OBJECTIVE To estimate the rates of urinary tract injury after benign gynecologic surgery. To explore the role of routine intraoperative cystoscopy at benign gynecologic surgery.

DATA SOURCES We conducted a systematic MEDLINE search for urinary tract injuries at gynecologic surgery for the period from November 1998 to May 2004 and combined this with a previous systematic review performed in the same fashion for the period from January 1966 to October 1998.

METHODS OF STUDY SELECTION There were 47 studies that fit our inclusion criteria: 29 that did not use routine intraoperative cystoscopy, 17 that used routine intraoperative cystoscopy, and 1 that reported the frequency of urinary tract injury separately, with and without routine intraoperative cystoscopy. We determined the crude and fitted ureteric and bladder injury rates for each surgery type from the studies where routine intraoperative cystoscopy was not performed and then from the studies where routine intraoperative cystoscopy was performed.

TABULATION, INTEGRATION, AND RESULTS From studies without routine cystoscopy, combined ureter and bladder injury rates varied according to the complexity of the surgery, ranging from less than 1 injury per 1000 for subtotal hysterectomy with or without bilateral salpingo-oophorectomy to as many as 13 injuries per 1000 surgeries for laparoscopic hysterectomy with or without bilateral salpingo-oophorectomy and for other gynecologic and urogynecologic surgeries. Injury rates were higher when routine intraoperative cystoscopy was used, but the confidence intervals were wider.

CONCLUSION The reasons for higher injury detection rates when routine cystoscopy was performed are unclear. Further study is needed to identify the scenarios where routine cystoscopy is warranted after major gynecologic surgery.
2. EAU Guidelines on iatrogenic trauma

**Author(s):** Summerton D.J.; Kitrey N.D.; Lumen N.; Serafetinidis E.; Djakovic N.
**Source:** European Urology; Oct 2012; vol. 62 (no. 4); p. 628-639
**Publication Date:** Oct 2012
**Publication Type(s):** Article
**PubMedID:** 22717550
**Available at:** [https://www.europeanurology.com/article/S0302-2838(12)00642-2/fulltext](https://www.europeanurology.com/article/S0302-2838(12)00642-2/fulltext)

**Abstract:** Context: The European Association of Urology (EAU) Trauma Guidelines Panel presents an updated iatrogenic trauma section of their guidelines. Iatrogenic injuries are known complications of surgery to the urinary tract. Timely and adequate intervention is key to their management.

Objective: To assess the optimal evaluation and management of iatrogenic injuries and present an update of the iatrogenic section of the EAU Trauma Guidelines. Evidence acquisition: A systematic search of the literature was conducted, consulting Medline and the Cochrane Register of Systematic reviews. No time limitations were applied, although the focus was on more recent publications. Evidence synthesis: The expert panel developed statements and recommendations. Statements were rated according to their level of evidence, and recommendations received a grade following a rating system modified from the Oxford Centre for Evidence-based Medicine. Currently, only limited high-powered studies are available addressing iatrogenic injuries. Because the reporting of complications or sequelae of interventions is now increasingly becoming a standard requirement, this situation will likely change in the future. Conclusions: This section of the trauma guidelines presents an updated overview of the treatment of iatrogenic trauma that will be incorporated in the trauma guidelines available at the EAU Web site (http://www. uroweb.org/guidelines/online-guidelines/ ). © 2012 European Association of Urology.

**Database:** EMBASE

3. The actual incidence of bladder perforation following transurethral bladder surgery: Editorial comment

**Author(s):** Balbay M.D.; Akbulut Z.; Cimentepe E.; Unsal A.; Bayrak O.; Koc A.
**Source:** Journal of Urology; Dec 2005; vol. 174 (no. 6); p. 2260-2262
**Publication Date:** Dec 2005
**Publication Type(s):** Review
**PubMedID:** 16280794

