

Efficacy of modified midurethral minisling in stress urinary incontinence patients in Al-Diwaniya teaching hospital

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خلاصة الدراسة

الهدف: تقييم فعالية استخدام رفع الاحليل ب(حمالة مصغرة) لدى النساء التي تشكو من السلس البولي الاجهادي في مستشفى الديوانية التعليمي.

المرضى وطرق العلاج: خضعت 22 امرأة مشخصة ب(السلس البولي الاجهادي) للعملية.

النتائج: معدل عدد الولادات(4,1)، معدل مدة الأعراض(28,8) شهر، معدل طول فترة العملية (65) دقيقة، معدل طول الإقامة في المستشفى(8) ساعات، معدل التكلفة (195,000) دينار عراقي، بعد العملية ، حالة واحدة عانت من احتباس الإدرار، ولا توجد مضاعفات أخرى. هناك فشل ثلاث حالات فقط.

الاستنتاج: رفع الاحليل باستخدام حمالة مصغرة هي مماثلة الى عمليات رفع الاحليل باستخدام الشبكة الجاهزة بأقل تكلفة.

Abstract

Aim: to evaluate the efficacy of using modified midurethral minisling in women with SUI in Al-Diwaniya teaching hospital.

Patients and methods: 22 women underwent minisling were diagnosed as pure SUI.

Results: mean parity was 4.1, mean duration of symptoms was 28.8 months, mean length of operation was 65 minutes, mean length of hospital stay was 8 hours, mean cost was 195.000 ID, postoperatively ; one case with urine retention, no bladder injury , no vaginal or urethral erosion, no De novo urgency. Three failed cases(recurrent) assessed subjectively(history and examination) and objectively (Urodynamic testing).

Conclusion: efficacy of modified midurethral minisling is comparable to TVT-TOT with lower cost.

Key words : Urinary incontinence, Stress, retropubic, transvaginal, transobturator sling, minisling.

Introduction

Stress urinary incontinence(SUI) is defined as involuntary leakage of urine on exertion, coughing, and sneezing according to the international continence society ⁽¹⁾.

prevalence of stress urinary incontinence account for 49% of female urinary incontinence , 4.9% incidence in nullipara and 12.2% in multipara ⁽²⁾.

SUI is classified in to two types: Complicated and uncomplicated (according to history, clinical examination and investigations).

Uncomplicated SUI is pure SUI, not associated with infection, no previous surgery, no medical conditions, no prolapse on examination with normal urethral mobility while complicated SUI is defined as the reverse ⁽³⁾.

The diagnosis is depend on history, physical examination, cough stress test, cotton swab test, and Urodynamic testing ⁽⁴⁾.

Treatment of SUI vary from conservative therapy including pelvic muscle exercise with or without physical therapy, behavioral therapy, pessaries supporting elements to surgical treatment like open retropubic urethral suspension⁽⁵⁻⁸⁾ bulking agents injection ⁽⁹⁾, autologous fascial sling, synthetic mid urethral sling(TVT,TOT) ⁽¹⁰⁻²⁰⁾ and single incision sling ⁽²⁰⁾. Synthetic midurethral slings are the most frequent procedures used for treatment of SUI nowadays; discovered in mid nineties by Ulmsten and Petros , main components of synthetic sling is made from polypropylene material which characterized by large size pores, flexible, which gives high tissue conformity and lower risk of erosion but more scar and tissue fixity ⁽²¹⁻²³⁾.

These are two types : TVT and TOT.

TVT; is sling pass transvaginally through retropubic space behind pubic bone ⁽²³⁾ .

while TOT is sling pass laterally through obturator foramen to avoid what structures that injured by TVT which include vascular and bladder injuries ⁽²⁴⁾.

Success rates are reported to be as high as 90%, serious complications , such as intestinal or large vessel perforation have been reported rarely.

Single incision sling is one of midurethral sling procedures that is less invasive with comparable efficacy to TVT or TOT and less postoperative pain ⁽²⁰⁾.

