

Management of Urinary Incontinence before and after Total Pelvic Reconstruction for Advanced Pelvic Organ Prolapse with and without Incontinence

Yu Song^{1,2}, Xiao-Juan Wang^{2,3}, Yi-Song Chen^{2,3}, Ke-Qin Hua^{2,3}

¹Medical Center of Diagnosis and Treatment for Cervical Diseases, Obstetrics and Gynecology Hospital of Fudan University, Shanghai 200011, China

²Shanghai Key Laboratory of Female Reproductive Endocrine Related Diseases, Shanghai 200011, China

³Department of Gynecology, Obstetrics and Gynecology Hospital of Fudan University, Shanghai 200011, China

Abstract

Background: The effectiveness of an anti-incontinence procedure concomitant with prolapse reconstruction for pelvic organ prolapse (POP) in preventing urinary incontinence (UI) after surgery remains controversial. Our study aimed to describe the incidence of pre- and postoperative UI for pelvic reconstructive surgery and evaluate the management of POP associated with UI.

Methods: A total of 329 patients who underwent total pelvic reconstruction between June 2009 and February 2015 at a single institution were identified. These patients were divided into two groups (Group A [Prolift reconstruction]: $n = 190$ and Group B [modified total pelvic reconstruction]: $n = 139$). Data regarding surgical procedures and patient demographic variables were recorded. Chi-square and Student's *t*-tests were used for two independent samples.

Results: A total of 115 patients presented with UI preoperatively. The average follow-up time was 46.5 months, with 20 patients lost to follow-up (6.1%). The cure rates of stress UI (SUI), urgency UI (UUI), and mixed UI (MUI) were 51% (30/59), 80% (16/20), and 48% (14/29), respectively. The cure rate of UUI after total pelvic reconstruction (80% [16/20]) was higher than that of SUI (50.8% [30/59], $\chi^2 = 5.219$, $P = 0.03$), and the cure rate of MUI (48%, 14/29) was the lowest. The cure rate of patients with UI symptoms postoperatively was lower than that of those with symptoms preoperatively (9.1% [28/309] vs. 16.2% [50/309], $\chi^2 = 7.101$, $P = 0.01$). There was no difference in the incidence of UI postoperatively between Groups A and B ($P > 0.05$). The cure rate of SUI in patients undergoing tension-free vaginal tape-obturator was not higher than that in those who did not undergo the procedure (42.9% [6/14] vs. 53.3% [24/45], $\chi^2 = 0.469$, $P = 0.49$). There were no differences in the cure rate for POP or UI between these two types of reconstructions ($P > 0.05$).

Conclusions: No correlation between the incidence of UI and POP was identified. The results suggest that UI treatment should be performed after POP surgery for patients with both conditions.

Key words: Pelvic Organ Prolapse; Recurrence; Urinary Incontinence

INTRODUCTION

Among elderly women, pelvic organ prolapse (POP) and urinary incontinence (UI), including stress UI (SUI), urgency UI (UUI), and mixed UI (MUI) are major pelvic disorders, and these conditions always present simultaneously, especially in severe prolapse,^[1,2] which has similar risk factors, such as injury during labor, constipation, and chronic cough.^[3,4] Many cases of UI resolve after corrective surgery for POP;^[5] however, *de novo* cases of UI may occur after corrective surgery for POP.^[6,7] Patients without UI before pelvic reconstruction exhibit UI symptoms and physical signs after the operation, and this condition is called

postoperative SUI (POSUI).^[8,9] Occult SUI (OSUI) is used to describe a patient with advanced prolapse who develops UI after a reduction in genital prolapse, which is considered the main feature of POSUI.^[10] To date, no correlation between

Address for correspondence: Prof. Ke-Qin Hua,
Department of Gynecology, Obstetrics and Gynecology Hospital of Fudan
University, 419 Fang Xie Rd., Shanghai 200011, China
E-Mail: huakeqin_dfwz8@126.com

This is an open access article distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 3.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as the author is credited and the new creations are licensed under the identical terms.