**Abstract:** Purpose: In this prospective study we evaluated the incidence of bladder perforation after transurethral bladder tumor resection. Materials and Methods: A total of 36 patients (33 male, 3 female, mean age +/- SD 65.6 +/- 11.43 [range 26 to 81]) with a solid mass in the bladder (mean 20.3 +/- 8.7 mm, range 5 to 40) were included in the study. Transurethral resections were performed with a 24Fr resectoscope. After the procedure in 18Fr Foley catheter was inserted into the bladder and 400 ml of 1/4 saline diluted contrast solution was instilled under gravity from 60 cm above the bladder. Complete filling and post-drainage radiographs were taken and examined for any evidence of extravasation. Regular evaluations with cystoscopy and ultrasound/computerized tomography were done to detect possible tumor recurrence and perivesical seeding. Results: Histopathological examination of the tumors showed transitional cell carcinoma in 35 patients and chronic eosinophilic cystitis in 1. Review of the cystograms revealed various degrees of extraperitoneal contrast extravasation around the resected area in 21 patients (58.3%). The only statistically significant difference between patients with and without extravasation was in tumor size (logistic stepwise
regression \( p = 0.030, \) among factors tested including patient age and localization, number of foci, tumor grade and stage. No apparent clinical problems requiring medical or surgical intervention other than urethral catheterization developed and no evidence of extravesical tumor seeding as per ultrasound and/or computerized tomography was seen during a mean follow-up 21.9 months (range 7 to 40). Conclusions: The extravasation of urine (asymptomatic perforation) after transurethral bladder tumor resection may occur much more frequently than believed or reported. It seems that this extravasation does not impose a significant risk of extravesical tumor seeding. Copyright © 2005 by American Urological Association.

**Database:** EMBASE


**Author(s):** Vakili, Babak; Chesson, Ralph R; Kyle, Brooke L; Shobeiri, S Abbas; Echols, Karolyn T; Gist, Richard; Zheng, Yong T; Nolan, Thomas E

**Source:** American journal of obstetrics and gynecology; May 2005; vol. 192 (no. 5); p. 1599-1604

**Publication Date:** May 2005

**Publication Type(s):** Multicenter Study Journal Article

**PubMedID:** 15902164

**Abstract:** OBJECTIVE To evaluate the incidence of urinary tract injury due to hysterectomy for benign disease. STUDY DESIGN Patients were enrolled prospectively from 3 sites. All patients undergoing abdominal, vaginal, or laparoscopic hysterectomy for benign disease underwent diagnostic cystourethroscopy. RESULTS Four hundred seventy-one patients participated. Ninety-six percent (24/25) of urinary tract injuries were detected intraoperatively. There were 8 cases of ureteral injury (1.7%) and 17 cases of bladder injury (3.6%). Ureteral injury was associated with concurrent prolapse surgery (7.3% vs 1.2%; \( P = .025 \)). Bladder injury was associated with concurrent anti-incontinence procedures (12.5% vs 3.1%; \( P = .049 \)). Abdominal hysterectomy was associated with a higher incidence of ureteral injury (2.2% vs 1.2%) but this was not significant. Only 12.5% of ureteral injuries and 35.3% of bladder injuries were detected before cystoscopy. CONCLUSION The incidence of urinary tract injury during hysterectomy is 4.8%. Surgery for prolapse or incontinence increases the risk. Routine use of cystoscopy during hysterectomy should be considered.

**Database:** Medline
5. Urinary tract injury during hysterectomy based on universal cystoscopy.

Author(s): Ibeanu, Okechukwu A; Chesson, Ralph R; Echols, Karolynn T; Nieves, Mily; Busangu, Fatuma; Nolan, Thomas E

Source: Obstetrics and gynecology; Jan 2009; vol. 113 (no. 1); p. 6-10

Publication Date: Jan 2009
Publication Type(s): Journal Article
PubMedID: 19104353
Available at Obstetrics and gynecology - from Ovid (Journals @ Ovid) - Remote Access

Abstract: OBJECTIVE: To estimate the incidence and location of injury to the urinary tract during hysterectomy for benign gynecologic disease. METHOD: This was a prospective clinical study in an academic environment performed at three sites. Diagnostic cystourethroscopy was performed on all patients after hysterectomy for benign disease. RESULT: Eight hundred thirty-nine patients were enrolled. The incidence of urinary tract injury associated with hysterectomy for benign disease was 4.3% (39 of 839 cases). The rate of bladder injury was 2.9% (24 of 839 cases), and rate of ureteral injury was 1.8% (15 of 839 cases). There were three cases of simultaneous bladder and ureteral injuries, resulting in a cumulative injury rate of 4.3%. The injury detection rate using intraoperative diagnostic cystoscopy was 97.4% (817 of 839 cases). The most common site of injury to the ureter was at the junction of the ureter and the uterine artery in 80% (12 of 15 cases) of ureteral injuries. Transection and kinking injuries were the most frequent type of injury. There were 21 cases of subnormal dye efflux from the ureteral orifices, with no subsequent injury detected on further evaluation. CONCLUSION: Ureteral injury occurred most commonly at the level of the uterine artery, and transection and kinking injuries were most frequent. Diminished dye efflux from ureteral orifices was not associated with injury. LEVEL OF EVIDENCE: III.
6. Iatrogenic bladder injuries during obstetric and gynecological procedures.

