ORIGINAL RESEARCH PAPER

VOLUME-6 | ISSUE-5 | MAY - 2017 | ISSN No 2277 - 8179 | IF : 4.176 | IC Value : 78.46

INTERNATIONAL JOURNAL OF SCIENTIFIC RESEARCH

TEP versus TAPP: comparison of the perioperative outcome in 200 patients with a primary unilateral inguinal hernia

General Surgery

Dr Mayank Devangan Associate Professor, Department of surgery, RIMS, Raipur, CG

Dr Niraj Srivastava Assistent Professor, Department of surgery, RIMS, Raipur, CG

Dr Brajendra Kumar Professor, Department of Medicine, RIMS, Raipur, CG

ABSTRACT

A total of 200 patients were enrolled prospectively between September 1, 2013, and April 15, 2016, in RIMS,RAIPUR. Of these patients,61.9% had a TAPP and 38.1% a TEP repair. The dependent variables were intra- and postoperative complication rates, number of reoperations as well as absolute and relative frequencies. The results of unadjusted analyses were verified via multivariable analyses.Multivariable analysis verified the results of unadjusted analysis, indicating that the surgical technique did not have any significant impact, also while taking account of other factors, on occurrence of intraoperative [p=0.1648; OR=1.214 (0.923; 1.596)] and general postoperative complications [p=0.0738; OR=1.315 (0.974; 1.775)]. Postoperative surgical complications [OR=2.323 (1.882; 2.866); p<0.0001] were noted more often after TAPP. Furthermore, the hernia defect size [p<0.0001; I vs III: OR=0.439 (0.313; 0.615), II vs III: OR=0.712 (0.582; 0.872)] or scrotal [p<0.0001; OR=2.170 (1.501; 3.137)] hernia and age [p=0.0002; 10-year OR=1.135 (1.062; 1.213)] had a significant impact on the occurrence of postoperative complications. Complications were observed more commonly for larger hernia defects and a scrotal hernia. However, the difference in the postoperative complication rate between TEP and TAPP did not result in any difference in the reoperation rate (TEP 0.82% vs TAPP 0.90%; p=0.6165).The intraoperative and general postoperative complication rates as well as the reoperation rate for complications show no significant difference between TEP and TAPP.

KEYWORDS:

TEP, TAPP, Intraoperative complications, Seroma, Postoperative complications, Inguinal hernia repair.

INTRODUCTION

Transabdominal preperitoneal patch plasty (TAPP) and total extraperitoneal patch plasty (TEP) are common methohs for inguinal hernia repair.This present analysis compares the prospective data collected for all patients who had undergone primary unilateral inguinal hernia repair using either transabdominal preperitoneal patch plasty (TAPP) or total extraperitoneal patch plasty (TEP).

MATERIALS AND METHODS

We registerd 200 patients.All postoperative complications occurring up to 30 days after surgery are recorded. On 1-year follow-up, postoperative complications are once again reviewed when the general practitioner and patient complete a questionnaire. This present analysis compares the prospective data collected for all patients who had undergone primary unilateral inguinal hernia repair using either transabdominal preperitoneal patch plasty (TAPP) or total extraperitoneal patch plasty (TEP). Inclusion criteria were minimum age of 16 years and primary unilateral inguinal hernia. There were no exclusion criteria used in this study beyond those who fell out of the inclusion criteria. Of these patients,61.9 % had a TAPP repair and 38.1% a TEP repair.The demographic and surgery-related parameters included age (years), sex (m/f), ASA classification (I–IV) as well as the proportion of scrotal inguinal hernias and the hernia defect size based on EHS classification (Hernia type: medial, lateral, femoral, scrotal. Defect size: Grade I=1.5cm, Grade II 1.5–3cm, Grade III >3cm) . The dependent variables were intra- and postoperative complication rates, number of reoperations as well as absolute and relative frequencies; continuous variables are displayed as mean, median, standard deviation and ranges.Estimates for odds ratio (OR) or least square (LS) means, respectively, and the corresponding 95% confidence interval were given. For age [years], the 10-year OR estimate was given. Results are presented in tabular form, sorted by descending impact. Patients (and not hernia) were the level of analysis.