For reprints contact: reprints@medknow.com

© 2018 Chinese Medical Journal | Produced by Wolters Kluwer - Medknow

Received: 23-08-2017 **Edited by:** Ning-Ning Wang
How to cite this article: Song Y, Wang XJ, Chen YS, Hua KQ. Management of Urinary Incontinence before and after Total Pelvic Reconstruction for Advanced Pelvic Organ Prolapse with and without Incontinence. Chin Med J 2018;131:553-8.

Access this article online

Quick Response Code:



Website:
www.cmj.org

DOI:
10.4103/0366-6999.226057

the occurrence of POP and UI has been identified, and the therapeutic options for both conditions are distinct.

In the recent years, total pelvic reconstructions with the wide use of mesh implantation have increased. Huang *et al.*^[11] described a cohort of 34 women with an overall success rate of 97% for surgical anatomic correction after 24 months and 94% after more than 2 years. During this time, the tension-free vaginal tape-obturator (TVT-O) procedure has been shown to benefit patients with severe SUI. After analyzing 5 years of follow-up reports, Tommaselli *et al.*^[12] demonstrated that the objective cure rate for SUI after TVT-O was 82.6%. Basu *et al.*^[13] reported that UUI resolved in 61.7% of 128 participants after prolapse repair. Therefore, prolapse correction may impact UI occurrence and outcomes. This finding raises questions concerning how to manage prolapse when treating concurrent UI and whether management strategies can decrease the occurrence of UI after pelvic organ reconstruction.

However, the methods for reducing prolapse in urodynamic evaluation vary. For example, many authors recommend treating OSUI simultaneously during surgical correction of the prolapse; however, this approach may lead to SUI overtreatment and increased complication risks.^[14,15] Other authors, with the purpose of reducing costs as well as the risk arising from additional surgical procedures, recommend a single procedure for POP without prophylactic anti-incontinence therapy or a second treatment according to the postoperative reassessment.^[10,16]

In our study, we described the presentation of UI (including SUI, UUI, and MUI) pre- and postpelvic reconstruction surgery and aimed to discuss the appropriate management of POP associated with or without UI.

METHODS

Ethical approval

This study was approved by the Ethics Committee and the Institutional Review Board of Obstetrics and Gynecology Hospital of Fudan University, Shanghai, China (No. 2013-35). All patients included in the study provided informed consent and agreed to the operation.

Patient selection

For this retrospective study, data were analyzed from 329 patients who underwent total pelvic reconstruction between June 2009 and February 2015 at the Obstetrics and Gynecology Hospital of Fudan University, China. All patients with or without UI who chose reconstructive surgery were diagnosed with Stage III genital prolapse in at least one part according to the Pelvic Organ Prolapse-Quantification system. Patients with concurrent medical issues, such as neoplasm, menstrual disorders, or severe disease that were deemed unsuitable for surgery, were excluded.

A detailed past medical history, physical examination, X-ray, electrocardiogram, laboratory tests, and cardiorespiratory function evaluation were obtained for each patient. Patients

also underwent an uro-gynecological examination, including urinary dynamic testing, stress tests, pad testing, and voiding diaries.^[17] For the purposes of the study, SUI was defined as an involuntary loss of urine during physical activity, coughing, or sneezing, according to the International Continence Society. SUI was divided into light, medium, and heavy degrees according to the subjective symptoms as follows: light, leakage of urine when coughing and sneezing, at least two times a week; medium, leakage occurs during daily activities such as brisk walking; and heavy, leakage occurs when standing with appropriate reference testing.^[18] OSUI was defined as leakage of urine when the patient was asked to cough in a sitting or standing position when the prolapse was reduced by pessary use.^[19] UUI was defined as involuntary loss of urine associated with urgency. MUI was defined as involuntary loss of urine associated with urgency and exertion, effort, sneezing, or coughing (i.e., UUI and SUI).^[20]

The total pelvic reconstructions performed included operations by Prolift (Group A)^[7] and modified total pelvic reconstruction according to our procedures (Group B), which were described in a previous article.^[21,22] Many POP patients with SUI of medium grade or above accepted a simultaneous TVT-O procedure according to their requirements. Follow-up evaluations were performed at 6 and 12 months after surgery.

