

Risk of postoperative urinary retention after laparoscopic (TAPP) or endoscopic (TEP) inguinal hernia repair

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Received: 30 April 2012 / Accepted: 31 May 2012 / Published online: 19 July 2012
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To the Editor,

I praise Bittner and colleagues for offering this important updated version of guidelines for laparoscopic transabdominal preperitoneal (TAPP) and endoscopic total extraperitoneal (TEP) treatment of inguinal hernia [1]. However, I think the topic of the potential risk for postoperative urinary retention (POUR) after inguinal herniorrhaphy requires further discussion.

In Chap. 2, J. F. Kukleta recommends that for TAPP inguinal hernia repair “grade D: the patient empty his/her bladder before the operation” and that preoperative urine catheterization should be considered if for “grade D: you expect technical difficulties or an extended operating time” (p. 2782). Furthermore, he also mentions that for “grade D: restrictive per- and postoperative intravenous fluid administration reduces the risk of postoperative urinary retention.” These recommendations are the same as those stated for TEP repairs by P. Chowbey et al. in Chap. 3, p. 2790.

In Chap. 11, specifically dedicated to urogenital complications, R. J. Fitzgibbons proposes only that for “grade C: intra- and postoperative intravenous fluid administration should be restricted to no more than 500 cc” (p. 2827). Finally, the authors briefly mention other accepted contributing factors for the development of POUR including male gender, age older than 50 years, preexisting benign prostatic hyperplasia, type of surgery, type of anesthesia, and use of opiates for analgesia.

Regrettably, they do not mention certain risk factors specifically related to the surgical technique that should

warrant further consideration and possibly additional recommendation. This is even more relevant because these guidelines are aimed at helping general surgeons who do not necessarily have a sufficient level of expertise to achieve the outstanding results with the very low incidence rates of POUR experienced by Bittner et al. [2] in a large series of 8,050 TAPP repairs.

For instance, tacks, still commonly used for mesh fixation by most general surgeons, seem to be associated with a significant risk of POUR, with incidences reaching 8–27.3%, as suggested in two recent retrospective studies [3, 4]. Interestingly, a look at the “no mesh fixation” cases in the series of Garg et al. [4] shows that although the mean age of the patients was 10 years younger than in the “mesh fixation” group, age difference alone cannot explain the considerable drop in the POUR risk to 4.6%. These results are consistent with the findings of a previous small prospective study that demonstrated a significant discrepancy in POUR risks between no mesh fixation (5 %) and the use of tacks (35 %) [5]. In this series, five to eight tacks were commonly used, and the most likely explanation is that the more tacks used to anchor the prosthesis, the more likely the level of postoperative pain is to increase [6] and thus also the use of opiates, leading to urinary retention [7].

In comparison, when specifically examining fibrin glue for mesh fixation, Olmi et al. [8] denied any occurrence of POUR after 320 TAPP inguinal hernia repairs in 230 patients, as did Topart et al. [9] after the TEP approach used for 66 patients.

In a personal case series of 640 TEP inguinal hernia repairs and recently accepted for publication, we encountered only one case of POUR among 472 patients with a median age exceeding 46 years (0.2 %). The fact that this human biologic product (Tisseel/Tissucol) is absolutely nontraumatic for the abdominal wall is the main reason for

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such significant improvement, as illustrated by a markedly decreased level of postoperative pain [10].

I believe that even minor variations in the technique that generally would be overlooked by certain authors also may play a substantial role in the development of POUR. For instance, in most published series of TEP repairs, whenever the carbon dioxide (CO₂) insufflation pressure is mentioned, it generally is set at 12 mmHg. However, I routinely use a maximum pressure of 8 mmHg to minimize not only the incidence of subcutaneous emphysema but also the risk for the development of residual postoperative pneumoperitoneum. Indeed, as the extraperitoneal pressure increases, CO₂ may easily diffuse into the peritoneal cavity through a small peritoneal breach that easily would have passed unnoticed during the procedure. Such an event can be responsible for increased postoperative shoulder tip pain and use of narcotics [11].

