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Published in:
Hernia

Publication status and date:
Published: 01/02/2011

DOI (link to publisher):
[10.1007/s10029-010-0744-2](https://doi.org/10.1007/s10029-010-0744-2)

Document Version
Publisher's PDF, also known as Version of record

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Citation for the published version (APA):
Koning, G. G., Koole, D., De Jongh, M. A. C., De Schipper, J. P., Verhofstad, M. H. J., Oostvogel, H. J. M., & Vriens, P. W. H. E. (2011). The transinguinal preperitoneal hernia correction vs Lichtenstein's technique; Is TIPP top? *Hernia*, 15(1), 19-22.
<https://doi.org/10.1007/s10029-010-0744-2>

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The transinguinal preperitoneal hernia correction vs Lichtenstein's technique; is TIPP top?

G. G. Koning · D. Koole · M. A. C. de Jongh ·
J. P. de Schipper · M. H. J. Verhofstad ·
H. J. M. Oostvogel · P. W. H. E. Vriens

Received: 11 March 2010 / Accepted: 14 October 2010 / Published online: 9 November 2010
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Abstract

Background Chronic pain is the main drawback of the Lichtenstein procedure for inguinal hernia repair, with a reported incidence of 15–40%. The transinguinal pre-peritoneal (TIPP) technique seems to be associated with less chronic pain, comparable to the total extra peritoneal (TEP) technique. The aim of this study was to evaluate 3 years of TIPP and Lichtenstein experience since the start of our Hernia Center Brabant in January 2006.

Methods Patient records of unilateral primary inguinal anterior hernia corrections (TIPP and Lichtenstein) performed since the opening of Hernia Center Brabant (2006–2008) were evaluated in a retrospective study. ASA class 4 and 5, <18 years, recurrences and bilateral hernias were excluded. In the TIPP technique, a Polysoft™ Hernia Patch was placed into the preperitoneal space using an anterior protocol led approach. The Lichtenstein technique was performed as described by Amid [Amid et al (1996) Eur J Surg 162:447–453] and modified with a soft mesh. One of the hernia surgeons decided peroperatively which technique to perform. Baseline characteristics and postoperative complications were assessed retrospectively. The attempted follow up period was 6 months. Chronic pain was assessed in both groups as mild (VAS 1–3), moderate

(VAS 4–6) or severe (VAS 7–10). Chronic pain was defined in both groups as any pain sensation lasting longer than 3 months postoperatively, or when local injection of analgesia was necessary. Patients who did not come back because of chronic pain after regular follow up were regarded as free of pain.

Results A total of 496 patients were included in this study; 225 TIPP and 271 Lichtenstein anterior inguinal hernia operations were analyzed. Data from one TIPP-patient were lost. Both groups were comparable with regard to baseline characteristics regarding age ($p = 0.059$), gender ($p = 0.478$) and ASA-classification ($p = 0.104$). TIPP: mean age 52.7 years, ASA-classification I: 54%, II: 36% and III: 5.3%. A total of 7.6% complications were assessed; recurrence ($n = 1$), bleeding (and re-operation) ($n = 4$); 10 patients (4.4%) experienced chronic pain. Persisting sensation loss occurred in 0.9%. Lichtenstein: mean age 57.3 years, ASA-classification I: 51%, II: 38% and III: 11%. A total of 8.5% complications were assessed; recurrence ($n = 3$), bleeding (and re-operation) ($n = 3$); 11 Lichtenstein patients (4.1%) experienced chronic pain. Persisting sensation loss occurred in 2.2%. Limitations of this retrospective study were incomplete follow up (31.3% had only one post operative visit 14 days after surgery) and these patients were further regarded as free of pain. Therefore, possible under-reporting of chronic pain could be present. The study was not double blind.

Conclusion This retrospective study design revealed no significantly better results for the TIPP procedure as compared to the Lichtenstein technique. The incidence of chronic pain reported in this retrospective study has been low in both groups since the opening of the Hernia Center Brabant. These results form the basis for a prospective randomized clinical trial comparing the TIPP and Lichtenstein techniques: ISRCTN93798494.

This study was presented as: Poster at Annual Surgery Days, May 2009, Veldhoven, The Netherlands. Oral presentation at EHS/AHS Joint Meeting, September 2009, Berlin, Germany.