Statistical analysis

We calculated either the mean \pm standard deviations or the median (range) for continuous variables as well as the frequencies (percentages) for categorical variables. The differences between groups were calculated using Chi-square tests, Student's *t*-test, or the Mann-Whitney test as appropriate. A value of $P < 0.05$ was considered statistically significant. Statistical analysis was performed using SPSS software, version 16.0 (SPSS Inc., Chicago, IL, USA) and Excel software (Microsoft Excel 2007, Microsoft Corp., Seattle, WA, USA).

RESULTS

The clinical characteristics of 329 patients who underwent total pelvic reconstruction between June 2009 and February 2015 are shown in Table 1. Preoperatively, 115 POP patients suffered from UI, including 64 cases of SUI (including 48 cases of evident SUI and 16 cases of OSUI), 21 of UUI, and 30 of MUI. A total of 190 patients selected to undergo total pelvic reconstruction with the Prolift procedure (Group A) and 139 underwent modified total pelvic reconstruction (Group B). There was no difference between the two groups with respect to age and the incidence of concomitant UI and/or obstruction [Table 1].

The mean follow-up time for patients was 46.5 months (range, 12–80 months). A total of 20 patients (6.1%, 20/329) were lost to follow-up, including 5 with SUI, 1 with UUI, 1 with MUI, and 13 without the symptoms of UI [Figure 1]. Seventy-six patients had UI following surgery, including eight patients with recurrent SUI who accepted TVT-O, 40 with persistent UI who did not accept TVT-O or other

Table 1: Baseline demographic and clinical characteristics of patients who underwent pelvic reconstructions in Group A (Prolift reconstruction) and Group B (modified total pelvic reconstruction)

Characteristics	Group A (n = 190)	Group B (n = 139)	Statistics	P
Age (years), mean ± SD	62.9 ± 9.0	62.8 ± 10.9	0.002*	0.99
Body mass index (kg/m ²)	24.38 ± 12.88	23.73 ± 12.62	1.702*	0.09
Previous total hysterectomy, n (%)	24 (12.6)	20 (14.4)	0.214 [†]	0.64
Parity (times), median (range)	2.0 (0–6.0)	1.5 (0–9.0)	1.001 [‡]	0.23
Preoperative bladder capacity (ml)	372.17 ± 97.33	373.99 ± 73.96	0.015*	0.88
Preoperative residual urine (ml)	73.01 ± 57.45	66.86 ± 67.71	0.692 [‡]	0.62
Postoperative residual urine (ml)	44.11 ± 39.7	41.53 ± 35.91	0.220 [‡]	0.89
Postoperative catheter reservation (days), median (range)	5.5 (2.0–9.0)	6.5 (2.0–12.0)	0.850 [‡]	0.38

Data were shown as mean ± SD, median (range), frequencies (proportions). *Student's *t*-test; [†]Chi-square test; [‡]Mann-Whitney test. SD: Standard deviation

