**590**

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# THE EFFECTS OF SUBURETHRAL SLING SURGERY ON NOCTURIA

<u>Hypothesis / aims of study</u>

Suburethral sling is effective in treating female stress urinary incontinence (SUI). However, there were few reports focusing on the changes of nocturia after suburethral sling surgery. This paper investigated the effects of suburethral sling surgery on nocturia.

<u>Study design, materials and methods</u>

Seventy-six women with pure SUI or SUI predominant symptoms underwent suburethral sling surgery in our institution. They completed overactive bladder symptoms score (OABSS) (n = 76), urinary distress Inventory (UDI-6) (n = 76) and frequency volume chart (FVC) (n = 64) before and 3 months after the surgery. Persistent nocturia was defined as equal or increased night-time frequency after surgery. The postoperative changes in symptoms of nocturia and the risk factors of persistent nocturia were analyzed.

<u>Results</u>

The average age of women was 60 years. 74 of 76 (97.4%) of patients experienced a significant improvement in SUI symptom after surgery (SUI-subscore of UDI-6, 3.25 at baseline versus 0.39 3 months after surgery, P < 0.001). Elder age was associated with a more night-time frequency before surgery (p = 0.048). Regarding OABSS, all sub-scores were significantly decreased 3 months after surgery (Table 1). In FVC, the night-time frequency was decreased from 1.79 at baseline to 1.24 after surgery (Table 2). Sixty-five percentages of women had postoperative resolution of night-time frequency. Both day-time frequency (p = 0.041) and night-time frequency (p = 0.037) were significantly decreased after surgery. There were no changes in nocturnal urine volume (p = 0.594), ratio of nocturnal urine volume (p = 0.345), and first morning voided volume (p = 0.486) 3 months after surgery. Age, body mass index, wet pad each day, presence of co-morbid systemic diseases, presence of previous pelvic surgery, presence of pelvic organ prolapse or mesh repair for prolapse were not found to be associated with persistent nocturia after surgery (Table 3). Interestingly, higher night-time frequency (p = 0.001) and nocturnal urine ratio (p = 0.005) preoperatively were associated with a decrease in night-time frequency after surgery.

<u>Interpretation of results</u>

Age was the only risk factor for night-time frequency before surgery. Suburethral sling surgery reduced both day-time and night-time frequency. There was no change in nocturnal urine ratio and volume. The patients with a higher night-time frequency before surgery were more likely to have improved nocturia after surgery

<u>Concluding message</u>

Suburethral sling surgery significantly decreases night-time frequency, especially for patients with a higher night-time frequency before surgery.

**Table 1 Effects of Sling Surgery on Overactive Bladder Symptoms Score (n=76)**

| **OABSS** | **Before surgery (mean)** | **3M/O after surgery (mean)** | **P*** |
|---|---|---|---|
| Day-time frequency | 1.06 | 0.79 | **<0.001** |
| Night-time frequency | 1.83 | 1.24 | **0.001** |
| Urgency | 2.53 | 1.16 | **0.01** |
| Urge urinary incontinence | 2.28 | 0.52 | **<0.001** |
| Total score | 7.58 | 3.71 | **<0.001** |

*Friedman test and use Post-Hoc multiple comparison by using Wilcoxon Sign Ranki Test with Bonferroni correct method with significance when $\alpha < 0.0167$

| Table 2 Effects of Sling Surgery on Nocturia by Frequency Volume Chart (n=64) | | | |
|---|---|---|---|
| **Frequency volume chart** | **Before surgery ( mean)** | **3M/O after surgery (mean)** | **P*** |
| 24 hour voided volume (ml) | 1794 | 1809 | 0.776 |
| Day-time frequency | 9.2 | 6.3 | **0.041** |
| Night-time frequency | 1.79 | 1.24 | **0.037** |
| Night-time mean voided volume (ml) | 263 | 293 | 0.460 |
| Nocturnal urine volume (ml) | 546 | 529 | 0.594 |
| Nocturnal urine ratio (%) | 30.8 | 29.7 | 0.345 |
| Nocturnal polyuria † (%) | 44.6 | 40.0 | 0.727 |
| First morning voided volume (ml) | 252 | 279 | 0.407 |

†Nocturnal polyuria: nocturnal urine volume >30% of total 24 urine volume
*Paired T test and McNemar test

| Table 3 Analysis of Risk Factors on Persistent Night-time frequency (n=64) after Sling Surgery | | | |
|---|---|---|---|
| **Risk Factors** | **nprovement** | **Persistence** | **P*** |
| Age (Mean ± SD) | 61.21 ± 8.85 | 61.36 ± 7.85 | 0.947 |
| Body mass index (Mean ± SD) | 25.34 ± 3.14 | 25.49 ± 4.91 | 0.888 |
| Wet pad/day before surgery (Mean ± SD) | 4.52 ± 3.93 | 3.67 ± 2.27 | 0.493 |
| Day-time frequency (Mean ± SD) | 8.53 ± 2.74 | 9.69 ± 3.05 | 0.200 |
| Night-time frequency (Mean ± SD) | 1.91 ± 0.87 | 0.86 ± 0.91 | **0.001** |
| Nocturnal urine ratio | 35.8% | 26.1% | **0.005** |
| Menopause | 66.7% | 77.2% | 0.378 |
| Presence of systemic disease | 45.7% | 57.9% | 0.393 |
| Previous pelvic surgery | 23.8% | 36.4% | 0.289 |
| Hysterectomy | 14.3% | 31.8% | 0.114 |
| Presence of organ prolapse | 16.7% | 22.7% | 0.737 |
| Anterior repair | 11.9% | 13.6% | 1.000 |
| †Mesh repair for prolapse | 14.3% | 9.1% | 0.704 |

*Paired T test or Pearson Chin-square test or Fisher's exact test
† Perigee mesh, Gynmesh, Avulta mesh repair

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