Interestingly, in a series of patients who underwent radical prostatectomy, Bivalacqua et al. [12] demonstrated that free air under the diaphragm was persistently identified on the abdominal X-rays of those treated by the extraperitoneal approach, whereas it was present in 80 % of the laparoscopic cases.

In conclusion, I believe that the chapter on urogenital complications associated with laparoscopic or endoscopic hernia repair, particularly the section on urinary retention, may warrant further attention before the next updated guidelines for laparoscopic (TAPP) and endoscopic (TEP) treatment of inguinal hernia are published. Indeed, although often considered trivial, unrecognized POUR can potentially cause complications detrimental to the patient, such as atony of the bladder wall through damage of the detrusor muscle.

Acknowledgments The author thanks Dr. Anthony Yeo, Savient Pharmaceuticals, East Brunswick, NJ, USA, for his assistance in the preparation of this letter.

Disclosures Christophe Berney has no conflicts of interest or financial ties to disclose.

References

1. Bittner R, Arregui ME, Bisgaard T, Dubai M, Ferzli GS, Fitzgibbons RJ, Fortelny RH, Klinge U, Kockerling F, Kuhry E, Kukleta J, Lomanto D, Misra MC, Montgomery A, Morales-Conde S, Reinpold W, Rosenberg J, Sauerland S, Schug-Pass C, Singh K, Timoney M, Weyhe D, Chowbey P (2011) Guidelines for laparoscopic (TAPP) and endoscopic (TEP) treatment of inguinal Hernia [International Endohernia Society (IEHS)]. *Surg Endosc* 25:2773–2843
2. Bittner R, Schmedt CG, Schwarz J, Kraft K, Leibl BJ (2002) Laparoscopic transperitoneal procedure for routine repair of groin hernia. *Br J Surg* 89:1062–1066
3. Zendejas B, Onkendi EO, Brahmabhatt RD, Lohse CM, Greenlee SM, Farley DR (2011) Long-term outcomes of laparoscopic totally extraperitoneal inguinal hernia repairs performed by supervised surgical trainees. *Am J Surg* 201:379–383
4. Garg P, Rajagopal M, Varghese V, Ismail M (2009) Laparoscopic total extraperitoneal inguinal hernia repair with nonfixation of the mesh for 1,692 hernias. *Surg Endosc* 23:1241–1245
5. Koch CA, Greenlee SM, Larson DR, Harrington JR, Farley DR (2006) Randomized prospective study of totally extraperitoneal inguinal hernia repair: fixation versus no fixation of mesh. *JLS* 10:457–460
6. Taylor C, Layani L, Liew V, Ghush M, Crampton N, White S (2008) Laparoscopic inguinal hernia repair without mesh fixation: early results of a large randomized clinical trial. *Surg Endosc* 22:757–762
7. Koch CA, Grinberg GG, Farley DR (2006) Incidence and risk factors for urinary retention after endoscopic hernia repair. *Am J Surg* 191:381–385
8. Olmi S, Erba L, Bertolini A, Scaini E, Croce E (2006) Fibrin glue for mesh fixation in laparoscopic transabdominal preperitoneal (TAPP) hernia repair: indications, technique, and outcomes. *Surg Endosc* 20:1846–1850
9. Topart P, Vandenbroucke F, Lozac'h P (2005) Tissel vs tack staples as mesh fixation in totally extraperitoneal laparoscopic repair of groin hernias. *Surg Endosc* 19:724–727
10. Fortelny RH, Petter-Puchner AH, Glaser KS, Redl H (2012) Use of fibrin sealant (Tisseel/Tissucol) in hernia repair: a systematic review. *Surg Endosc*. doi:10.1007/s00464-012-2156-0
11. Fredman B, Jedeikin R, Olsfanger D, Flor P, Gruzman A (1994) Residual pneumoperitoneum: a cause of postoperative pain after laparoscopic cholecystectomy. *Anesth Analg* 79:152–154b
12. Bivalacqua TJ, Schaeffer EM, Alphas H, Mettee L, Wagner AA, Su LM, Pavlovich CP (2008) Intraperitoneal effects of extraperitoneal laparoscopic radical prostatectomy. *Urology* 72:273–277