**Author(s):** Pandyan, G V Soundra; Zahrani, Ahmed B; Awon, Abdul-Rehman; Al-Rashid, Mohammed; Al-Assiri, Mana; Dahnoun, Mohamed

**Source:** Saudi medical journal; Jan 2007; vol. 28 (no. 1); p. 73-76

**Publication Date:** Jan 2007

**Publication Type(s):** Journal Article

**PubMedID:** 17206294

**Abstract:**

**OBJECTIVE** To review the frequency of iatrogenic bladder injuries (IBI) occurring during obstetric and gynecological (OBG) procedures and we report a single center experience with these emergency urological consultations and interventions and analyze their outcomes and correlate them with the present day trends.

**METHODS** We reviewed retrospectively the relevant data of all IBI during various OBG procedures from the Medical Records of Abha Maternity Hospital, the OBG wing of Assir Central Hospital, Abha, Saudi Arabia over a period of 4.5 years (September 2000 to February 2005). Various relevant factors of the injuries were studied with their final outcome.

**RESULTS** Out of the 8,684 OBG procedures carried out during this period there were 20 occasions of IBI directly related, with an overall incidence of 0.23%. The majority of injuries were seen during obstetric procedures (85%) and 15% during gynecological procedures. Notably 90% of them were recognized intraoperatively and managed. Concomitant ureteric injury was noticed in 20% of the cases. Endourological and surgical options were both used in the management. Overall outcomes were very satisfactory, unrelated to the site, type or other associated injuries.

**CONCLUSION** The bladder is the most commonly injured organ during OBG interventions. Prompt recognition and repair of injuries should be the main goal. Gynecologists should be able to do at least a minimum diagnostic cystoscopy in emergency situations. It is well established that this can lessen, missing iatrogenic urinary tract injuries in this era of increasing gamut of gynecologic surgical and laparoscopic procedures.

**Database:** Medline

7. Incidence and treatment of bladder perforation following bladder biopsy.

**Author(s):** Sigler, L J; Addonizio, J C; Fernandez, R; Schutte, H

**Source:** Urology; Jul 1985; vol. 26 (no. 1); p. 10-11

**Publication Date:** Jul 1985

**Publication Type(s):** Journal Article

**PubMedID:** 4012969

**Abstract:** In 36 per cent of 25 patients who underwent bladder biopsies, post-biopsy cystogram revealed extravasation of dye. These patients were treated with twenty-four-hour catheter drainage and antibiotics without complications developing.

**Database:** Medline
8. What can we learn from large data sets? An analysis of 19,000 retropubic tapes.

Author(s): Bach, Fiona; Toots-Hobson, Philip

Source: International urogynecology journal; Apr 2017; vol. 28 (no. 4); p. 629-636

Publication Date: Apr 2017

Publication Type(s): Multicenter Study Journal Article

PubMedID: 27738733

Available at International urogynecology journal - from ProQuest (Hospital Premium Collection) - NHS Version

Abstract: INTRODUCTION AND HYPOTHESIS Retropubic tapes are successful for treating stress urinary incontinence (SUI), but there is controversy around risk profiles. The British Society of Urogynaecology (BSUG) database allows analysis of surgery for patient safety, surveillance and benchmarking. Objectives of this study were to establish success and complication rates in routine practice, determine complication rates for trainees and consultants, explore reasons for outliers and assess perforation as a surrogacy of quality.

METHODS Approval was obtained from BSUG to use data on retropubic tapes. Data was anonymised, and patients gave prior consent. Analysis was done using the χ² test, and a funnel plot of bladder perforation rate was calculated.

RESULTS There were 18,763 procedures recorded: 14,156 were performed by consultants, 64 by associate specialists (64), 1140 by subspecialty trainees, 2549 by registrars, 201 staff grades and 377 other. We found a 3.5 % bladder perforation rate, which was statistically higher for trainees than consultants (p < 0.05). The rate of other "standard" complications were low: 95.8 % of patients felt better on the Patient Global Impression of Improvement of Incontinence (PGI) scale. There was a significant difference (p < 0.05) in PGI and SUI outcome between patients who did and did not experience perforation.

