urinary incontinence</td>
</tr>
<tr>
<td>Troilet et al</td>
<td>26</td>
<td>88%</td>
<td>2 conversions</td>
<td>19% improvement</td>
</tr>
<tr>
<td>Yates et al</td>
<td>6</td>
<td>100%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Median length of AUS cuff (cm): 73 (60-90)
Median operative time (min): 180
Median length of hospital stay (days): 5 (3-9)
Incontinence complications: 6 (18%)
Bladder neck injury: 4
Vaginal injury: 2
Pelvic organ complications: 9
Clitoral 1 (22.2%)
Clitoral 2: 6
Clitoral 3: 2
# Complications of AUS in women

- Erosion
- Infection
- Malfunctioning
- Incontinence
- Upper tract damage

## EAU Guidelines 2018

<table>
<thead>
<tr>
<th>Recommendations</th>
<th>Strength rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Management of complicated SUI should only be offered in expert centres</td>
<td>Weak</td>
</tr>
<tr>
<td>The choice of surgery for recurrent SUI should be based on careful evaluation</td>
<td>Weak</td>
</tr>
<tr>
<td>Inform women with recurrent SUI that the outcome of a surgical procedure, when</td>
<td>Weak</td>
</tr>
<tr>
<td>used as a second-line treatment, is generally inferior to its use as a first-line</td>
<td></td>
</tr>
<tr>
<td>treatment, both in terms of reduced efficacy and increased risk of complications.</td>
<td></td>
</tr>
<tr>
<td>Consider secondary synthetic sling, colposuspension or autologous sling as first</td>
<td>Weak</td>
</tr>
<tr>
<td>options for women with complicated SUI</td>
<td></td>
</tr>
<tr>
<td>Inform women receiving AUS or ACT© that although cure is possible, even in</td>
<td>Weak</td>
</tr>
<tr>
<td>expert centres, there is a high risk of complications, mechanical failure or</td>
<td></td>
</tr>
<tr>
<td>need for explantation</td>
<td></td>
</tr>
</tbody>
</table>

ACT© = Adjustable compression device; AUS = artificial urinary sphincter; SUI = stress urinary incontinence.
** Expert centres refers to the comments on surgeon volume in the introduction to the surgical chapter.

## Case report

- Referred because of refractory urinary incontinence after hysterectomy
- Physical examination: mobile urethra, no pelvic organ prolapse. No evidence of fistula by the gynaecologists at that moment.
- Urodynamics: total incontinence

## Case report

- Ultrasound: two kidneys, no hydronephrosis, no lithiasis.
- Cystoscopy: no bladder masses, orthotopic meatus plus one other foramen next to the trigone that was supposed to be the fistula.

## Case report

- A vesico-vaginal fistula repair through an open abdominal approach is planned.
- After cystostomy, no fistula is identified! The three foramina are catheterised and contrast is introduced:
  - Complete ureteral duplication on the left side
  - Incomplete ureteral duplication on the right side
- Vagina is again explored: 1 fistulous tract entering through the bladder neck is identified
- Primary closure of the fistula is performed
After two weeks, urethral catheter is removed and suprapubic cystostomy is maintained. Cystography: bilateral vesico-ureteral reflux and persistence of the fistula with uncontrolled urinary leakage to the vagina.

What should we do next?

1. Endoscopic approach with catheterisation of the three ureters and suprapubic catheter’s replacement
2. Vaginal approach
   Identification of the fistulous tract and performance of an inverted-U opening of the mucosa
   Dissection of the fistula and identification of the normal, non-fibrotic tissue
   Closure of the bladder neck hole

3. Martius flap
   Longitudinal incision of the right mayor labia
   Isolation of the fatty tissue filling the labia and transposition to the vagina
   Anchoring over the former fistula
4. Closure of both incisions. Both suprapubic and urethral catheters are left in place. Ureteral catheters are removed

Follow-up

After 3 weeks of treatment, the patient has improved, with better continence.

Video-urodynamics:
- VU low grade reflux appears with a higher volume, better compliance
- No urinary leakage through the former fistula, but SUI

3 months later the patient refers SUI
Bulkamid agent was offered and implanted
The patient is satisfied with the outcome