G. G. Koning (✉) · D. Koole · M. A. C. de Jongh ·
J. P. de Schipper · M. H. J. Verhofstad ·
H. J. M. Oostvogel · P. W. H. E. Vriens
Department of Surgery, St. Elisabeth Hospital,
Hilvarenbeekseweg 60, 5055 GC Tilburg, The Netherlands
e-mail: g.koning@elisabeth.nl
URL: www.liesbreukcentrumbrabant.nl

Keywords TIPP · Inguinal hernia repair · Anterior · Lichtenstein · Surgery

Introduction

Tension-free mesh inguinal hernia repair has reduced the incidence of recurrence to 2–5% [1]. Nowadays chronic pain is the main problem associated with the Lichtenstein procedure for inguinal hernia repair, with a reported incidence of 15–40% [2, 3]. The transinguinal pre-peritoneal (TIPP) technique seems to be associated with less chronic pain, comparable to the total extra peritoneal (TEP) technique [4].

Chronic pain has significant effects on all daily activities, including walking, work, sleep, relationships with other people, mood and general enjoyment of life [3, 5]. Thus, much effort has been put into strategies to reduce chronic pain. Specialized hernia centers have reported excellent results after endoscopic repair. This “Concentration of Care” principle is possibly associated with less complications, steep learning curves and a higher quality of life for patients after operation.

Since January 2006, all hernia repairs of the St. Elisabeth Hospital and the TweeSteden Hospital in Tilburg, The Netherlands, have been performed in The Brabant Hernia Center (www.liesbreukcentrumbrabant.nl).

The aim of this study was to evaluate 3 years of TIPP and Lichtenstein experience since the opening of this hernia center.

Methods

Patient records of unilateral primary inguinal hernia corrections (TIPP or Lichtenstein) performed in the Hernia Center Brabant from January 2006–December 2008 were evaluated in a retrospective study. Patients with ASA class 4 and 5, younger than 18 years, operated for recurrences or bilateral hernias were excluded from retrospective analyses. Cases where preperitoneal surgery had been previously performed were also excluded. Joint sessions (e.g., inguinal hernia repair, radical prostatectomy or vasectomy) were excluded from analyses. Only TIPP and Lichtenstein techniques were analysed. Hernias were not classified occur according to a defined hernia classification system (such as that described by the EHS) at that time.

In this study population, groin hernia was corrected according to Lichtenstein as described by Amid et al. [6], i.e., adapted to present-day insights; a soft mesh (Soft MeshTM, BARD[®] Benelux, Belgium) was used.

The other technique used in this population was the TIPP technique with a PolysoftTM Hernia Patch (BARD[®] Benelux, Belgium). This technique involves a standard anterior

approach, with high dissection of the sac reducing the pre-peritoneal space (PPS) through the internal ring. Blunt dissection in the PPS was carried out using one finger or large dissection gauze through the internal orifice, and was then extended deep towards epigastric vessels and transverse fascia in the direction of the pubic spine. The hernia patch was introduced in the PPS via the internal orifice. The patch has a memory ring and unfolds easily. Because only regional or local anaesthesia was used, the patient was asked to strain or cough, which allows correct anatomical spreading of the mesh after removal of the gauze. External oblique aponeurosis repair superficial to the cord was performed to restore normal anatomy. One of the hernia surgeons decided peroperatively which technique to perform.

Baseline characteristics and postoperative complications were assessed. The attempted follow up period was 6 months. Chronic pain was assessed in both groups as mild (VAS 1–3), moderate (VAS 4–6) or severe (VAS 7–10) retrospectively, based on descriptions in patient records. Chronic pain was defined in both groups as any form of pain sensation lasting longer than 3 months post-operatively, or when local injection of analgesia was necessary. Patients who did not come back after operation because of chronic pain after regular follow up were regarded as free of pain. Patients were not questioned by telephone afterwards to prevent recall bias.

Results

A total of 689 unilateral hernia corrections of all kinds were performed in the Hernia Center during the study period. Of these, 496 patients were included in this study, of which 225 (32.7%) were TIPP and 271 (39.3%) Lichtenstein procedures. Data from one TIPP-patient were lost. Both groups were comparable with regard to baseline characteristics in terms of age ($p = 0.059$), gender ($p = 0.478$) and ASA-classification ($p = 0.104$). Other exclusions ($n = 193$; 28%) were children, recurrences from other hospitals, previous surgery in PPS or bilateral hernias (TEP).

Transinguinal pre-peritoneal repair

Mean age 52.7 years, ASA-classification I: 54%, II: 36% and III: 5.3%. A total of 7.6% complications were assessed; recurrence ($n = 1$), bleeding (and re-operation) ($n = 4$); 10 patients (4.4%) experienced chronic pain (mean VAS 4.6, range 1–6). Persisting sensation loss occurred in 0.9%.