CONCLUSIONS Success rates with retropubic tapes are high, with low complication rates. Bladder perforation in "real", not "trial" data was 3.5 %, which is lower than reported by the Cochrane review (4.5 %). Trainees have a higher perforation rate (p < 0.05) because of learning curves. Outliers are easily identified, and reasons for this should be explored, including proportion of trainees doing the surgery. This analysis confirms that bladder perforation is a valid surrogate for quality with a small but measurable difference. We have a responsibility to analyse data to improve patient care and encourage colleagues to support the International Urogynaecology Association (IUGA) database initiative.

Database: Medline

**Author(s):** Adelman, Marisa R; Bardsley, Tyler R; Sharp, Howard T

**Source:** Journal of minimally invasive gynecology; 2014; vol. 21 (no. 4); p. 558-566

**Publication Date:** 2014

**Publication Type(s):** Research Support, N.i.h., Extramural Journal Article Review

**PubMedID:** 24462595

**Abstract:** The aim of this review was to estimate the incidence of urinary tract injuries associated with laparoscopic hysterectomy and describe the long-term sequelae of these injuries and the impact of early recognition. Studies were identified by searching the PubMed database, spanning the last 10 years. The key words "ureter" or "ureteral" or "urethra" or "urethral" or "bladder" or "urinary tract" and "injury" and "laparoscopy" or "robotic" and "gynecology" were used. Additionally, a separate search was done for "routine cystoscopy" and "gynecology." The inclusion criteria were published articles of original research referring to urologic injuries occurring during either laparoscopic or robotic surgery for gynecologic indications. Only English language articles from the past 10 years were included. Studies with less than 100 patients and no injuries reported were excluded. No robotic series met these criteria. A primary search of the database yielded 104 articles, and secondary cross-reference yielded 6 articles. After reviewing the abstracts, 40 articles met inclusion criteria and were reviewed in their entirety. Of those 40 articles, 3 were excluded because of an inability to extract urinary tract injuries from total injuries. Statistical analysis was performed using a generalized linear mixed effects model. The overall urinary tract injury rate for laparoscopic hysterectomy was 0.73%. The bladder injury rate ranged from 0.05% to 0.66% across procedure types, and the ureteral injury rate ranged from 0.02% to 0.4% across procedure type. In contrast to earlier publications, which cited unacceptably high urinary tract injury rates, laparoscopic hysterectomy appears to be safe regarding the bladder and ureter.

**Database:** Medline

11. Incidence of bladder perforation when utilizing a bladder retractor during retropubic midurethral sling placement

**Author(s):** Wood S.C.; Patton S.P.; Veronikis D.K.

**Source:** Female Pelvic Medicine and Reconstructive Surgery; 2013; vol. 19

**Publication Date:** 2013

**Publication Type(s):** Conference Abstract

**Abstract:** Objectives: To describe a novel instrument and technique to decrease bladder perforation during retropubic midurethral sling placement. Methods: Retropubic midurethral slings are a surgical treatment for stress urinary incontinence with particular advantages over transobturator slings in patients with intrinsic sphincteric deficiency. However, the incidence of bladder perforation at 5-7% has directed some surgeons to favor the transobturator approach. The aim of this study was to examine the incidence of bladder perforation when utilizing a bladder retractor during retropubic sling placement. Following approval from the Mercy Hospital St. Louis Institutional Review Board, a retrospective chart review of a single urogynecologic surgeon’s electronic medical record was performed utilizing a search of the CPT code 57288 from January 2007 through December 2008. All retropubic slings were included, and all transobturator slings were excluded. All slings were performed in a bottom-to-top route. All sling procedures utilized a bladder retractor, which was designed by the operating surgeon, to act as a guide when placing the sling trocar. Every patient had cystoscopy performed with a 30 degree cystoscope with complete examination of the bladder.
following sling trocar placement. Each operative report was read in its entirety to elicit any history of perforation. Prior operative reports from anti-incontinence surgery and other pelvic surgeries were also reviewed. Results: During the study period, 395 patients underwent retropubic sling placement. Of these 395 patients, 1 (0.25%) patient had a bladder perforation; this patient had a history of a prior pubovaginal sling that had previously been removed. This is a significant decrease when compared to a reported perforation rate of 5% in the literature. Review of previous operative reports and documentation revealed 61 prior anti-incontinence surgeries, including midurethral sling, retropubic urethropexy, pubovaginal sling, and needle suspension procedures. 10/61 (16%) patients had documentation of two or more prior anti-incontinence surgeries. 175 patients underwent concomitant vaginal reconstructive surgery with an additional 146 undergoing vaginal hysterectomy in addition to vaginal repairs. 18 patients had a prior mesh sling removed at the time of retropubic sling placement.

