

## TEP under general anesthesia is superior to Lichtenstein under local anesthesia in terms of pain 6 weeks after surgery: results from a randomized clinical trial

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### Abstract

**Background** Persistent pain is common after inguinal hernia repair. The methods of surgery and anesthesia influence the risk. Local anesthesia and laparoscopic procedures reduce the risk for postoperative pain in different time perspectives. The aim of this study was to compare open Lichtenstein repair under local anesthesia (LLA) with laparoscopic total extraperitoneal repair (TEP) with respect to postoperative pain.

**Methods** Between 2006 and 2010, a total of 389 men with a unilateral primary groin hernia were randomized, in an open-label study, to either TEP ( $n = 194$ ) or LLA ( $n = 195$ ). One patient in the TEP group and four in the LLA group were excluded due to protocol violation. Details about the procedure and patient and hernia characteristics were registered. Patients completed the Inguinal Pain Questionnaire (IPQ) 6 weeks after surgery. [The study is registered in ClinicalTrials.gov (No. NCT01020058)].

**Results** A total of 378 (98.4 %) patients completed the IPQ. One hundred forty-eight patients (39.1 %) reported some degree of pain, 22 of whom had pain that affected concentration during daily activities. Men in the TEP group had less risk for pain affecting daily activities (6/191 vs. 16/187; odds ratio [OR] 0.35; 95 % CI 0.13–0.91;

$p = 0.025$ ). Pain prevented participation in sporting activities less frequently after TEP (4.2 vs. 15.5 %; OR 0.24; 95 % CI 0.09–0.56;  $p < 0.001$ ). Twenty-nine patients (7.7 %) reported sick leave exceeding 1 week due to groin pain, with no difference between the treatment groups.

**Conclusions** Patients who underwent the laparoscopic TEP procedure suffered less pain 6 weeks after inguinal hernia repair than those who underwent LLA. Groin pain affected the LLA patients' ability to perform strenuous activities such as sports more than TEP patients.

**Keywords** Inguinal hernia · TEP · Lichtenstein · Postoperative pain · Hernia repair · Hernioplasty

Inguinal hernia is a common condition that can be cured only surgically. For a long time, recurrence served as a means of measuring the quality of surgical repair. The introduction of mesh repair and simultaneous quality improvement has reduced the number of recurrences substantially [1–4]. As a result, other outcome parameters have gained increasing interest as measurements of quality.

Considerable effort has been spent in optimizing surgical techniques. The laparoscopic approach has been shown to be advantageous in terms of wound infection and hematoma formation [5–8], but also in regard to time to return to work, postoperative pain [8, 9], and dysesthesia [10]. These advantages are most pronounced in the short- and mid-term perspective. However, there are also drawbacks to the laparoscopic procedure. The cost of a laparoscopic hernia repair has been shown to be higher and laparoscopic techniques require general anesthesia [11, 12]. Some studies describe an increased risk for serious complications [6, 11, 13]. This is often attributed to a long learning curve. Of the laparoscopic procedures employed

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