

## LOWER URINARY TRACT FUNCTION AFTER EXTENSIVE PELVIC RECONSTRUCTIVE SURGERY USING SINGLE INCISION MESH AND TRANSOBTURATOR SYNTHETIC MESH

### Hypothesis / aims of study

To assess the lower urinary tract functions in continent women who have had either single incision mesh (SIM-A) or synthetic anterior mesh (TVM) in extensive pelvic organ reconstruction surgeries.

### Study design, materials and methods

124 patients who underwent primary POP repair without concomitant anti-incontinence surgery performed from May 2010 to Jan 2013 were enrolled. 57 patients had SIM-A (Elevate anterior) procedure and 61 patients who had TVM (Perigee) were eligible for the study. Six patients, three from each arm were excluded due to incomplete data at follow up. Inclusion criteria is all patients who had symptomatic anterior or apical prolapse >2 who received either SIM-A or TVM repair. Patient who had overt or occult SUI pre-operatively, previous SUI surgery and prior pelvic prolapse mesh operation were excluded. Patients assessment at baseline and during follow-up at 6 and 12 months were analyzed. Surgeries performed include vaginal hysterectomy, SIM-A or TVM and if indicated a posterior colporrhaphy, in that particular sequence. Cystoscopy to evaluate integrity of the lower urinary tract was performed in all patients. The outcome measure was the emergence of de novo SUI post operatively, objectively by UDS and subjectively by UDI-6, question 3. Secondary outcome is the POP cure rate at 1 years follow-up, objectively defined as POP-Q<sub>1</sub> ≤ 1 at the anterior vaginal wall and all compartments. Subjectively negative response to question 2 and 3 of POPDI-6 questionnaires. Sexual function of the patient was also assessed via PISQ-12 questionnaires.

### Results

Median follow up for both groups are 24.8 and 27.8 for SIM-A and TVM respectively. All patient completed minimum of one year follow up. Both groups are demographically similar statistically. Operative time is slightly longer in TVM-A however not statistically significant. There were significantly high incidence of de novo SUI post-operatively in SIM-A group (15/57) compares to TVM (5/61) group: objectively 26.3% and 8.3% respectively with significant P value of 0.003. Subjectively response to UDI-6 question 3 score > 6 at six months follow up were 31.6% and 9.8% for SIM-A and TVM respectively with P value of 0.001. No significant difference between group in the urodynamic finding pre operatively and post operatively in comparison between SIM-A and TVM group. Urodynamics assessment of the patients who had SIM procedure pre operative and post operatively show significant changes of the MUCP and FUL from 77.2 to 59.7 with P <0.001 and 25.3 to 23.1 with P=0.008. There were improvement in BOO between and within group with P<0.001. The objective and subjective cure rate of POP in SIM group and TVM group were comparable (96.5%,93.0%) and (93.6%, 90.2%) respectively. There were no major complication. No incidence of mesh erosion in SIM group with only 3 (4.6%) have mesh erosion in TVM group.

### Interpretation of results

The primary outcome measured for this study was the lower urinary tracts function following either SIM-A or TVM+SSF procedure. Our study showed a significantly high incidence of de novo SUI among patient who received SIM-A (26.3%,15/57) in comparison with those who underwent TVM+SSF (8.3%,5/61). The cause of de novo SUI after pelvic reconstructive surgery is not fully understood. It was reported that successful repair of anterior prolapse can unmask a so called potential SUI.

In our study the incidence of de novo SUI is higher in the SIM-A group than the TVM+SSF group. This may be explained by the differences in the path of mesh application. Application of SIM-A required the opening of paravesical fossa from the level of the ischiopubic ramus to the ischial spine bilaterally until the sacrospinous ligaments. TMN+SSF on the other hands only needed limited area of tissue separation without opening the paravesical fossa. We postulated that this is due to large area of tissue separation with the opening of the retropubic space may have caused more tissue damage and nerves denervation.

A decrease in MUCP and FUL measurement was observed in both methods 6 months after the operation. Yet, the decrease of MUCP is significantly lower in the SIM-A group than with TVM+SSF. The difference on MUCP and FUL may be explained by the same theory as above. Despite a significantly high incidence of de novo SUI in the SIM-A group (15/57) only 2 patients had symptoms which were bothersome enough for them to undergo anti incontinence procedure. For the TVM+SSF group, only 1 out of 6 de novo SUI chose to have anti incontinence surgery. This was reflected on the UDI6/IIQ7 scores of both procedures post operatively which show significant improvement with P <0.001.

POP success rate for application of both methods were comparable objectively and subjectively and was reported in other mesh augmented vaginal surgery studies. The recurrences of POP in our study were all in the posterior compartment. This was because both procedures utilized augmentation only on the anterior and apical compartments.

### Concluding message

Single incision mesh application (SIM-A, Elavate A) according to this study revealed a higher incidence of de novo stress urinary incontinence compared to transobturator vaginal mesh procedure (TVM, Perigee). Both procedures are comparable in terms of objective and subjective POP success rate. Counselling of the patient pre operatively should include proper education regarding the treatment options, the procedure itself and the possible complications for every option in order for the patients and surgeons to make informed decisions.

### Disclosures

**Funding:** none **Clinical Trial:** No **Subjects:** HUMAN **Ethics Committee:** Institutional Review Board of Chang Gung Memorial Hospital **IRB:** CGMH No 100-0713A3 **Helsinki:** Yes **Informed Consent:** Yes