Conclusions: The superiority of the retropubic midurethral sling in patients with intrinsic sphincteric deficiency has been described; however concern of bladder perforation limits its use amongst gynecologic surgeons. This instrument utilized to retract the bladder can significantly decrease the incidence of bladder perforation and intra-operative complications in primary as well as repeat sling procedures.

Database: EMBASE

11. Perioperative complications and reoperations after incontinence and prolapse surgeries using prosthetic implants

Author(s): Nguyen J.N.; Jakus-Waldman S.M.; Walter A.J.; White T.; Menefee S.A.

Source: Obstetrics and Gynecology; Mar 2012; vol. 119 (no. 3); p. 539-546

Publication Date: Mar 2012

Publication Type(s): Article

PubMedID: 22353951

Available at Obstetrics and gynecology - from Ovid (Journals @ Ovid) - Remote Access

Abstract: OBJECTIVE: To estimate the perioperative complication and reoperation rates associated with slings and prolapse repairs using mesh and biologic grafts. METHODS: Analysis of all female members of Kaiser Permanente Southern and Northern California and Hawaii who underwent sling procedures or pelvic organ prolapse surgeries using implanted grafts or mesh between September 1, 2008, and May 31, 2010. Physicians’ Current Procedural Terminology Coding System, 4th edition, International Classification of Diseases, 9th Revision, and surgical implant logs were used to identify the procedures performed, implants used, perioperative complications, and readmissions and reoperations within 12 months of the index surgery. RESULTS: During the 21-month period, 4,142 women (mean age 57 years [standard deviation 12.2], median parity 3 [interquartile range 1-4], median body mass index 28 [interquartile range 25-32]) underwent 3,747 (71%) slings and 1,508 (29%) prolapse procedures using implanted prostheses. Trocar-related bladder perforations (51 of 3,747 [1.4%]) occurred more commonly than urethral perforations (2 of 3,747 [0.05%]) in sling procedures (P<.001). There were no trocar-related injuries for prolapse repair kit procedures. Mesh-related reoperations after sling procedures were performed for voiding dysfunction or urinary retention (49 of 3,747 [1.3%]), vaginal mesh erosion (30 of 3,747 [0.8%]), and urethral erosion (3 of 3,747 [0.08%]). Reoperations after prolapse procedures were performed more often for vaginal mesh erosion (29 of 858 [3%]) than for biologic graft infection (2 of 650 [0.3%]; P=.01) and were performed more commonly after anterior (19 of 307 [6%]) compared with apical (9 of 487 [2%]) or posterior vaginal mesh repairs (1 of 64 [2%]; P=.018). CONCLUSION: Reoperations for mesh-related complications occurred most often after transvaginal mesh placement in the anterior vagina. LEVEL OF EVIDENCE: III. © 2012 by The American College of Obstetricians and Gynecologists. Published by Lippincott Williams & Wilkins.

Author(s): Pushkar D.Y.; Godunov B.N.; Gvozdev M.; Kasyan G.R.

Source: International Journal of Gynecology and Obstetrics; Apr 2011; vol. 113 (no. 1); p. 54-57

Publication Date: Apr 2011

Publication Type(s): Article

PubMedID: 21315346

Available at International journal of gynaecology and obstetrics: the official organ of the International Federation of Gynaecology and Obstetrics - from Wiley Online Library Science, Technology and Medicine Collection 2017

Abstract:Objective: To compare the incidence of complications associated with the use of retropubic tension-free vaginal tape (TVT) and transobturator tension-free vaginal tape (TVT-O) for the management of stress urinary incontinence (SUI). Methods: In a cross-sectional study, 1081 patients were treated for SUI via mid-urethral slings, and the outcomes of those treated via TVT and those treated via TVT-O were compared. Patients who suffered from recurrent or mixed urinary incontinence were excluded. Results: Group 1 included patients treated via TVT (n = 207) and group 2 included those treated with TVT-O (n = 570). There was a higher incidence of bladder perforation (5.4% versus 0.6%; P = 0.001) and hematoma formation (9.1% versus 1.5%; P = 0.001) in group 1 than in group 2. Compared with group 1, there was higher incidence of vaginal wall perforation in group 2 (0.0% versus 3.8%, P = 0.044). The rate of intraoperative complications was not related to patient age, body mass index, or parity. Of the patients who did not leak urine during a cough test 1 month after surgery, 90.9% still had a negative cough test at the long-term follow-up. Conclusion: TVT-O was superior to TVT with regard to the incidence of bladder perforation and hematoma formation, but it resulted in more vaginal wall injuries. © 2011 Elsevier Ireland Ltd.