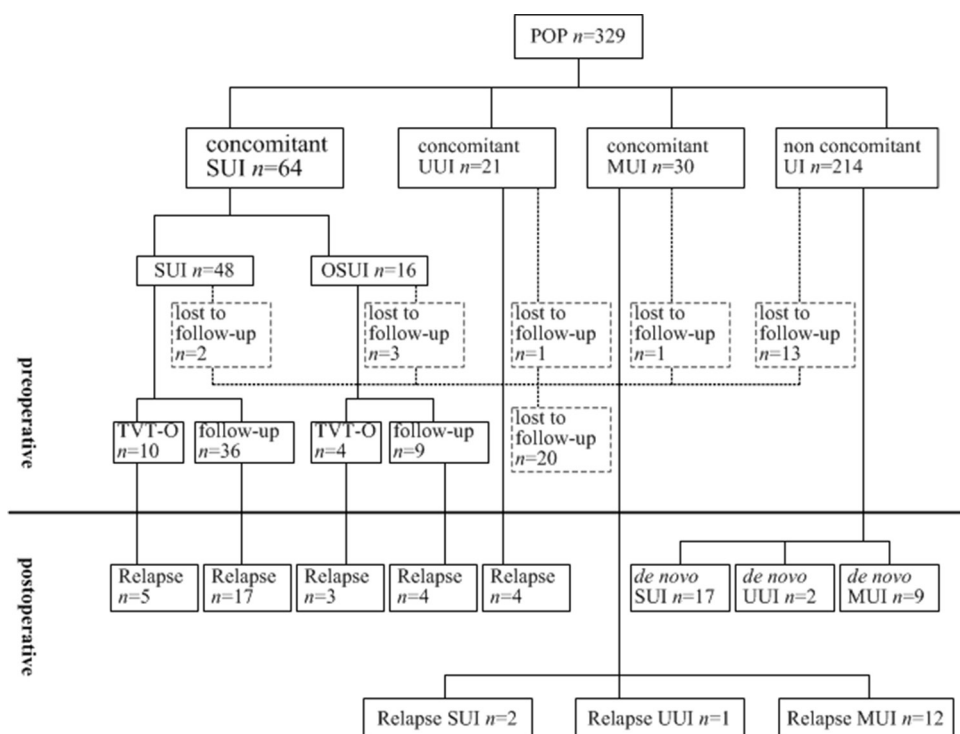


Figure 1: The flowchart of preoperative and postoperative urinary incontinence for a total of 329 patients with POP. POP: Pelvic organ prolapse; UI: Urinary incontinence; SUI: Stress urinary incontinence; TVT-O: Tension-free vaginal tape-obturator; MUI: Mixed urinary incontinence; UUI: Urgency urinary incontinence.

therapy, and 28 with *de novo* UI. SUI occurred in 48 (63%, 48/76) patients and was the main type of postoperative UI. MUI was the next most prevalent UI and occurred in 21 (27%, 21/76) patients. The remaining seven patients experienced symptoms of UUI (9%, 7/76).

The cure rates for each type of UI were as follows: SUI 51% (30/59), UUI 80% (16/20), and MUI 48% (14/29). However, there were 17 cases of *de novo* SUI, 2 cases of *de novo* UUI, and 9 cases of MUI that occurred postoperatively. The cure rate of UUI after total pelvic reconstruction (80%, 16/20) was higher than that of SUI (50.8%, 30/59; $P = 0.03$), and the cure rate of MUI (48%, 14/29) was the lowest. The cure rate of patients with UI symptoms postoperatively was lower than that of those with symptoms preoperatively (9.1% [28/309] vs. 16.2% [50/309]; $P = 0.01$). There was no difference in the incidence of

UI postoperatively between Groups A and B ($P > 0.05$). The cure rate of SUI in patients undergoing TVT-O was not higher than that in those who did not undergo the procedure (42.9% [6/14] vs. 53.3% [24/45]; $P = 0.49$). Among patients with MUI, 53% (16/30) experienced resolution of stress urinary symptoms, and this number was equal to those with a single SUI without a TVT-O procedure. There were no significant differences in recurrence rates between OSUI and evident SUI ($P > 0.05$). It showed that patients without UI before surgery, after Prolift reconstruction, had MUI significantly more than that in modified total pelvic reconstruction (7.6% [8/105] vs. 1% [1/99]; $P = 0.03$). The above results are shown in Table 2.

Among cases of postoperative incontinence, 75% (57/76) occurred within 3 months after surgery and most were SUI cases [Figure 2]. There were 23 cases of POP recurrence, and

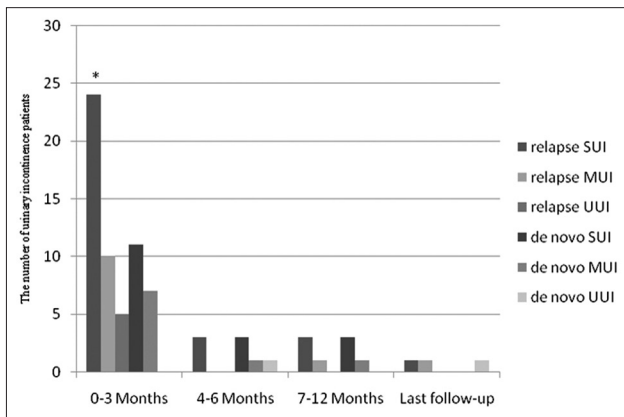


Figure 2: The occurrence of UI at different times after pelvic reconstruction. * $P < 0.05$. UI: Urinary incontinence.

