PRE-OPERATIVE URODYNAMIC STUDIES:

IS THERE VALUE IN PREDICTING POST-OPERATIVE STRESS URINARY INCONTINENCE IN WOMEN UNDERGOING PROLAPSE SURGERY?

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Dr JA van Rensburg
INTRODUCTION

- POP – common condition worldwide
- Lifetime risk for surgery 11.1%

Natural history POP and SUI

- Few studies prospectively evaluated natural history
- POP and SUI commonly coexist

  Rate of SUI and POP 63%-80% Hei-Yu Lau et al. (2011)
**ICS Terminology: Urinary Incontinence**

- **SUI**: Complaint of involuntary loss of urine on effort, physical exertion, coughing or sneezing.
- **UUI**: Involuntary leakage accompanied by or immediately preceded by urgency.
- **Occult stress urinary incontinence**: SUI only after the reduction of coexisting prolapse.

URODYNAMIC STUDIES

- Evaluate pressure-flow relationship bladder & urethra
- Should be viewed with voiding diary (context)
- Interaction between patient and clinician
URODYNAMIC STUDIES

- Uroflowmetry
- Post-void residual volume
- Cystometry
  - Filling phase
  - Voiding phase
- Specialised equipment, expertise
URODYNAMIC STUDIES
URODYNAMIC STUDIES: RECOMMENDATIONS

- When the results may change management, such as prior to most invasive treatments for UI and POP.
- After treatment failure to plan further Rx
- As part surveillance programs
- Neurogenic lower urinary tract dysfunction
- In “complicated incontinence” including significant POP.

Incontinence associated with:

- Suspected fistulae
- Previous incontinence surgery
- Significant POP
- After pelvic irradiation
- Radical pelvic surgery
**AIMS OF UDS**

- Reproduce the Sx and correlate with UDS findings
- Determine bladder and urethral function, and provide a diagnosis
  

- Define the most significant abnormality
- Aid in selection of the most appropriate Rx
- Predict post op problems
- Assess results of treatment

**Goal** – to answer a specific Question
POP AND OSUI: ROLE OF UDS

The Colpexy and urinary reduction Efforts (CARE) trial N=322

- Multicentre RCT with stage 2-4 POP prophylactic BURCH at SCP vs. SCP alone
- Underwent standardized UDS with 5 different reduction methods
- Pre-op 3.7% SUI without reduction
- Overall 27% SUI with reduction

## POP and OSUI: Outcome of POP Reduction Methods at UDS (CARE) RCT

<table>
<thead>
<tr>
<th>Method of reduction</th>
<th>% leakage with reduction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pessary</td>
<td>6%</td>
</tr>
<tr>
<td>Manual</td>
<td>16%</td>
</tr>
<tr>
<td>Swab</td>
<td>20%</td>
</tr>
<tr>
<td>Forceps</td>
<td>21%</td>
</tr>
<tr>
<td>Speculum</td>
<td>30%</td>
</tr>
</tbody>
</table>

POP AND OSUI: OUTCOME OF POP REDUCTION METHODS AT UDS (CARE) RCT

- Pessary lowest rate of detection, Bladed speculum the highest
- Swab test best PPV in control group 79%
- For all 5 methods combined:
  - Sensitivity 33%
  - Specificity 83%
  - PPV 37%
  - NPV 80%
- Positive reduction test was predictive in 39% (12/31)
POP AND SUI: ROLE OF UDS

Therapeutic value POP and SUI prior to surgery:
- Combining procedures reduces risk of post-operative SUI at a cost of voiding dysfunction

Therapeutic value POP and OSUI prior to surgery:
- If reduction tests are negative risk of post-operative SUI very low
- Continence rates in 6 studies 86-100 % and OAB 6-30%

Jan-Paul Roovers et al. Clinical relevance of UDS prior to surgical correction of genital prolapse: a literature review.
Int Urogynecol J(2007) 18:455-460
POP AND SUI

- Literature review- Baessler, Maher
- Determine impact of POP on bladder function
- Results:
  - No conclusion Mx continent women without SUI
  - Occult SUI: Addition of continence surgery reduces post-op SUI
  - De novo OAB may occur in 12%

CONTROVERSIES

- No standardised diagnostic method of prolapse reduction for OSUI
- Should an anti-incontinence procedure be performed for SUI or OSUI at time of POP surgery if demonstrated pre-op?
- Performance of UDS in POP with/without SUI patients.
PRE-OPERATIVE UDS: IS THERE VALUE IN PREDICTING POST-OP SUI IN WOMEN REQUIRING POP SURGERY?

AIM:
- Determine value of pre-op UDS and manual POP reduction in predicting post-op SUI.