Database: EMBASE

**Author(s):** George, S; Begum, R; Thomas-Philip, A; Thirumalakumar, L; Sorinola, O

**Source:** Journal of obstetrics and gynaecology : the journal of the Institute of Obstetrics and Gynaecology; Apr 2010; vol. 30 (no. 3); p. 281-284

**Publication Date:** Apr 2010

**Publication Type(s):** Comparative Study Journal Article

**PubMedID:** 20373932

**Abstract:** Tension-free vaginal tape (TVT) and transobturator tape (TOT) are relatively new, minimally invasive procedures for the management of stress incontinence. All patients with urodynamic stress incontinence who underwent a TVT procedure from April 2003 to March 2005 (n = 76) were compared with all patients who had TOT from September 2004 to August 2006 (n = 73). The overall success rate for TVT was 97.4% and for TOT was 94.5%. Success was defined as no leakage, as reported by the patient at follow-up. Voiding difficulty in the TVT group was 9.2% for 1 week's duration, while in the TOT group, it was 4.1% and 1.4%, respectively. Bladder perforation was 1.3% in the TVT group but was 0 (none) in the TOT group. Both TOT and TVT have good success rates with minimal complications, although bladder perforation has a higher incidence rate in the TVT group.

**Database:** Medline

14. Lower urinary tract injury during mid-urethral sling

**Author(s):** Dwyer P.; Stav K.; Lim Y.; Rosamilia A.

**Source:** International Journal of Gynecology and Obstetrics; Oct 2009; vol. 107

**Publication Date:** Oct 2009

**Publication Type(s):** Conference Abstract


**Abstract:** Purpose: To determine incidence and risk factors for bladder and urethral injury during mid-urethral sling surgery for stress urinary incontinence. Materials and Methods: 1136 consecutive women had a midurethral slings (874 retropubic, 262 transobturator) and routine intraoperative cystoscopy at our institution between 1999 and 2007 and were follow-up to determine the clinical outcome. Eight hundred and seventy four slings (77%) were retropubic (TVT 87%, Advantage sling 11%, SPARC 2%) and 262 (23%) were transobturator slings (Monarc 91%, TVT-O 9%). Statistical analysis was performed using Chi-Square tests, independent t-tests and ANOVA tests to compare the 2 groups (patients with and without bladder perforation) by baseline characteristics and major risk factors. Results: The incidence of trocar injury to the bladder during retropubic sling was 3.8% (33/874) compared to 0.4% (1/262) with transobturator approach. (p < 0.0001). Thirty two (94%) of the perforations involved inexperienced surgeons (fellows or registrars) whose experience varied but was less than 50 slings (p < 0.0001). The perforation rate was similar in the various types of the retropubic slings (p = 0.32). Multivariate analysis revealed that the presence of rectocele (OR 6.2), performing the procedure under local anesthesia (OR 5.9), BMI< 30 (OR 5.6), previous Cesarean section (OR 3.7), and previous colposuspension (OR 3.2) are significant independent risk factors for perforation. Urethral injury was detected intraoperatively in 2 women (0.2%), both had retropubic slings. Conclusions: Our results indicate that previous Cesarean section, colposuspension, BMI< 30, rectocele and local anesthesia are independent risk factors for bladder perforation during midurethral slings. This occurs mainly during a retropubic sling procedure and when the surgeon is inexperienced. Urethral injuries were uncommon occurring in 0.2% of women having retropubic...
slings. These injuries have also been described in transobturator slings, a number of women with latent urethral injuries following these procedures have been referred although there were none in this case series. Complete endoscopic visualization of the lower urinary tract with cystourethroscopy is necessary following sling placement.

**Database:** EMBASE

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**15. Evaluation of the incidence of bladder perforation after transurethral bladder tumor resection in a residency setting.**

**Author(s):** El Hayek, Omar R; Coelho, Rafael Ferreira; Dall’oglio, Marcos Francisco; Murta, Cláudio Bovolenta; Ribeiro Filho, Leopoldo Alves; Nunes, Ricardo Luís Vita; Chade, Daher; Menezes, Marcos; Srougi, Miguel

**Source:** Journal of endourology; Jul 2009; vol. 23 (no. 7); p. 1183-1186

**Publication Date:** Jul 2009

**Publication Type(s):** Clinical Trial Journal Article

**PubMedID:** 19530900

**Abstract:**

**PURPOSE** To evaluate prospectively the actual bladder perforation incidence during transurethral resection of bladder tumor (TURB) performed by residents and to identify possible predisposing factors to such condition.

