The use of the artificial urinary sphincter (AUS) for the treatment of moderate to severe stress urinary incontinence (SUI) has long been established as the standard practice when conservative measures have failed. (1,2) There has been however, the development of alternative artificial urinary sphincters which has tried to address some of the flaws in design of the 3-piece device. (1,2,3)

The introduction of a “stress balloon” developed by Craggs and colleagues aimed to address two of the major deficiencies of the 3-piece device, namely the failure of the pressure regulating balloon to adapt to changes in intra-abdominal or bladder pressure and, the issues relating to revision when there is cuff atrophy. (1,3)

Materials and Methods

- Review of 2 consultant Logbooks within a regional, tertiary centre.
- 12 patients had FlowSecure AUS inserted in 11 patients from 2013-2015
- All patients randomly selected to undergo insertion of FlowSecure sphincter rather than standard AUS.
- 10 patients had post-prostatectomy SUI and 1 patient had Spina bifida with neuropathic bladder.
- Pre-operative video-urodynamics and dynamic cystoscopy performed as well as record of pre-operative 24 hour pad weight test.
- All patients reviewed at 6 weeks for activation of sphincter and further review at 8 to 10 weeks post-operatively and for top-up as required.
- For those with ongoing SUI, an MRI was carried out for assessment.

Results

- Prostate Cancer characteristics – 75% had intermediate risk prostate cancer on histology.
- No adjuvant radiotherapy, 1 patient had history of NIDDM, 1 patient with previous CVA.
- Average Pre-operative 24hr pad weight test 713grams.
- No immediate post-operative complications
- 58.3% (7/12) had persistent urinary leakage and therefore had the FlowSecure Sphincter explanted after MRI.
- 4/12 patients had incorrect cuff size implanted.
- 16.67% (2/12) are still under review and although continue to have urinary leakage, it is less than before.
- 25% (3/12) – the final 3 cases in the series have had significant benefit with the changes in cuff size (5.5cm rather than 4.5cm) and placement of stress balloon (intra-peritoneal rather than retropubic).
- Pre-operative 24hr pad weight tests in these 3 patients – 800grms, 450grms, 200grms.
- Post-operative 24hr pad weight test – 43grms, 0grms, 0grms.
- All ‘very much better’ in Global outcome of severity scores.

Conclusions

- Further research and development needed to devise the ideal AUS.
- In a high volume centre where surgical experience of AUS insertion is high, almost 60% of early FlowSecure sphincters were replaced.
- Inappropriate cuff size (measured at 4.5cm but actually 5.5cm diameter) and the placement of the stress relief balloon in the retropubic space, allowing for a fibrous capsule to develop around the balloon and therefore making activation difficult.
- Addressing the issues of the correct cuff size and placement of the reservoir and stress balloon in the peritoneal cavity has led to the success of the later cases and may lead to the FlowSecure sphincter rivaling that of the AMS 800.

References

2. Chung E, Ranaweera M, Cartmill R. Newer and novel artificial urinary sphincters(AUS); the development of alternatives to the current AUS device. BJUJ Supplements 2012; 110: 5-11