HYPOTHESIS:
- UDS & manual POP reduction in patients requiring POP surgery can identify a group of women with OSUI
- Women with OSUI are more likely to develop post-op SUI compared to those with negative reduction testing
METHODS

- **Retrospective study** - TBH Urogynaecology dept
- Patients receiving POP surgery 1 Jan 2006 – 31 Dec 2011

- **Exclusion criteria:**
  - No UDS performed pre-op
  - Incomplete/ lost UDS results
  - Missing urogynae files
METHODS

Population

199
- Patients with prolapse surgery

167
- 32 files not found

131
- No UDS - 36

128
- No follow up data - 3
METHODS

- Pre-op multichannel UDS – ICS guidelines
  - Dantec system, Patient sitting

- POP manual reduction at max bladder capacity
  - Determined by UDS
  - Patient standing, cough test
METHODS

- Combined surgery offered if:
  - SUI standing/ during UDS (frank SUI)
  - OSUI (positive manual reduction cough test)

- Routine f/u at 6 weeks, then as required
Results: UDS Findings

Total number UDS = 131

- "Normal UDS" 91 (69.5%)
  - No OSUI 71 (54.2%)
  - OSUI 20 (15.3%)

- Frank SUI 40 (30.5%)

- 43 (32.8%) - Overactive detrusor

- Rate of SUI and POP TBH: 45.8%
**History of Incontinence - Urodynamic Study Results**

<table>
<thead>
<tr>
<th>Symptoms</th>
<th>UDS</th>
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<tbody>
<tr>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td><strong>SUI</strong></td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>34.50%</td>
</tr>
<tr>
<td><strong>MUI</strong></td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>23%</td>
</tr>
<tr>
<td><strong>UUI</strong></td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>36%</td>
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*p = 0.22 Chi squared for trend*
RESULTS: POST-OPERATIVE FINDINGS

- Follow-up: n=128 women

- Pre-op with OSUI:
  - n= 16: 1-step surgery – 1 SUI (neg cough test)
  - n= 4: prolapse surgery only – 3 SUI, 1 UUI

- Pre-op no SUI:
  - n=69 follow-up
  - n=4 SUI symptoms – 1 demonstrated on UDS (anti-incontinence surgery performed at later stage)
RESULTS: POST-OPERATIVE FINDINGS

- **Pre-op frank SUI:**
  - n=39 attended F/U
  - n=36: 1-step surgery- 2 SUI(not bothersome),1UUI
  - n=4: prolapse surgery only- 2 SUI

- 4 patients required repeat surgery
  - 1 anti-incontinence procedure
  - 3 prolapse surgery
RESULTS: COMPARATIVE

- OSUI – 15.3% in women with severe POP
  - CARE trial: 19%
- Post-op SUI after combined surgery - 6.2%
  - Literature: 0-7%

  Barnes NM, Dmochowski RR, Park R, Nitti VW. Pubovaginal sling and pelvic prolapse repair in women with occult stress urinary incontinence: effect on postoperative emptying and voiding symptoms. Urology 2002; 59:856-860

- Post-op OAB after combined surgery – 2%
  - Literature review- Roovers: 6-30%
## RESULTS: COMPARATIVE

<table>
<thead>
<tr>
<th>TBH</th>
<th>Srikrishna, Cardozo (2011)</th>
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<tbody>
<tr>
<td>Retrospective</td>
<td>Prospective</td>
</tr>
<tr>
<td>Manual reduction</td>
<td>Pessary</td>
</tr>
<tr>
<td>Pre-op UDS</td>
<td>Videosyctourethroscopy</td>
</tr>
<tr>
<td>131 women</td>
<td>112 women</td>
</tr>
<tr>
<td>40 frank SUI</td>
<td>64 frank SUI</td>
</tr>
<tr>
<td>91 ‘normal’ UDS</td>
<td>48 ‘normal’ SUI</td>
</tr>
<tr>
<td>71 no SUI</td>
<td>43 no SUI</td>
</tr>
<tr>
<td><strong>20 OSUI (16: 1-step) (4: 2 step)</strong></td>
<td><strong>5 OSUI</strong></td>
</tr>
</tbody>
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## RESULTS: COMPARATIVE

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<tr>
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<tr>
<td><strong>Sensitivity 50%</strong></td>
<td><strong>Sensitivity 67%</strong></td>
</tr>
<tr>
<td>(CI:0.09-0.82)</td>
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<tr>
<td><strong>Specificity 98.5%</strong></td>
<td><strong>Specificity 93%</strong></td>
</tr>
<tr>
<td>(CI:0.92-0.99)</td>
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<tr>
<td><strong>PPV 75%</strong></td>
<td><strong>PPV 40%</strong></td>
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<tr>
<td>(CI:0.19-0.99)</td>
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</tr>
<tr>
<td><strong>NPV 94.4%</strong></td>
<td><strong>NPV 98%</strong></td>
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<tr>
<td>(CI:0.86-0.98)</td>
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Discussion

- Small numbers - OSUI
- Only 4 women with OSUI – 2-step prolapse surgery
- Similar trend found to Cardozo study
- Cannot comment/ make recommendations on sensitivities
- Data shows promise identifying women with POP without OSUI (complement to the hypothesis)
- Larger numbers required to assess true predictive value of manual reduction
CONCLUSION

- Manual reduction of POP at time of UDS simulates surgical correction
- Study shows promise in identifying women without OSUI, likely to remain continent following POP repair
- Decision whether or not to add a prophylactic anti-incontinence procedure can be tailored selectively to the individual patient
- Aide in pre-operative counselling
Future research

- Larger numbers required to assess true predictive value of UDS and prolapse reduction.

- Prospective study randomising between UDS & ‘eye-ball’ UDS.

- Further randomised controlled trials are also needed to randomise the performance of 1-step and 2-step surgery in patients with POP and SUI.
THANK YOU!