**PATIENTS AND METHODS** Thirty-four patients with bladder tumor were submitted to TURB in our academic institution in April 2006, and were prospectively studied. Procedures were all done by senior residents under an attending direct supervision. All patients had a cystograms performed after the procedure by the injection of 400 mL of saline-diluted contrast solution with low-pressure infusion through the Foley catheter. The cystograms were evaluated blindly by a single radiologist. All patients were examined by cystoscopy and/or CT every 3 months for the first 2 years postoperatively.

**RESULT** The cystogram showed contrast leaking compatible with bladder perforation in 17 (50%) cases. None of the perforations were recognized intraoperatively by the surgeon. All perforations were extraperitoneal and managed conservatively. There was no significant correlation between the incidence of bladder perforation and the patient age (p = 0.508), the tumor stage (p = 0.998), the tumor grade (p = 0.833), the number of lesions (p = 0.394), and the tumor size (p = 0.651). The only factor that had impact on the development of bladder perforation was tumor localization at the bottom of the bladder (p = 0.035; OR, 6750; 95% CI, 1.14, 39.8).

**CONCLUSION** Asymptomatic perforations of the bladder wall occur very frequently after a TURB procedure performed by residents in training and, most of the time, are not noticed by the surgeon. Localization of the tumor at bladder dome was the only factor that negatively influenced perforation rates.

**Database:** Medline
16. Risk factors for trocar injury to the bladder during mid urethral sling procedures.

Author(s): Stav, Kobi; Dwyer, Peter L; Rosamilia, Anna; Schierlitz, Lore; Lim, Yik N; Lee, Joe

Source: The Journal of urology; Jul 2009; vol. 182 (no. 1); p. 174-179

Publication Date: Jul 2009

Publication Type(s): Comparative Study Journal Article

PubMedID: 19450824

Abstract: PURPOSE: We determined the incidence of and risk factors for bladder injury during mid urethral sling procedures for stress urinary incontinence. MATERIALS AND METHODS: At our institution, 1,136 consecutive women underwent a mid urethral sling procedure (retropubic in 874 and transobturator in 262) and routine intraoperative cystoscopy between 1999 and 2007, and were followed to determine the clinical outcome. Statistical analysis was performed using the chi-square and independent t tests, and ANOVA to compare patients with and without bladder perforation by baseline characteristics and major risk factors. A total of 45 variables were included in analysis. Multivariate analysis to predict events was done with logistic regression models with stepwise forward selection. RESULTS: Bladder injury was noted in 34 patients (3%) and all except 1 were during a retropubic sling procedure (p <0.0001). Of the perforations 32 (94%) were associated with an inexperienced surgeon (p <0.0001). Multivariate analysis revealed that rectocele (OR 6.2), local anesthesia (OR 5.9), body mass index less than 30 kg/m(2) (OR 5.6), previous Cesarean section (OR 3.7) and previous colposuspension (OR 3.2) were significant independent risk factors for perforation. Urethral injury was detected intraoperatively in 2 women (0.2%) with a retropubic sling.

CONCLUSIONS: Our results indicate that previous Cesarean section, colposuspension, body mass index less than 30 kg/m(2), rectocele and local anesthesia are independent risk factors for bladder perforation during mid urethral sling procedures. This occurs mainly during a retropubic sling procedure and when the surgeon is inexperienced.

Database: Medline

17. Bladder perforation during tension-free vaginal tape surgery: Does it matter?

Author(s): Gold R.S.; Groutz A.; Pauzner D.; Lessing J.; Gordon D.

Source: Journal of Reproductive Medicine for the Obstetrician and Gynecologist; Jul 2007; vol. 52 (no. 7); p. 616-618

Publication Date: Jul 2007

Publication Type(s): Article

PubMedID: 17847759

Abstract: OBJECTIVE: To analyze the incidence, possible risk factors, preoperative morbidity and outcome results in tension-free vaginal tape (TVT) cases complicated by lower urinary tract injury in a large, heterogeneous, consecutive group of women. STUDY DESIGN: Four hundred sixty consecutive women who underwent TVT surgery for correction of uroodynamically proven stress urinary incontinence were enrolled prospectively. All the procedures were performed at 1 center by 3 experienced surgeons. RESULTS: In this series, 3.9% cases of lower urinary tract injury occurred. Most of the injuries occurred during the learning curve. TVT-related urinary tract injury was not associated with increased perioperative morbidity. The cure rates were similar with and without injury. De novo urge and persistent urge incontinence were slightly more common in patients with bladder perforation. CONCLUSION: Lower urinary tract injury during the TVT procedure is directly related to the inexperience of the surgeon. However, TVT-related lower urinary tract injury does not appear to affect medium-term outcome results. © Journal of Reproductive Medicine, Inc.

