POST FISTULA URINARY INCONTINENCE

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URINARY INCONTINENCE

• Involuntary loss of urine experienced during the bladder storage phase
  o ICS
URINARY INCONTINENCE EXCLUDING FISTULA

• Overactive bladder
• Stress urinary incontinence
• Mixed urinary incontinence
• Overflow incontinence
• Others e.g. cognitive dysfunction
LOWER URINARY TRACT SYMPTOMS – ICS DEFINITIONS

• Overactive bladder (OAB)
  o Urinary urgency, usually accompanied by increased daytime frequency and/or nocturia, with urinary incontinence (OAB-wet) or without (OAB-dry), in the absence of urinary tract infection or other detectable diseases

• Stress urinary incontinence (SUI)
  o Complaint of involuntary loss of urine on effort or physical exertion including sporting activities, or on sneezing or coughing

• Mixed urinary incontinence (MUI)
  o Complaints of both stress and urgency urinary incontinence
URINARY INCONTINENCE

• Systematic reviews – wide range of incontinence rates
  o World-wide UUI – up to 1/3 women (Milsom 2014)
  o MUI 1/3 women (Manssian 2003)
  o Sub-saharan Africa (Whiting, Pope et al 2022)
    • Wide variation e.g. 0.6% in Sierra Leone to 42.1% in Tanzania
    • Uganda SUI and UUI 27%
URODYNAMICS INVESTIGATION

• Measurement of all the physiological parameters relevant to the function and any dysfunction of the lower urinary tract
  o Uroflowmetry, post-void residual
  o Cystometry
  o Urethral closure mechanism
URODYNAMICS – ICS DEFINITIONS

• Uroflowmetry
  o Assesses voided volumes, urine flow rate, post-void residual urine
  o Strong dependency of flow rates on voided volume
  o Cultural challenges with equipment

• Cystometry
  o Measurement of the pressure-volume relationship of bladder during filling
  o Assess bladder sensation, bladder capacity, detrusor activity/compliance, urinary leakage
  o Cytometrogram – graphical recording of the bladder pressure(s) and volume(s) over time
    • Detrusor pressure ($P_{\text{det}}$): Subtracting abdominal from intravesical pressure
      ▪ $P_{\text{det}} = P_{\text{ves}} - P_{\text{abd}}$

• Urethral closure mechanism
  o Incompetent: leakage of urine occurs during activities which might raise intra-abdominal pressure in absence of a detrusor contraction
POST-FISTULA URINARY INCONTINENCE

• McConnachie 1958
  o “operative cure is claimed only when cure of the fistula with complete control of urinary function has been achieved”

• Goh 2020
  o “more than a hole in the bladder”
URINARY INCONTINENCE AFTER CLOSURE OF URINARY PFF

• 960 successful fistula (obstetric) closure (Goh J, Browning A et al. Int Urogynecol J 2008)
  o 24% ongoing urinary incontinence at time of discharge from hospital
  o Highest risk – lower fistula i.e. close to external urethral meatus
    ▪ Goh classification Type 1 = 3.2% risk incontinence vs Type 4 = 47.2%
  o Goh classification Type ii & iii (vaginal scarring, circumferential fistula) – increase risk
  o Goh classification a-c (size) – tendency to increasing incontinence with increasing fistula size
    (p=0.08)
  (Goh J. ANZJOG 2004)
URODYNAMICS FOLLOWING OBSTETRIC FISTULA REPAIR

• Urodynamics 149 women with incontinence after obstetric fistula repair (mean 51 months)
  o 73 (49%) had urodynamic stress incontinence only
  o 5 (3%) had detrusor overactivity only
  o 64 (43%) had both urodynamic stress incontinence and detrusor overactivity.
  o 7 (5%) of women had neither detrusor overactivity nor urodynamic stress incontinence.
  o 11 (7%) had post-void residual volumes 150 mls or more.
  o Significant urethral sphincter dysfunction
    ▪ 1/3 required paraurethral compression to stop leakage during filling without detrusor rise

