Less Pain 1 Year After Total Extra-peritoneal Repair Compared With Lichtenstein Using Local Anesthesia

Data From a Randomized Controlled Clinical Trial

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Objective: The aim was to compare long-term postoperative pain after inguinal hernia surgery using 2 techniques that have shown favorable long-term outcome in previous randomized studies: Lichtenstein using local anesthesia (LLA) and endoscopic total extra-peritoneal repair (TEP) under general anesthesia.

Background: Patients often experience pain after inguinal hernia surgery. These 2 methods in their optimal state have not yet been sufficiently compared.

Methods: A randomized controlled trial was conducted to detect any difference in long-term postoperative inguinal pain. Altogether 384 patients were randomized and operated using either TEP under general anesthesia (n = 193) or LLA (n = 191). One year postoperatively, patients were examined by an independent surgeon and requested to complete the Inguinal Pain Questionnaire (IPQ), a validated questionnaire for the assessment of postoperative inguinal pain.

Results: Three hundred seventy-five (97.7%) patients completed follow-up at 1 year. In the TEP group, 39 (20.7%) patients experienced pain, compared with 62 (33.2%) patients in the LLA group ($P = 0.007$). Severe pain was reported by 4 patients in the TEP group and 6 patients in the LLA group (2.1% and 3.2%, respectively, $P = 0.543$). Pain in the operated groin limited the ability to exercise for 5 TEP patients and 14 LLA patients (2.7% and 7.5%, respectively, $P = 0.034$).

Conclusions: Patients operated with TEP experienced less long-term postoperative pain and less limitation in their ability to exercise than those operated with LLA. The present data justify recommending TEP as the procedure of choice in the surgical treatment of primary inguinal hernia.

Keywords: inguinal hernia, Lichtenstein, local anesthesia, postoperative pain, TEP

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Inguinal hernia is a common condition, especially in men. In the US and Europe, hernia repair is one of the most frequently carried out elective surgical procedures. Approximately 800,000 hernia repairs are carried out in the US annually.[1] In Sweden, more than 15,000 patients were operated for this benign condition in 2012.[2] Recurrence rates have been considerably reduced over the past 20 years, after the widespread use of mesh and the development of the Lichtenstein technique as the gold standard in inguinal hernia surgery.[3,4] As a result, focus has shifted from recurrence to other outcome measures. Long-term pain after hernia surgery has been identified as a substantial problem and is the outcome measure that attracts most attention today. The prevalence of persisting pain has been reported to be close to 30%.[5] Up to 6% experience severe postoperative pain.[6]

In addition to the use of mesh, other innovations in surgical technique have changed the treatment of inguinal hernia. The introduction of laparoscopic techniques in general surgery in the 1990 s soon resulted in this being applied to inguinal hernia surgery as well. Endoscopic procedures include total extraperitoneal repair (TEP) and transabdominal preperitoneal repair (TAPP), of which TEP is the most commonly used in Sweden. Although both laparoscopic techniques are comparable when carried out by surgeons familiar with the technique, TEP may be associated with a slightly lower risk for complications.[7,8]

Laparoscopic surgery has been shown to cause less postoperative pain in several fields. This has also been found to be true for endoscopic hernia surgery.[9] Postoperative pain can also be reduced by using local anesthesia for open inguinal hernia surgery.[10–12] There are, however, no randomized controlled trials comparing the 2 techniques that have provided the best outcome in this context: Lichtenstein using local anesthesia (LLA) and TEP under general anesthesia. The aim of this study was to compare LLA and TEP, using long-term postoperative pain as the primary outcome.

METHODS

Study Design and Participants

Inclusion was conducted between April 10, 2006, and January 5, 2011. Men ages 20–80 years with a primary unilateral hernia were eligible for inclusion. Exclusion criteria were: female; age younger than 20 years or older than 80 years; American Society of Anesthesiology (ASA) physical status score above 3; bilateral hernias; scrotal hernia; recurrent hernia; and previous surgery in the lower abdomen (except appendectomy). Figure 1 shows the enrollment of patients in the study. All patients were recruited and treated at either of 2 hospitals located in 1 Swedish county. The study was approved by the Regional Ethics Committee in Uppsala, Sweden, before the first enrollment, and is registered with ClinicalTrials.gov, number NCT01020058.

Randomization and Masking

Randomization was carried out on a 1:1 ratio between LLA and TEP. The participating hospitals received separate blocks of consecutively numbered sealed envelopes for the randomization procedure. Each block contained 20 envelopes.

Patients were randomized to either LLA or TEP in general anesthesia on the day of surgery by the operating surgeon. Group allocation did not affect which surgeon carried out the procedure. Group allocation was not masked.

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