Patients and methods

This experimental prospective study was done in Al-Diwaniya teaching hospital in the period between March , 2012 and June, 2014 . Twenty two women were complain from features of SUI underwent 2 tests; cotton swab test (bladder neck hypermobility more than 30 degree) and Urodynamic testing (VLPP \leq 60 cm H₂O).

In this study , all women with urge or mixed urinary incontinence (objective features diagnosed by Urodynamic testing) are excluded. No patient with previous hysterectomy was included.

Procedure : positioning of patient in lithotomy location, vaginal speculum retraction, vertical incision of anterior vaginal wall at mid urethra, creation of space surrounding mid urethra, insertion of modified mini sling made from polypropylene mesh underneath the urethra without tension, under spinal anesthesia to ask the patient to cough (testing intraoperatively)

All patients were discharged with urethral catheter for 2 days , and underwent (subjective)follow up for 4 weeks, 12 weeks, 6 months and objective follow up for failed cases.

Results

Twenty two women patients , mean age/year was 49, mean number of deliveries was 4.1, mean duration of symptoms was 28.8 month, modified mid urethral mini slings were done for them with mean length of operation/

minutes was 65, mean length of stay in hospital/ hour was 8, mean cost of operation/ 1000 Iraqi Dinars (according to account of ministry of health) was 195.

Zero percent for postoperative complications such as bladder injury, vaginal erosion, De novo urgency, urethral erosion. One case with urine retention. But I had 3 failed cases(13.6%) according to subjective features(history) and objective features(Urodynamic study).

Table 1: characters of patients.

Mean age/ year	4 9±9 SD
Mean number of birthing	4.1
Mean duration of symptoms/month	28.8

Table 2 : operation-hospital events and cost.

Mean length of operation/min.	65
Mean length of stay in hospital/hr.	8
Mean cost/1000 ID	195

Table 3: postoperative complications and recurrence.

Urine retention %	1
Bladder injury %	0
Vaginal erosion %	0
De novo urgency %	0
Urethral erosion %	0
Recurrence %	13.6

Discussion

The urinary incontinence is under diagnosed and underreported . An estimated 50-70% of women with urinary incontinence fail to seek medical evaluation and treatment because of social stigma ⁽²⁵⁻²⁷⁾.

SUI account for 49% of female urinary incontinence ⁽²⁾. There are many studies discussing the therapeutic approaches for SUI ranging from conservative to surgical

intervention and upon discovery of midurethral sling by Ulmsten and Petros in mid nineties, it became the popular surgical ways for treatment of SUI ^(23,24).

In my study, I compare 22 cases underwent modified midurethral minisling with other studies use retropubic suspension and midurethral sling(TVT,TOT).

There are many authers as Michael et al, Ogah et al, Novara et al, Barber et al, and

others had studied and compared between retropubic urethral suspension and midurethral sling. ^(8,10-13,16,19,28-31) .

Retropubic urethral suspension requires operative time (120-150) minutes, costly especially laparoscopic one (4000-5000) \$, length of stay in hospital (40-45 hours), and TVT-TOT requires operative time(55-60 minutes), less costly(2000-3000\$), and length of stay in hospital(5-6 hours) ^(8,10,33) .

In my study, I were use modified midurethral minisling mesh made from polypropylene material, it was available and the cost just (170 \$) which is less than retropubic suspension and TVT-TOT, duration of operation (65 minutes) which is less than retropubic suspension and comparable to TVT-TOT, length of stay in hospital (8 hours) which less than retropubic suspension and slightly more than TVT-TOT ⁽¹⁰⁻¹⁸⁾ .

Regarding postoperative complications, retropubic suspension is associated with more complications than TOT-TVT ,regarding urine retention, wound infection, postoperative pain but less bladder injury than TVT-TOT (because of using of metallic device for guidance). In my cases just on case had urine retention.

In my study, there is no place for vaginal erosion, urethral erosion, Denovo urgency where these complications can occur in TOT-TVT and retropubic urethral suspension as mentioned by Latthe et al, Kleeman et al ⁽³⁴⁾ .