(Goh J, Krause H et al. IUJ 2013)
INVESTIGATION OF POST FISTULA URINARY INCONTINENCE

• History
• Examination
  o Exclude fistula recurrence
• Bladder diary
• Residual urine
• Urodynamics if available
  o “simple cystometry”
    • Insert urethral catheter, inflate balloon
    • Connect syringe to catheter and hold vertically about 15 cm above pubic symphysis
    • Fill bladder to about 300 mls
    • Document filling sensations
    • Remove plunger from catheter tip syringe
    • Lower catheter/syringe to note height at which meniscus is seen (vesical pressure)

MANAGEMENT POST LOWER URINARY TRACT FISTULA
URINARY INCONTINENCE

• Conservative management
  o Pelvic floor rehabilitation
  o Lifestyle changes
  o Bladder training
  o Pharmacological agents
  o Urethral plugs (Goh J, Browning A. ANZJOG 2005)

• Surgery
  • “incompetent drain-pipe urethra”
  • Fascial slings
    o +/- retropubic urethrolysis/omental fat-flap (Carey M, Goh J et al. AJOG 2002)
  • Bulking agents (Krause H, Lussy J, Goh J. JOGR 2014)
URINARY STRESS INCONTINENCE PROCEDURES

Ideal pre-operative situation

- Full history
- Initial conservative management
  - Exclude pathology, infection etc
  - Bladder diary
  - Pelvic floor rehabilitation
  - Lifestyle changes – fluids, diet, bowel, weight
- Compliance
- Confirm diagnosis
- Discussion regarding surgical options, risks
- Realistic expectations for outcomes for procedures
IDEAL PATIENT FOR SUI SURGERY

• Ideal patient
  o Urodynamic stress incontinence only
  o Normal uroflowmetry
  o Normal bladder capacity
  o No overactive bladder
  o No previous continence procedures/urethral or bladder neck surgeries
  o Normal BMI
  o No significant medical co-morbidities
  o Complete childbearing
MANAGEMENT INCONTINENCE: “MUSCULAR STRAPS”

- McConnachie 1958
  - “Operative treatment of persisting urinary stress incontinence... formation of a cross-strut muscular sling using the bulbo-cavernosus muscle, levator ani muscle...”

- Browning 2004
  - Similar procedure but performed during fistula closure
MANAGEMENT POST LOWER URINARY TRACT FISTULA
URINARY INCONTINENCE: SLINGS

• Acheter-Walsh 2010 (Nigeria)
  o 140 women; 2 months follow up <40% dry
  o Native tissue sling – “substantial urethrolysis and retropubic dissection”
  o Polypropylene mesh – 20% vaginal extrusion rate
  o Iatrogenic fistula 17.3%

• Carey, Goh (2002)
  o 9 cases all had UDIs pre-op confirming significant USI
  o Urethrolysis, omental flap, rectus fascial sling
    • 2 cystourethrotomy
  o 14/12 – 67% subjective/objective (UDs) – no SUI
    • 7 women returned for follow up; 1 failure
BULKING AGENTS FOR SUI

• Treat SUI via
  o Coaptation of urethra

• 2 techniques for urethral bulking
  o Transurethral or periurethral

• 2 classes of bulking agents
  o Particulate
    ▪ Solid microparticles in liquid (that is absorbed)
    ▪ Long-term bulking effect via foreign-body/fibrosis reaction forming a capsule/cushion
    ▪ Complications: foreign body granulomas, migration to other body sites, local extrusion/erosion
  o Non particulate
    ▪ Homogenous gel, is not absorbed
    ▪ Host tissue grows into gel which anchors bulking agent in situ
BULKING AGENTS FOR SUI

