Laparoscopic implantation of artificial urinary sphincter in women. An update on a 12year-long single center's experience

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Hypothesis / aims of study

The artificial urinary sphincter (AUS) is an intracorporal external compression device that constitutes a treatment option for women with recurrent stress urinary incontinence (SUI) after a previous surgery failure, as well as for urodynamically-proven intrinsic urethral sphincter deficiency (ISD). Low evidence data for AUS implantation using an open surgical approach, report high cure rates up to 88%, but also common complications, including mechanic failure, infection and explantation. The aim of this study is to examine the efficacy and safety of laparoscopic implantation of AUS in women, in a single center with 12 years of experience.

Study design, materials and methods

This study consists in an update of the data available in the largest prospective case-series trial of laparoscopic AUS implantation. From 2005 up to date, 65 female patients with SUI have been submitted to laparoscopic implantation of the AMS 800 Urinary Control System (Boston Scientific, Marborough, MA, USA) after written inform consent. Patients' selection was carried out after clinical examination, urodynamic evaluation and individual motivation. Inclusion criteria were: women with primary or recurrent SUI with/without pelvic organ prolapse; urodynamic findings of low maximum urethral closure pressure (MUCL<20cm H_2O) and low Valsalva leak point pressure (VLPP<60cm H_2O), normal detrusor's function and bladder's compliance; no cervical-urethral hypermobility; a negative Ulmsten test (urine leakage on straining or coughing not corrected by urethral support); absence of cognitive and mobility dysfunction. Exclusion criteria included: monosymptomatic urge incontinence and previous pelvic radiotherapy. Patients' main characteristics are summarized in Table 1. All laparoscopic procedures were performed by two experienced urologists using the same technique which is demonstrated in Fig 1.

Table 1. Patients' basic characteristics

No of patients	65
Age (mean ± SD)	67.2 ± 12.4
Body mass index (mean ± SD)	29.6 ± 5.8
Diabetes, n (%)	13 (20)
Hypertension, n (%)	32 (49.2)
Obstetric history, n (%) Nulliparous <3 deliveries ≥3 deliveries Dystocic deliveries	 9 (13.8) 46 (70.8) 10 (15.4) 11 (16.9)
History of pelvic urogynecological surgery, n (%)	55 (84.6)
Hysterectomy Vaginal Suprapubic	28 (43.0) 5 (7.7) 23 (35.4)
Antincontinence surgery TOT procedure TVT procedure Burch procedure Marshall–Marchetti procedure Artificial urinary sphincter (vaginal approach)	53 (81.6) 32 (49.2) 7 (10.7) 9 (13.8) 1 (1.5) 3 (4.6)
Surgical prolapse repair Laparoscopic sacrocolpopexy Abdominal sacrocolpopexy Vaginal prolapse repair	17 (26.1) 6 (9.2) 3 (4.6) 6 (9.2)
Maximum urethral closure pressure, mean ± SD (cmH2O)	15.9 ± 5.9

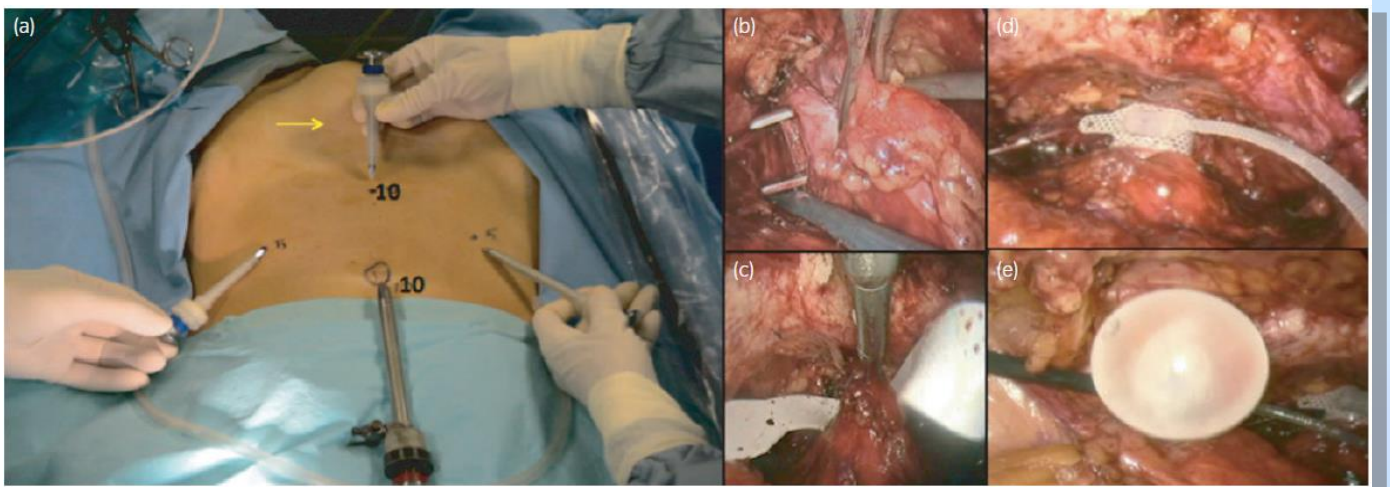

Fig. 1 Surgical steps. (a) Port placement – a 10-mm trocar for a 0° laparoscope. A 10-mm trocar midway between the umbilicus and the pubic symphysis. Two 5-mm trocars 2 cm medially to each superior iliac crest. (b) Urethral dissection. (c) Insertion and placement of the AUS measuring tape. (d) Cuff placement around the urethra. (e) Insertion of an AUS balloon in the Retzius space.

Results

OPERATION SPECS

- Mean op time: 122 ± 40.2 min
- 61-70cm H_2O reservoir in all cases
- Cuff lengths: 5.5cm (9.2%)
  6cm (15.4%)
  6.5cm (30.7%)
  7cm (20.0%)
  7.5cm (13.8%)
  8cm (9.2%)
- Median hospital stay: 2 days

OUTCOMES

Success: 49 (75.3%)

Improvment: 10 (15.4%)

Failure: 4 (6.1%)

(Mean follow-up: 31 mo)

COMPLICATIONS

Early
- Intraop. vaginal erosion: 1 (1.5%)
- Postoperative pelvic pain: 1 (1.5%)
- Infection: 5 (7.7%)
- Urinary retention: 5 (7.7%)

Late
- De-novo late urgency: 8 (12.3%)
- Surgical re-implantation: 12 (18.4%)
- Permanent removal : 8 (12.3%)

Conclusions

According to our experience, laparoscopic AUS implantation is an option in selected patients with severe incontinence and ISD. This approach is feasible and safe, achieving comparable results against the standard treatment.

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The authors declare no conflicts of interest