RESULTS

The patients in the TEP and TAPP groups did not differ in terms of age or gender distribution. However, there were significant differences between the two patient groups in respect of a number of other patient characteristics. the overall demographic data. No difference was found with regard to age or gender distribution. However, more patients with a lower ASA status and larger hernia defects underwent the TAPP method. The TAPP technique was also used more often for hernias with 'medial,' 'scrotal' and 'combined' localization, while the TEP technique was employed more commonly for lateral hernias.As regards the outcome variables, the two surgical methods differed in terms of duration of operation (<0.0001) and of postoperative length of hospital stay (<0.0001). Both were significantly longer for patients in the TAPP group. The mean duration of operation for the TAPP technique was 52.62 ± 3.58 min, and the median was 47 min (range 20–274 min). The mean duration of operation for the TEP technique at 48.58 ± 21.52 min and median at 45 min (range 20–275min) was significantly lower.The mean length of hospital stay for the TAPP group patients was 1.93 ± 2.22 days, and for the TEP group patients, it was 1.88 ± 2.19 days (median in each case 2.0 days, range 1–63 days after TEP, 1–64 days after TAPP). shows the total data for duration of operation and length of hospital stay.Unadjusted analysis, at 1.19% for TEP and 1.40% for TAPP, did not reveal any significant differences in the intraoperative complications associated with the two surgical techniques (p=0.2763).Significantly, more complications were noted within the first 30 postsurgical days in the TAPP group (3.97%; p<0.0001). These were mainly due to the significant difference in the postoperative seroma rate (TEP 0.51% vs TAPP 3.06%; p<0.001). Secondary bleeding occurred more frequently after TEP operation (1.15%; p=0.030), while seroma was seen more commonly after TAPP operation (3.06%). In terms of individual general complications, a significant difference was seen for fever (p=0.0228) and coronary heart disease (p<0.0001). Both occurred more commonly in patients operated on with the TAPP technique (0.11 vs 0.2%, respect ively).illustrates all data related to complic ations.Multi variable analysis verified the results of unadjusted analysis, indicating that the surgical technique did not have any significant impact, also while taking account of other factors, on occurrence of intraoperative

[p=0.1648; OR=1.214 (0.923; 1.596)] and general complications [p=0.0738; OR=1.315 (0.974; 1.775)]. The only variable impacting onset of intraoperative complications was medial inguinal hernia (p=0.001). It had a preventive effect [OR=0.607 (0.451; 0.816)] . Onset of general complications was affected by a number of parameters, but not the surgical technique. A lower ASA score [p<0.001, e.g., ASA III vs I: OR=2.599 (1.645; 4.107)], younger age (10-year OR=1.249 [1.116; 1.398], p=0.0001) as well as medial [p=0.03, OR=0.577 (0.353; 0.942)] or lateral [p=0.04; OR=0.586 (0.352; 0.976)] inguinal hernia were preventive , whereas a higher ASA score, older age and a scrotal hernia led to significantly more general postoperative comp lications.Postoperative complications [OR=2.323 (1.882; 2.866); p<0.0001] were noted more often after TAPP. For a postoperative complication rate of 3.1%, this would amount to around 43 out of every 1000 patients operated on with TAPP and to 19 out of every 1000 patients operated on with the TEP technique. Furthermore, the hernia defect size [p<0.0001; I vs III: OR=0.439 (0.313; 0.615), II vs III: OR=0.712 (0.582; 0.872)], presence of medial [p=0.0007, OR=0.610 (0.458; 0.811)], lateral [p=0.0043; OR=0.655 (0.490; 0.876)] or scrotal [p<0.0001; OR=2.170 (1.501; 3.137)] hernia and age [p=0.0002; 10-year OR=1.135 (1.062; 1.213)] had a significant impact on the occurrence of postoperative complications. Complications were observed more commonly for larger hernia defects and a scrotal hernia. Conversely, there were fewer postoperative complications in young patients and in patients with a medial or lateral hernia.Likewise, the multivariable model revealed the significant influence of the surgical technique on seroma formation or on secondary bleeding. For TAPP, postoperative seromas were seen significantly more often [OR=5.873; (4.116; 8.380), p<0.0001]. For every 1000 patients undergoing surgery, there would therefore be 35 seromas for TAPP patients compared with six seromas on using TEP. The presence of a scrotal inguinal hernia also had a significant effect on the seroma rate, with this being conducive to onset of seroma [p<0.0001; OR=2.784 (1.837; 4.217)]; smaller hernia defects [p=0.0002; I vs III: OR=0.398 (0.258; 0.615), II vs III: OR=0.754 (0.590; 0.964)], a lateral [p=0.001; OR=0.566 (0.401; 0.799)] or medial inguinal hernia [p=0.012; OR=0.639 (0.451; 0.904)] each had a preventive effect, whereas older age [p=0.003; 10-year OR=1.131 (1.044; 1.226)] was conducive to onset of seroma.For TAPP, secondary bleeding was less common [OR=0.734 (0.539; 1.000), p=0.05]. For a total secondary bleeding rate of 0.94%, that complication would thus occur in eight out of every 1000 TAPP patients and in 11 out of every 1000 TEP patients. Conversely, the secondary bleeding rate was influenced more by the ASA status (p=0.005), medial inguinal hernia (p=0.02) and age (p=.04). A low ASA score, e.g., ASA III versus I: OR=.760 [1.038; 2.982], medial hernia [OR=0.540 (0.323; 0.901)] and young age [10-year OR=1.135 (1.007; 1.279), p=0.0387] had a preventive effect on onset of secondary bleeding.Multivariable analysis also confirmed that the surgical technique did not have any impact on the reoperation rate linked to complications. However, it was demonstrated that a high ASA classification as well as large hernia defects had a significant impact on the complication-related reoperation rate.

