

Anna Padoa^{1,2}, Stav Amram³, Tal Fligelman^{1,2}, Hadil Hassouna^{1,2}, Roni Tomashev^{1,2}, Anna Tsviban^{1,2}, Maurizio Serati²

¹ Department of Obstetrics and Gynecology, Yitzhak Shamir Medical Center, Zrifin, Israel; ² The Faculty of Medicine, Tel Aviv University, Israel; ³ The Adelson School of Medicine, Ariel University, Ariel, Israel; ⁴ Department of Obstetrics and Gynecology, University of Insubria, Varese, Italy.

Introduction

Overactive bladder (OAB) and urinary urgency incontinence have a detrimental impact on quality of life. De-novo OAB can be encountered following placement of a mid-urethral sling (MUS), and constitutes a source of great disappointment for women expecting improvement of lower urinary tract symptoms (LUTS) following anti-incontinence surgery. Identification of risk factors for de-novo OAB is therefore crucial, in order to improve preoperative counselling and establish realistic expectations on outcome of surgery for stress urinary incontinence (SUI). Previous studies (1) addressing this topic have focused on the comparison of different MUS approaches (retro-pubic versus trans-obturator) and on the impact of different sling materials. However, to date little is known regarding additional background or perioperative risk factors for de-novo urgency following MUS. The aim of this study was to identify perioperative parameters related to de-novo postoperative urgency, in a cohort of women following trans-obturator MUS using the Monarc[®] kit.

Methods and Materials

• In this retrospective analysis, women who underwent a Monarc[®] Subfascial Hammock (American Medical Systems, Inc., Minnetonka, MN, USA) procedure during the years 2009-2017 were included. Pre-operative evaluation included medical history, pelvic floor symptoms and LUTS history, standing cough-stress test, and multi-channel urodynamic studies when clinically indicated. Concomitant surgical procedures included a variety of pelvic floor reconstructive procedures and hysterectomy for benign indications. At the 12-month follow-up, pelvic floor symptoms, LUTS history and standing cough-stress test were repeated. De-novo urgency was defined as a positive answer to the following question: "Do you experience a sudden, compelling urge to pass urine which is difficult to defer?"

• Statistical analysis was performed with IBM-SPSS v.17 for Windows (IBM Corp, Armonk, NY, USA). Continuous variables were reported as median and interquartile range. Multiple logistic regression was performed to identify factors involved in the risk of de-novo urgency. The model included those variables that achieved significance ($p < 0.05$) or association ($p \leq 0.10$) in the univariate analysis. Statistical significance was considered achieved when $p < 0.05$.

Table 1. Monarc[®] cohort concomitant surgical procedures

Procedure	Monarc [®] (mid-urethral sling) cohort n=305
Vaginal hysterectomy, n (%)	110 (36.06)
Manchester procedure, n (%)	10 (3.27)
Anterior colporrhaphy, n (%)	118 (38.68)
Posterior colporrhaphy, n (%)	94 (30.81)
Anterior colporrhaphy with mesh (Elevate [™] , SRS), n (%)	52 (17.04)
Posterior colporrhaphy with mesh (Elevate [™]), n (%)	23 (7.54)
Sacrospinous fixation, n (%)	34 (11.14)
Robotic sacrocolpopexy, n (%)	18 (5.9)
Abdominal/ laparoscopic hysterectomy, n (%)	12 (3.93)

Table 2. Perioperative parameters of women with and without de-novo urgency

	Without de-novo Urgency (n=58)	With de-novo Urgency (n=27)	P-value (two sided)
Age, yrs, median (IQR)	60.5 (49.5-64)	63 (57-70.5)	0.13
BMI, kg/m ² , median (IQR)	25. (23.5-28.2)	27.0 (22.2-31.0)	0.48
Diabetes Mellitus, n (%)	3 (5.17)	6 (22.22)	0.02
Post-menopausal, n (%)	41 (70.68)	21 (77.77)	0.60
Parity, median (IQR)	3 (2-4)	3 (2-4.5)	0.11
Previous UI surgery, n (%)	1 (1.72)	0 (0)	1
Previous POP surgery, n (%)	3 (5.17)	1(3.70)	1
Frequency, n (%)	5 (8.62)	6 (22.22)	0.09
Nocturia, n (%)	12 (20.68)	8 (29.62)	0.41
Voiding, n (%) symptoms pre, n (%)	25 (43.10)	13 (48.14)	0.10
Detrusor Overactivity, n (%)	11 (18.96)	3 (11.11)	0.53
Concomitant hysterectomy, n (%)	19 (32.75)	12 (44.44)	0.33
Concomitant procedures, n (%)	38 (65.51)	24 (88.88)	0.03