• 7-year follow up (Brosche 2017)
  o 388 women – 67.1% cured/improved if primary surgery for SUI; 61.5% if not primary
  o Complications – transient voiding dysfunction 15.3%; UTI 3.5%

• TVT vs Bulkamid – randomized trial (Freitas 2020)
  o Primary surgery: 224 women, 1-year follow up
  o Negative cough test: 95% TVT; 66.4% Bulkamid
  o Periop complications: TVT 17.1%; Bulkamid 2.6%
    ▪ Reoperation: TVT 5.4%; Bulkamid 0%

• Bulkamid after radiation therapy for gynaecological cancers (Krhut et al 2016)
  o Significant scarring and poor quality tissue
  o After radioRx – synthetic slings – higher risk of complications – mesh erosion into urethra/vagina
  o 24 women, 12 months follow up
  o No significant complications; 25% completely dry
BULKAMID POST FISTULA

• Usual technique via 0 degree cystoscope
  o Transurethral, bulking agent placed at bladder neck or mid-urethra
• Modified technique as cystoscope not readily available
  • Recurrent fistula excluded, simple urodynamics performed

• Periurethral technique
  o Measure urethral length and bladder neck via Foley catheter
  o Insert metal catheter into urethra
    ▪ To determine direction and path of urethra
    ▪ 23G Bulkamid needle inserted into periurethral region at 3 points – each point bulking agent inserted to a total of 1ml
POST FISTULA URETHRAL BULKING AGENT: PROCEDURE

- History, examination
- Simple urodynamics
- Procedure
  - Under sedation/GA
  - Measure length to estimate urethrovessical junction via Foley catheter
  - Path and direction of urethra determined by metal catheter
  - Bulkamid total of 1ml injected via 23G long needle through periurethral skin at 3, 6 and 9 o’clock
    - Leave metal catheter in situ – if needle in urethra, then able to identify it as needle strikes the metal catheter
  - Empty bladder
- "urethral lengthening" procedure in past
  - Not a ‘problem’ with bulking as performed at bladder neck not ‘mid-urethra’ (sling)
BULKAMID POST FISTULA

- Krause, Goh 2014
  - DR Congo
  - Modified technique as no cystoscope
  - 4 cases, pre-op examination, simple urodynamics confirms diagnosis, no overactive bladder
    - Between 3-11 previous VVF surgeries
    - At 10-14 days: 3 dry, 1 mild SUI (11 previous repairs)
    - 1 woman – voiding dysfunction D1, then successful TOV
- 20 cases in total
  - 1 failure
  - 1 repeat injection – dry
  - 1 require ongoing oxybutynin – dry
  - 2 transient retention
  - 1 UTI

What is Bulkamid?

Bulkamid is a urethral bulking agent, consisting of 97.5% water and 2.5% polyacrylamide. Bulkamid is injected into the soft tissue of your urethra. Bulkamid achieves its bulking effect by the volume of the gel injected.
BULKAMID POST FISTULA

• Why are the women happy with results?
  o Patient selection and counselling
    ▪ “Ideal patient”
    ▪ SUI surgery does not treat and may worsen OAB
    ▪ SUI surgery – higher failure with mixed urinary incontinence
    ▪ Incontinence very severe pre-op, post-op satisfied with improvement

• Advantages
  o Minimally invasive
  o Can be done in women with severe scarring or had “urethral lengthening”
    ▪ Bulking agent at bladder neck, not mid-urethra

• Disadvantage
  o Cost of bulking agent
  o May not be readily available
• Urinary incontinence after fistula repair
  o History – full urinary symptoms
  o Examination – exclude fistula etc.
  o Bladder diary
  o Urodynamics/simple cystometry
    ▪ Beware voiding dysfunction – surgery may worsen
    ▪ Mixed urinary incontinence – surgery may worsen OAB, and success may be lowered with MUI
  o Patient selection is vital
  o Bulking with nonparticulate agent
    o Good short-term outcomes
    o Require longer term outcomes