Discussion

In our study, no difference was seen in the age or gender distribution between the TEP and TAPP groups. Conversely, significant differences were discerned between the TEP and TAPP groups in terms of the proportion of medial, lateral and scrotal hernias. That also applied for the defect size. Significantly, more medial and scrotal hernias as well as larger defects were seen for the TAPP group. Despite that disparity, no difference was seen in the intraoperative complication rate between TEP and TAPP. The significant difference in the postoperative complication rates, which were higher for TAPP (TEP 1.70 vs TAPP 3.97; p<0.0001), was due to a significantly higher seroma rate (TEP 0.51% vs TAPP 3.06%; p<0.0001). In multivariable analysis, the variables identified as impacting onset of a postoperative complication, in particular seroma formation, were a large hernia defect and a scrotal hernia. Both hernia pathologies were found significantly more often in patients operated on with the TAPP technique, hence this higher complication rate compared with TEP was observed across different patient collectives. However, despite adjustment of these parameters, TAPP per se proved to be a lower but independent risk factor. To what extent the various surgeon's experience played a role here cannot be elucidated on the basis of that analysis.As such, the difference in perioperative outcome between TEP and TAPP must be imputed more to the indication than to the surgical technique. Since a greater number of large inguinal hernias and scrotal hernias were operated on with the TAPP than the TEP technique, a significantly higher rate of postoperative complications amenable to conservative treatment occurred in the former. These manifested as seromas, something that was consistent with these findings. Therefore, by adopting a tailored approach for inguinal hernia surgery, as recommended in the guidelines on the basis of a decision-making tree , the indication for use of the laparoscopic technique for very large hernias and for scrotal hernias should be based on ultra stringent criteria. If the surgeon has only limited experience of the laparoscopic technique, it would be advisable to opt instead for the Lichtenstein technique in the case of a scrotal hernia with a hernia sac reaching as far as the scrotum. Only experienced TAPP experts should use laparoscopic repair for scrotal hernias. It appears that TEP surgeons are more reluctant to use this technique for scrotal hernia because of the challenging anatomic situation, indicating instead open surgical repair.Secondary bleeding occurred significantly more often after TEP than after TAPP. In the case of TEP, the extraperitoneal space is markedly narrower than the abdominal space and impairs visibility when using current for TEP dissection. Hence, many TEP surgeons avoid the use of current and perform dissection without current, using instead a pulling and counterpulling technique, while tearing the connective tissue bridges between the anatomic structures. That inevitably results in a higher rate of secondary bleeding. The significantly higher postoperative seroma rate in patients operated on with the TAPP technique, leading to a significantly higher overall postoperative complication rate, is therefore to be expected. To reduce the seroma rate for a directly accessible hernia, it is recommended to use widespread electrocoagulation of the pseudohernia sac for sloughing off even the smallest blood and lymph vessels or inversion of the pseudohernia sac with fixation to Cooper's ligament .