The objective cure rate (cotton-tip test and Urodynamic study) in TVT-TOT is similar to retropubic urethral suspension 76.5-86.4% ⁽²⁹⁻³³⁾ . and it is similar to my study ^(10,20) .

Conclusion: efficacy of modified midurethral minisling is comparable to TVT-TOT ,retropubic urethral suspension with lower cost, and less complication.

Reference

- 1- Hannestad YS, Rortveit G, Sandvik H, Hunskaar S. A community-based epidemiological survey of female urinary incontinence: the Norwegian EPINCONT study. *Epidemiology of Incontinence in the County of Nord-Trøndelag*. *J Clin Epidemiol* 2000;53:1150-7.
- 2- Rortveit G, Daltveit AK, Hannestad YS, Hunskaar S, Norwegian EPINCONT Study. Urinary incontinence after vaginal delivery or cesarean section. *N Engl J Med* 2003;348: 900-7
- 3- Haylen BT de Ridder D, Freeman RM, Swift SE, Berghmans B, Lee J, et al. An International Urogynecological Association (IUGA)/ International Continence Society (ICS) joint report on the terminology for female pelvic floor dysfunction. *International Urogynecological Association* . *International Continence Society* . *Neurourol Urodyn* 2010; 29:4-20
- 4- Nager CW, Brubaker L, Litman HJ, Zycynski HM, Varner RE, Amundsen C, et al. A randomized trial of urodynamic testing before stress incontinence surgery . *Urinary Incontinence Treatment Network*. *N Engl J Med* 2012;366:1987-97.
- 5- Lapitan MCM, Cody JD. Open retropubic colposuspension for urinary incontinence in women. *Cochrane Database Syst Rev* 2012:CD002912.
- 6- Rehman H, Bezerra CC, Bruschini H, Cody JD. Traditional suburethral sling operations for urinary incontinence in women. *Cochrane Database Syst Rev* 2011:CD001754.
- 7- Glazener CM, Cooper K. Anterior vaginal repair for urinary incontinence in women. *Cochrane Database Syst Rev* 2001:CD001755.
- 8- Dean NM, Ellis G, Wilson PD, Herbison GP. Laparoscopic colposuspension for urinary incontinence in women. *Cochrane Database Syst Rev* 2006:CD002239.
- 9- Kulseng-Hanssen S, Husby H, Schiotz HA. The tension free vaginal tape operation for women with mixed incontinence: do preoperative variables predict the outcome? *Neurourol Urodyn* 2007;26:115-21.
- 10- Ogah J, Cody DJ, Rogerson L. Minimally invasive synthetic suburethral sling operations for stress urinary incontinence in women: a short version Cochrane review. *Neurourol Urodyn* 2011;30:284-91.
- 11- Jelovsek JE, Barber MD, Karram MM, Walters MD, Paraiso MF. Randomised trial of laparoscopic Burch colposuspension versus tension-free vaginal tape: long-term follow up. *BJOG* 2008; 115:219-25, discussion 225.
- 12- Ward K, Hilton P. Prospective multicentre randomised trial of tension-free vaginal tape and colposuspension as primary treatment for stress incontinence. *BMJ* 2002;325:67.
- 13- Adile B, Grandese R, Lo Bue A, et al. A prospective randomized study comparing laparoscopic Burch versus TVT. Short and long term follow-up [abstract 550]. *Neurourol Urodyn* 2003:22.