Table 2: The occurrence of UI in Group A (Prolift reconstruction) and Group B (modified total pelvic reconstruction) for POP

Items	Group A	Group B	Statistics	P
POP with UI, n/N*				
SUI				
TVT-O	2/3	3/7	0.476	0.49
Follow-up	16/32	1/4	0.892	0.35
Occult SUI				
TVT-O	1/1	2/3	–	–
Follow-up	2/4	2/5	0.090	0.76
UII				
MUI	2/7	2/13	0.495	0.48
MUI	14/26	1/3	0.453	0.59
POP without UI, n/N*				
SUI				
TVT-O	10/105	7/99	0.401	0.53
Follow-up	2/105	0/99	1.904	0.49
UII				
MUI	8/105	1/99	5.278	0.03

*n/N: Postoperative/preoperative. POP: Pelvic organ prolapse; UI: Urinary incontinence; SUI: Stress urinary incontinence; TVT-O: Tension-free vaginal tape-obturator; MUI: Mixed urinary incontinence; UII: Urgency urinary incontinence; –: Not available.

no difference was detected between Group A (7.9%, 14/178) and Group B (6.9%, 9/131; $P > 0.05$). Only two cases of concurrent POP and SUI occurred after total pelvic reconstruction by the Prolift™.

DISCUSSION

SUI and UII are the most common types of UI. However, each type of UI has distinct mechanisms, clinical characteristics, and treatment strategies.^[23] Studies concerning the treatment of prolapse with accompanying SUI have reported conflicting results. Treating POP and SUI simultaneously may lead to overtreatment; however, treating POP alone might require a two-step surgery for UI after pelvic reconstruction. One purpose of the current study was to discuss the appropriate strategy for managing POP accompanied by UI.

Similar to POP, SUI is mostly attributed to loose pelvic floor connective tissue. Consequently, SUI is

almost always accompanied by POP.^[4] The rate of SUI (28.6%, 94/329, single SUI + MUI) in this study population was higher than that in the general population (17.1%), confirming that SUI is increased in patients with POP. Unfortunately, surgically curing POP does not necessarily guarantee resolution of symptoms of SUI. For example, many POP patients with SUI continue to suffer from SUI symptoms after POP correction. In this study, compared with 64 patients preoperatively, only one patient suffered from recurrence of both POP and SUI. Postoperatively, there were 48 SUI cases, including 17 *de novo* cases. However, POP and SUI must be related. For example, a portion of SUI patients experienced relief of symptoms after total pelvic reconstruction. This phenomenon may be due to total or partial recovery of POP impacting mid-urethral urinary continence. Therefore, distinguishing between POP and SUI is necessary to offer patients the best treatment strategy.

In general, mid-urethral sling surgery (TVT-O or homologous) is ideally suited for solitary SUI of a moderate grade or higher.^[12] The objective cure rate of solitary SUI by TVT-O 5 years after the operation is 82.6%.^[12] In the current study, 14 patients who suffered from POP and SUI accepted TVT-O surgery and 8 experienced recurrence of SUI symptoms, indicating that the therapeutic effect of combination surgery was poorer than that of a single operation for SUI. We propose that the correction of POP could impact the formation of SUI, but this impact did not translate into an accurate preoperative forecast. This result could be due to inaccurate estimation of the impact of urinary continence induced by the degree of recovery of POP. More importantly, the cure rate of SUI in patients undergoing TVT-O was not higher than that in those without, and 53% (16/30) of patients with MUI experienced resolution of stress urinary symptoms after prolapse correction, equal to that after a single SUI without the TVT-O procedure. In addition, on an average, SUI developed within 3 months after surgery, and symptoms decreased approximately 6 months after the operation. Based on these results, we recommend treating these conditions separately and performing total pelvic reconstruction before considering therapy for incontinence. However, for prolapse patients with serious symptoms of SUI, it may be difficult to undergo multiple surgeries; therefore, treatment should be considered on a case-by-case basis.^[24]