CONCLUSION

Finally, analysis of a large patient collective in routine practice has revealed that 25years after the introduction of laparoscopic surgical techniques for inguinal hernia repair, TAPP and TEP techniques can be carried out with a very low rate of predominantly harmless complications and with an acceptable duration of operation. Today, onset of serious visceral and vascular complications is rare, even in non-specialist hospitals, but the situation is still not satisfactory. However, a further reduction can only be achieved through continuing training, accretion of knowledge and improvement of the surgical techniques.

References

1. Tetik C, Arregui ME, Dulucq JL, Fitzgibbons RJ, Franklin ME, McKernan JB, Rosin RD, Schultz LS, Toy FK. Complications and recurrences associated with laparoscopic repair of groin hernias. A multi-institutional retrospective analysis. Surg Endosc. 1994;8 (11):1 316–1322. doi: 10.1007/BF00188291.
2. McCormack K, Wake BL, Fraser C, Vale L, Perez J, Grant A. Transabdominal pre-peritoneal (TAPP) versus totally extraperitoneal (TEP) laparoscopic techniques for inguinal hernia repair: a systematic review. Hernia. 2005;9:109–114. doi: 10.1007/s10029-004-0309-3.
3. O´Reilly EA, Burke JP, O`Connell PR. A meta-analysis of surgical morbidity and recurrence after laparoscopic and open repair of primary unilateral inguinal hernia. Ann Surg. 2012;255:846–853. doi: 10.1097/SLA.0b013e31824e96cf.
4. Bracale U, Melillo P, Pignata G, Di Salvo E, Rovani M, Merola G, Pecchia L. Which is the best laparoscopic approach for inguinal hernia repair: TEP or TAPP? a systematic review of the literature with a network meta-analysis. Surg Endosc. 2012;26:3355–3366. doi: 10.1007/s00464-012-2382-5
5. Antoniou SA, Antoniou GA, Bartsch DK, Fendrich V, Koch OO, Pointner R, Granderath FA. Transabdominal preperitoneal versus totally extraperitoneal repair of inguinal hernia: a meta-analysis of randomized studies. Am J Surg. 2013;206:245–252. doi: 10.1016/j.amjsurg.2012.10.041.
6. Schrenk P, Woisetschläger R, Rieger R, Wayand W. Prospective randomized trial comparing postoperative pain and return to physical activity after transabdominal preperitoneal, total preperitoneal or Shouldice technique for inguinal hernia repair. Br J Surg. 1996;83:1563–1566. doi: 10.1002/bjs.1800831124.
7. Heikkinen T, Bringman S, Ohtonen P, Kunelius P, Haukipuro K, Hulkko A. Five-year outcome of laparoscopic and Lichtenstein hernioplasties. Surg Endosc. 2004;18(3):518–522. doi: 10.1007/s00464-003-9119-4

8. Dedemadi G, Sgourakis G, Karaliotas C, Christofides T, Kouraklis G, Karaliotas C. Comparison of laparoscopic and open tension-free repair of recurrent inguinal hernias: a prospective randomized study. Surg Endosc. 2006;20:1099–1104. doi: 10.1007/s00464-005-0621-8.
9. Butler RE, Burke R, Schneider JJ, Brar H, Lucha PA., Jr The economic impact of laparoscopic inguinal hernia repair: results of a double-blinded, prospective, randomized trial. Surg Endosc. 2007;21:387–390. doi: 10.1007/s00464-006-9123-6.
10. Pokorny H, Klingler A, Schmid T, Fortelny R, Hollinsky C, Kawji R, Steiner E, Pernthaler H, Függer R, Scheyer M. Recurrence and complications after laparoscopic versus open inguinal hernia repair: results of a prospective randomized multicenter trial. Hernia. 2008;12:385–389. doi: 10.1007/s10029-008-0357-1.