Results

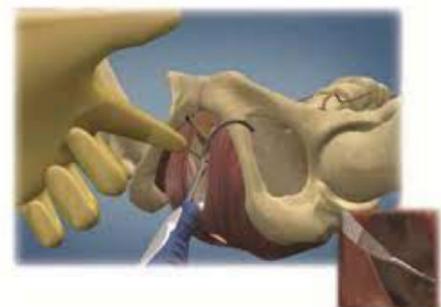
- Three-hundred and five women underwent MUS using Monarc[®] during the study period. Median age was 61 (32-90) years, median BMI=27.08 (15.57-41.40) kg/m², median parity was 3 (0-11) vaginal deliveries. Sixty-one (20%) women suffered from diabetes mellitus (DM). Seventy women (22.95%) underwent Monarc[®] as a single procedure, while 235 women (77.04%) underwent additional pelvic floor reconstructive procedures and hysterectomy for benign indications (Table 1). At 12 months, subjective cure for SUI was reported by 265 (86.85%) women, and objective evidence of SUI (positive cough-stress test) was observed in 10 (3.28%) women. Two (0.65%) women had vaginal erosion of the sling and 6 (1.97%) patients had some degree of groin pain. Ten women (3.28%) had recurrent/persistent POP symptoms.
- Preoperatively, 220 (72.13%) women had either mixed urinary incontinence or SUI combined with OAB-dry, while 85 (27.86%) women had SUI without urgency. Of the 85 women without pre-operative OAB symptoms, 58 (68.23%) did not develop post-operative urgency, while 27 (31.76%) had de-novo urgency following surgery (8.85% of the entire surgical cohort).
- Results of univariate analysis are outlined in Table 2: factors associated with de-novo urgency included the presence of pre-operative DM [3 (5.17%) vs. 6 (22.22%), $p=0.02$], pre-operative increased daytime frequency [5 (8.62%) vs. 6 (22.22%), $p=0.09$], and the presence of concomitant surgical procedures [38 (65.51%) vs. 24 (88.88%), $p=0.03$].
- Multivariate analysis confirmed preoperative diabetes (OR: 1.9 [95%CI: 1.1-2.6]; p 0.01) and concomitant surgical procedures (OR 2.8 [95%CI: 1.3-3.7]; p 0.02) as predictive risk factors for de-novo urgency.

Discussion

In this cohort of women following Monarc[®] trans-obturator MUS for SUI or MUI, with or without concomitant pelvic floor reconstructive and other gynecologic procedures, the observed rate of de-novo urgency was aligned with previous reports. On multivariate analysis, we found that the presence of DM was independently associated with de-novo urgency, which conflicts with previous research (2) on the effect of MUS, reporting no difference in bother and impact of LUTS in women with and without DM. Moreover, the presence of concomitant pelvic floor reconstructive and other gynecological surgical procedures was independently associated with de-novo urgency. This finding is in concordance with previous studies (3). We suggest that the combination of several pelvic procedures may disrupt bladder and urethral innervation more significantly than a MUS procedure by itself, leading to de-novo OAB symptoms.

Conclusions

In women undergoing trans-obturator MUS for SUI with no pre-operative OAB, DM and concomitant pelvic floor reconstructive surgery are associated with an increased incidence of de-novo urgency. The risk of de-novo urgency should be emphasized during preoperative counseling of diabetic women before an anti-incontinence procedure. As for candidates for pelvic floor reconstructive surgery, the option of approaching POP and SUI as a two-step procedure should be suggested as a potentially safer alternative in terms of de-novo OAB.



References

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