Richardson defined OSUI in 1983 and thought that a zigzag and obstructed urethra explained the symptoms of SUI;^[25] another noted that bulging of the posterior wall of the vagina pressed against the urethra, contributing to urinary continence.^[26] In this study, four patients with OSUI accepted the TVT-O procedure and SUI recurred in three of these patients. In addition, only four of the nine OSUI patients without TVT-O developed SUI symptoms. Therefore, the TVT-O procedure for the treatment of MUI did not decrease the recurrence of SUI. This phenomenon may be due to improper setting of the pelvic organs during surgery or differences in surgical procedures that more or less caused development of UI. Taken

together, these findings suggest that treating OSUI with a simultaneous TVT-O procedure is unnecessary.

UUI is another common type of UI in this patient population, and its pathogenesis is related to POP.^[27] In this study, the incidence rate of UUI (2.3%, 7/309) in the postoperative period was lower than that in the preoperative period (6.4%, 21/329). Considering the addition of MUI cases, the postoperative rate (9.1%, 28/309) was also lower than the preoperative rate (15.5%, 51/329), but it was equivalent to that in the general population (11.7%). This finding may indicate that the surgical correction of POP is a major contributor to the decreased incidence of UUI and may be related to factors such as decreased friction, physical damage, and infection of the vaginal wall.^[28] Therefore, a short period of observation postoperatively for POP is necessary to prevent overtreatment of UI before using another management strategy, such as medicine therapy.

Finally, we would like to emphasize the importance of the urinary dynamic test. In this study, all types of UI, including MUI and UUI, were confirmed by urinary dynamic test pre- and postoperatively. The majority of patients in our cohort did not accept a simultaneous TVT-O procedure, and a minority of these patients continued to suffer from recurrent, persistent UI. Importantly, all patients were satisfied with the treatment experience, after receiving a detailed explanation of the surgery expectations and risks. Adequate examination and dissemination of relevant information, including risks and benefits, is necessary for POP patients preoperatively.^[29]

In summary, there are some relationships between POP repair and the occurrence and prognosis of different forms of UI. A full preoperative medical assessment and close postoperative follow-up are necessary. We suggested treating UI after the POP operation for patients with both conditions except for those with severe SUI. Due to the limitations of our clinical data and hospital-based retrospective study that could not be representative of the whole country, a prospective study with a larger sample is the best way to determine the correlation between UI and POP to guide evidence-based management.

Financial support and sponsorship

This work was supported by a grant from the Science and Technology Commission of Shanghai Municipality (No. 124119a500).

Conflicts of interest

There are no conflicts of interest.