Lichtenstein repair

Mean age 57.3 years, ASA-classification I: 51%, II: 38% and III: 11%. A total of 8.5% complications were assessed;

Table 1 Baseline characteristics of transinguinal pre-peritoneal repair (TIPP) and Lichtenstein repair groups

Baseline characteristics	Lichtenstein	TIPP	<i>p</i> value
Patients (<i>n</i>)	271	225	–
Mean age (years)	57	53	0.059
Gender (M/F)	257/14	210/15	0.478
ASA 1	139 (51%)	121 (54%)	
ASA 2	103 (38%)	82 (36%)	0.104
ASA 3	29 (11%)	12 (5.3%)	
Mean duration of operation (min)	45	41	0.004
Bleeding	3 (1.1%)	4 (1.8%)	0.707
Chronic pain	11 (4.1%)	10 (4.4%)	0.832
Mean VAS score (range)	5.3 (3–9)	4.6 (1–6)	0.653
Persisting sensation loss	6 (2.2%)	2 (0.9%)	0.302
Recurrence	3 (1.1%)	1 (0.4%)	0.630
Total complications	23 (8.5%)	17 (7.6%)	0.868

recurrence ($n = 3$), bleeding (and re-operation) ($n = 3$); 11 Lichtenstein patients (4.1%) experienced chronic pain (mean VAS 5.3, range 3–9). Persisting sensation loss occurred in 2.2% (Table 1).

Discussion

Tension-free mesh repair has reduced the incidence of recurrence and direct post operative pain in inguinal hernia repair. The incidence of recurrences are 2–5% [1, 6]. However, chronic pain after inguinal hernia repair is an underestimated problem [2]. The exact incidence of chronic pain is unknown. Well conducted, large and unselected epidemiological studies suggest that about 20% of patients are affected with chronic pain [3–5, 7].

Chronic pain has significant effects on all daily activities, including walking, working, sleep, relationships with other people, mood and general enjoyment of life [7]. Thus, much effort has been put into strategies to reduce chronic pain. Specialized hernia centers have reported excellent results after endoscopic repair. This “Concentration of Care” principle is possibly associated with less complications, steep learning curves and a higher quality of life for patients after operation. Chronic pain is the main problem associated with the Lichtenstein procedure, with a reported incidence of more than 15% [7]. Suggestions to reduce chronic pain include the three-nerve-recognizing Lichtenstein procedure or triple neurectomy. Disadvantages of damaging the inguinal nerves are the loss of sensation in the affected dermatome. In our series, this inadvertently persisting sensation loss during regular procedures affects a considerable proportion of patients treated

with the Lichtenstein procedure (Table 1), and under-reporting of these sensory loss findings is possible. The TIPP technique, as described by Pélissier, seems to be associated with less chronic pain, comparable to the total extra peritoneal (TEP) technique [8–10]. The drawback of endoscopic hernia repair over the open approach is the added cost, particularly when disposable instruments are used [11]. The other disadvantage of endoscopy compared with open hernia repair is that general anaesthesia is necessary [12]. Complications of endoscopic hernia repair are rare but can be severe.

Since January 2006 all hernia repairs at the St. Elisabeth Hospital and the TweeSteden Hospital in Tilburg, The Netherlands, have been performed in The Brabant Hernia Center (www.liesbreukcentrumbrabant.nl). TIPP and Lichtenstein are performed according to standardized protocols based on initial descriptions of these procedures by Pélissier and Amid. The Lichtenstein procedure was modified with a soft mesh instead of the previously used “harder” mesh. Our aim was to evaluate 3 years of TIPP and Lichtenstein experience since the opening of the Hernia Center Brabant. All six dedicated hernia surgeons use the same techniques for the TIPP or Lichtenstein procedures. Details of each step in both operations were standardized after discussion. During our operation schedule, approximately eight patients per operating room ($n = 2$) are treated in the center. Patients visit the outpatient department after 14 days to check wound healing and to evaluate their experience.

All findings are entered into the electronic patient files. These case record forms were analysed retrospectively. Limitations of this retrospective study include incomplete follow up according to basic research principles. Furthermore, there was possible under-reporting of chronic pain, as 31.3% had only one post-operative visit 14 days after surgery, and these patients were further regarded as free of pain because they did not return to the outpatient department. This study was not double blind. The surgeon decided peroperatively which technique to perform. Thus there was selection bias of patients and technique. The investigator and the patient both knew which procedure was performed. However, the results, as presented in Table 1, revealed low complication rates and (possible) low percentages of chronic pain in the TIPP and Lichtenstein group.

Conclusion

In conclusion, this retrospective study design revealed no significantly better results for the TIPP—as compared to the Lichtenstein technique. As reported in this study, the incidence of pain has been low in both groups since the start of the Hernia Center Brabant. These results form

the basis for a prospective randomized clinical trial comparing the TIPP and Lichtenstein techniques: the TULIP Trial, ISRCTN93798494.

Conflict of interest None.

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