- 14- Drahoradova PI, Masata J, Martan AI, et al. Comparative development of quality of life between TVT and Burch colposuspension [abstract 278]. *Neurourol Urodyn* 2004;23.
- 15- Foote AJ, Maughan V, Carne C. Laparoscopic colposuspension versus vaginal suburethral slingplasty: a randomised prospective trial. *Aust N Z J Obstet Gynaecol* 2006;46:517–20.
- 16- Liapis A, Bakas P, Creatsas G. Burch colposuspension and tensionfree vaginal tape in the management of stress urinary incontinence in women. *Eur Urol* 2002;41:469–73.
- 17- El-Barky E, El-Shazly A, El-Wahab OA, Kehinde EO, Al-Hunayan A, Al-Awadi KA. Tension free vaginal tape versus Burch colposuspension for treatment of female stress urinary incontinence. *Int Urol Nephrol* 2005;37:277–81.
- 18- Maher C, Qatawneh A, Baessler K, et al. Laparoscopic colposuspension or tension-free vaginal tape for recurrent stress urinary incontinence and/or urethral sphincter deficiency—a randomized controlled trial. *Neurourol Urodyn* 2004;23:433–4.
- 19- Barber MD, Kleeman S, Karram MM, et al. Risk factors associated with failure 1 year after retropubic or transobturator midurethral slings. *Am J Obstet Gynecol* 2008;199, 666.e1–7.
- 20- Abdel-Fattah M, Ford JA, Lim CP, Madhuvrata P. Single-incision mini-slings versus standard midurethral slings in surgical management of female stress urinary incontinence: a meta-analysis of effectiveness and complications. *Eur Urol* 2011;60:468–80.
- 21- Oliphant SS, Wang L, Bunker CH et al: Trends in stress urinary incontinence inpatient procedures in the United States, 1979 –2004. *Am J Obstet Gynecol* 2009; 200: 521.
- 22- Thom DH, Nygaard IE and Calhoun EA: Urologic Diseases in America Project: urinary incontinence in women—national trends in hospitalizations, office visits, treatment and economic impact. *J Urol* 2005; 173: 1295..
- 23- Ulmsten U and Petros P: Intravaginal slingplasty (IVS): an ambulatory surgical procedure for treatment of female urinary incontinence. *Scand J Urol Nephrol* 1995; 29: 75. ,
- 24- Delorme E: Transobturator urethral suspension: mini-invasive procedure in the treatment of stress urinary incontinence in women. *Prog Urol* 2001; 11: 1306.
- 25- Erdem N, Chu FM. Management of overactive bladder and urge urinary incontinence in the elderly patient. *Am J Med.* Mar 2006;119(3 Suppl 1):29-36.
- 26- Nazir T, Khan Z, Barber HR. Urinary incontinence. *Clin Obstet Gynecol.* Dec 1996;39(4):906-11.
- 27- Nygaard I, Barber MD, Burgio KL, Kenton K, Meikle S, Schaffer J, et al. Prevalence of symptomatic pelvic floor disorders in US women. *JAMA.* Sep 17 2008;300(11):1311-6.
- 28- Deffieux X, Daher N, Mansoor A, Debodinance P, Muhlstein J, Fernandez H. Transobturator TVT-O versus retropubic TVT: results of a multicenter randomized controlled trial at 24 months followup. *Int Urogynecol J* 2010;21:1337–45.
- 29- Krofta L, Feyereisl J, Otcenasek M, Velebil P, Kasikova E, Krcmar M. TVT and TVT-O for surgical treatment of primary stress urinary incontinence: prospective randomized trial. *Int Urogynecol J* 2010;21:141–8.
- 30- Lee KS, Han DH, Choi YS, et al. A prospective trial comparing tension-free vaginal tape and transobturator vaginal tape insideout for the surgical treatment of female stress urinary incontinence: 1-year followup. *J Urol* 2007;177:214–8.
- 31- Nerli RB, Kumar AG, Koura A, Prabha V, Alur SB. Transobturator vaginal tape in comparison to tension-free vaginal tape: a prospective trial with a minimum 12 months follow-up. *Indian J Urol* 2009;25:321–5.
- 32- Palva K, Rinne K, Aukee P, et al. A randomized trial comparing tension-free vaginal tape with tension-free vaginal tape-obtur.
- 33- Robert M, Farrell SA, SOGC Urogynaecology Committee. Choice of surgery for stress incontinence. SOGC Clinical Practice Guideline no. 166, October 2005. *J Obstet Gynaecol Can* 2005;27:964–85.
- 34- Latthe PM, Kleeman Foon R and Tooze-Hobson P: Transobturato an retropubic tape procedures in stress urinary incontinence: a systematic review and meta-analysis of effectiveness and complications. *BJOG* 2007; 114: 522