REFERENCES

- Anderson KM, Davis K, Flynn BJ. Urinary incontinence and pelvic organ prolapse. *Med Clin North Am* 2015;99:405-16. doi: 10.1016/j.mena.
- Komesu YM, Schrader RM, Ketani LH, Rogers RG, Dunivan GC. Epidemiology of mixed, stress, and urgency urinary incontinence in middle-aged/older women: the importance of incontinence history. *Int Urogynecol J* 2016;27:763-72. doi: 10.1007/s00192-015-2888-1.
- Giarenis I, Robinson D. Prevention and management of pelvic organ prolapse. *F1000Prime Rep* 2014;6:77. doi: 10.12703/P6-77.
- Liu B, Wang L, Huang SS, Wu Q, Wu DL. Prevalence and risk factors of urinary incontinence among Chinese women in Shanghai. *Int J Clin Exp Med* 2014;7:686-96.
- Chang TC, Hsiao SM, Chen CH, Wu WY, Lin HH. Clinical outcomes and urodynamic effects of tailored transvaginal mesh surgery for pelvic organ prolapse. *Biomed Res Int* 2015;2015:191258. doi: 10.1155/2015/191258.
- Lensen EJ, Withagen MI, Kluivers KB, Milani AL, Vierhout ME. Urinary incontinence after surgery for pelvic organ prolapse. *Neurourol Urodyn* 2013;32:455-9. doi: 10.1002/nau.22327.
- Khan ZA, Thomas L, Emery SJ. Outcomes and complications of trans-vaginal mesh repair using the Prolift™ kit for pelvic organ prolapse at 4 years median follow-up in a tertiary referral centre. *Arch Gynecol Obstet* 2014;290:1151-7. doi: 10.1007/s00404-014-3316-3.
- Svenningsen R, Borstad E, Spydslaug AE, Sandvik L, Staff AC. Occult incontinence as predictor for postoperative stress urinary incontinence following pelvic organ prolapse surgery. *Int Urogynecol J* 2012;23:843-9. doi: 10.1007/s00192-012-1764-5.
- Lo TS, Bt Karim N, Nawawi EA, Wu PY, Nusee Z. Predictors for *de novo* stress urinary incontinence following extensive pelvic reconstructive surgery. *Int Urogynecol J* 2015;26:1313-9. doi: 10.1007/s00192-015-2685-x.
- Jundt K, Wagner S, von Bodungen V, Friese K, Peschers UM. Occult incontinence in women with pelvic organ prolapse – Does it matter? *Eur J Med Res* 2010;15:112-6. doi: 10.1186/2047-783X-15-3-112.
- Huang WC, Lin TY, Lau HH, Chen SS, Hsieh CH, Su TH, *et al.* Outcome of transvaginal pelvic reconstructive surgery with Prolift after a median of 2 years' follow-up. *Int Urogynecol J* 2011;22:197-203. doi: 10.1007/s00192-010-1259-1.
- Tommaselli GA, Di Carlo C, Formisano C, Fabozzi A, Nappi C. Medium-term and long-term outcomes following placement of midurethral slings for stress urinary incontinence: A systematic review and metaanalysis. *Int Urogynecol J* 2015;26:1253-68. doi: 10.1007/s00192-015-2645-5.
- Basu M, Wise B, Duckett J. Urgency resolution following prolapse surgery: Is voiding important? *Int Urogynecol J* 2013;24:1309-13. doi: 10.1007/s00192-012-2010-x.
- Wu CJ, Chuang FC, Chu LC, Kung FT, Huang KH, Wu MP, *et al.* Concomitant trocar-guided transvaginal mesh surgery with a midurethral sling in treating advanced pelvic organ prolapse associated with stress or occult stress urinary incontinence. *Taiwan J Obstet Gynecol* 2013;52:516-22. doi: 10.1016/j.
- King AB, Goldman HB. Stress incontinence surgery at the time of prolapse surgery: Mandatory or forbidden? *World J Urol* 2015;33:1257-62. doi: 10.1007/s00345-015-1591-7.
- Ennemoser S, Schönfeld M, von Bodungen V, Dian D, Friese K, Jundt K, *et al.* Clinical relevance of occult stress urinary incontinence (OSUI) following vaginal prolapse surgery: Long-term follow-up. *Int Urogynecol J* 2012;23:851-5. doi: 10.1007/s00192-012-1765-4.
- Vierhout ME, Stoutjesdijk J, Spruijt J. A comparison of preoperative and intraoperative evaluation of patients undergoing pelvic reconstructive surgery for pelvic organ prolapse using the pelvic organ prolapse quantification system. *Int Urogynecol J Pelvic Floor Dysfunct* 2006;17:46-9. doi: 10.1007/s00192-005-1347-9.
- Marinkovic SP, Stanton SL. Incontinence and voiding difficulties associated with prolapse. *J Urol* 2004;171:1021-8. doi: 10.1097/01.ju.0000111782.37383.e2.
- Haessler AL, Lin LL, Ho MH, Betson LH, Bhatia NN. Reevaluating occult incontinence. *Curr Opin Obstet Gynecol* 2005;17:535-40. doi: 10.1097/01.gco.0000183530.03481.64.
- Kammerer-Doak D, Rizk DE, Sorinola O, Agur W, Ismail S, Bazi T, *et al.* Mixed urinary incontinence: International urogynecological association research and development committee opinion. *Int Urogynecol J* 2014;25:1303-12. doi: 10.1007/s00192-014-2485-8.
- Chen YS, Cao Q, Ding JX, Hu CD, Feng WW, Hua KQ, *et al.* Midterm prospective comparison of vaginal repair with mesh vs. Prolift system devices for prolapse. *Eur J Obstet Gynecol Reprod Biol* 2012;164:221-6. doi: 10.1016/j.ejogrb.2012.06.015.
- Zhu L, Lang J, Sun Z, Ren C, Liu X, Li B, *et al.* Pelvic reconstruction