Database: EMBAS
18. Bladder perforation during tension-free vaginal tape procedures: analysis of learning curve and risk factors.

Author(s): McLennan, Mary T; Melick, Clifford F

Source: Obstetrics and gynecology; Nov 2005; vol. 106 (no. 5); p. 1000-1004

Publication Date: Nov 2005

Publication Type(s): Journal Article

PubMedID: 16260518

Available at Obstetrics and gynecology - from Ovid (LWW Total Access Collection 2015 - Q1 with Neurology)

Abstract: OBJECTIVE To estimate whether rates of bladder perforation decrease with increasing surgical experience.

METHODS We performed a review of all patients undergoing a tension-free vaginal tape procedure performed by senior resident physicians under the guidance of a single surgeon. Physician experience was assessed by sequentially assigning case numbers to each procedure for each resident. For analysis of learning curve, cases were grouped in fives (ie, first five representing cases 1 to 5, second five cases 6 to 10).

RESULTS Twenty-three residents performed 278 procedures. The median number of cases performed was 13 (range 3 - 22); mean number was 12.1 (sd = +/- 5.6). The rate of perforation was 34.2% (95/278, 95% confidence interval 28.8-39.9%). Age and weight were significantly associated with perforation. The cystotomy group was, on average 4.5 years younger (P = .007) and 7.86 kg (17.3 lb) lighter (P < .001). Rate of injury in the first five series was 40.9%, 30.7% in second series of five, and 25.9% in the third series of five and was statistically significant (linear-by-linear association chi(2) = 4.286, df = 1, P = .038). The relationship between the incidence of cystotomy and the cumulative number of cases performed was inversely correlated. As the number of cases a resident completed increased, there was a slight tendency for cystotomy to decrease (P.033). On cystoscopic examination, residents missed 35 of the 95 injuries (37%, 95% confidence interval 27.8-46.9%).

CONCLUSION A learning curve exists for tension-free vaginal tape procedures. Many injuries are missed on initial resident cystoscopic inspection, highlighting the need for comprehensive cystoscopic training during residency.

LEVEL OF EVIDENCEII-3.

Database: Medline
19. A nationwide analysis of complications associated with the tension-free vaginal tape (TVT) procedure

Author(s): Kuva N.; Nilsson C.G.

Source: Acta Obstetricia et Gynecologica Scandinavica; 2002; vol. 81 (no. 1); p. 72-77

Publication Date: 2002

Publication Type(s): Article

PubMedID: 11942891

Available at Acta Obstetricia et Gynecologica Scandinavica - from Wiley Online Library Science, Technology and Medicine Collection 2017

Abstract: Background. To evaluate the therapy-associated morbidity of all patients who underwent a TVT operation in Finland by the end of the year 1999. Methods. Questionnaires on the number of operations and on the number of different complications were sent to 38 hospitals where TVT operations had been independently performed after an obligatory TVT training period. The primary TVT training center and a hospital, which did not use the standard TVT equipment, were excluded. Results. Among the 38 hospitals there were four university, 13 central and 21 local hospitals. The total number of operations was 1455. The incidence of bladder perforation was 38/1000, of intra-operative blood loss over 200 ml 19/1000, of major vessel injury 0.7/1000, of nerve injury 0.7/1000, of vaginal hematoma 0.7/1000 and of urethral lesion 0.7/1000. The incidence of minor voiding difficulty was 76/1000, that of urinary tract infection 41/1000, of complete postoperative urinary retention 23/1000, of retropubic hematoma 19/1000, of wound infection 8/1000 and of vaginal defect healing 7/1000. No case of tape rejection or life threatening complication occurred and the incidence of complications requiring laparotomy was 3.4/1000. The ratio of number of complications to TVT operations performed did not vary significantly between different hospital types (p>0.05). Conclusion. The TVT procedure is a safe method for the treatment of stress urinary incontinence provided that appropriate training is offered.

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