- with mesh for advanced pelvic organ prolapse: A new economic surgical method. *Menopause* 2011;18:328-32. doi: 10.1097/gme.0b013e3181f083ae.
23. Gibson W, Wagg A, Hunter KF. Urinary incontinence in older people. *Br J Hosp Med (Lond)* 2016;77:C27-32. doi: 10.12968/hmed.2016.77.2.C27.
24. Matsuoka PK, Pacetta AM, Baracat EC, Haddad JM. Should prophylactic anti-incontinence procedures be performed at the time of prolapse repair? Systematic review. *Int Urogynecol J* 2015;26:187-93. doi: 10.1007/s00192-014-2537-0.
25. Richardson DA, Bent AE, Ostergard DR. The effect of uterovaginal prolapse on urethrovaginal pressure dynamics. *Am J Obstet Gynecol* 1983;146:901-5. doi: 10.1016/0002-9378(83)90961-4.
26. Nguyen JN, Yazdany T, Burchette RJ. Urodynamic evaluation of urethral competency in women with posterior vaginal support defects. *Urology* 2007;69:87-90. doi: 10.1016/j.urology.2006.09.068.
27. Milsom I, Coyne KS, Nicholson S, Kvasz M, Chen CI, Wein AJ, *et al.* Global prevalence and economic burden of urgency urinary incontinence: A systematic review. *Eur Urol* 2014;65:79-95. doi: 10.1016/j.eururo.2013.08.031.
28. Rickey LM, Huang L, Rahn DD, Hsu Y, Litman HJ, Mueller ER, *et al.* Risk factors for urgency incontinence in women undergoing stress urinary incontinence surgery. *Adv Urol* 2013;2013:567375. doi: 10.1155/2013/567375.
29. Iancu G, Peltecu G. Predicting the outcome of mid-urethral tape surgery for stress urinary incontinence using preoperative urodynamics – A systematic review. *Chirurgia (Bucur)* 2014;109:359-68.

全盆底重建术前后尿失禁发生和治疗的研究

摘要

背景: 盆底重建术同时行抗尿失禁手术用于预防盆腔器官脱垂患者术后尿失禁仍然存在争议。本文研究目的是描述盆底重建术前、术后尿失禁发生的情况, 以及评估盆腔器官脱垂合并尿失禁的处理。

方法: 2009年6月至2015年2月我院共计329名患者行全盆底重建术纳入研究。这些患者分成两组: A组行Prolift重建术, 190人; B组行改良全盆底重建术, 139人。记录患者的手术方式及一般资料。卡方检验、*t*检验用于两个独立样本分析。

结果: 术前共有115人患尿失禁。平均随访时间46.5月, 20名(6.1%)患者失访。压力性尿失禁、急迫性尿失禁及混合性尿失禁的治愈率分别是51%(30/59)、80%(16/20)及48%(14/29)。盆底重建术后急迫性尿失禁的治愈率(80%, 16/20)高于压力性尿失禁(50.8%, 30/59; $P=0.035$), 而混合性尿失禁的治愈率最低(48%, 14/29)。术后有尿失禁症状患者的治愈率低于术前有症状的患者(9.1% [28/309] vs. 16.2% [50/309], $P=0.007$)。术后尿失禁的发生率在两组间没有明显差异($P>0.05$)。TVT-O治疗压力性尿失禁与未行TVT-O之间没有明显差异 (42.9% [6/14] vs. 53.3% [24/45]; $P=0.493$)。两种盆底重建术在治疗盆腔器官脱垂合并/不合并尿失禁没有明显差异 ($P>0.05$)。

结论: 尿失禁的发生和盆底手术没有明确关系。抗尿失禁治疗应在盆底重建术后再进行。