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Mesh Fixation at Laparoscopic Inguinal Hernia Repair: A Meta-Analysis Comparing Tissue Glue and Tack Fixation

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Abstract

Background The aim of this study was to conduct a comprehensive systematic review comparing tissue glue (TG) against tacks/staples for mesh fixation in laparoscopic (totally extra-peritoneal and trans-abdominal pre-peritoneal) groin hernia repair with the incidence of post-operative chronic pain as the primary outcome measure.

Methods A computerized search of MEDLINE, EMBASE, and Cochrane databases for the period from 1 January 1,990 to 30 June 2013 produced 39 reports. The quality of reports was assessed according to criteria reported by the Cochrane communication review group.

Results Five randomized controlled trials (RCTs, 491 patients) and five non-RCTs (1,034 patients) fulfilled the selection criteria. A meta-analysis of chronic pain from the five RCTs gave a statistically significant Peto odds ratio (OR) of 0.40 (0.21–0.76; $p = 0.005$) indicating that the TG group experience less chronic pain. Although the studies are underpowered to detect recurrence, the meta-analysis of the recurrence rates from the RCTs identified no difference between tacks/staple and glue fixation (OR 2.36; 0.67–8.37). There were also no differences found in meta-analysis of seroma and hematoma formation between the

two methods of fixation. The wide variation in time points regarding pain score meant it was not possible to combine the studies and perform analysis for pain score with earlier time points.

Conclusions Meta-analysis of RCTs comparing TG with tack fixation in laparoscopic inguinal hernia surgery depicts a significant reduction in chronic pain with no increase in recurrence rates. Early post-operative outcome is similar after both methods of mesh fixation, although larger RCTs are required, with long-term pain as the primary endpoint.

Introduction

The last two decades have confirmed that laparoscopic inguinal (groin) hernia surgery, whether totally extraperitoneal (TEP) or trans-abdominal preperitoneal (TAPP), has benefits, with an earlier return to work and reduced post-operative pain [1–3]. There is a small recognised risk of nerve and visceral injury with laparoscopic approaches, along with a steeper learning curve [4, 5].

Individual surgeon preference plays a major role in the decision regarding the type of fixation device used [6–8], with ‘no fixation’ in the TEP technique described as a credible alternative [9]. However, where fixation is preferred, the use of ‘tacks’ was initially employed in both TEP and TAPP techniques. Stark et al. [10] highlighted the need to reduce the number of tacks in laparoscopic inguinal hernia surgery to reduce the risk of nerve irritation and the consequent effect on post-operative pain. Studies examining recurrence rates in laparoscopic inguinal hernia surgery have recommended fixation over Cooper’s ligament medially and on the lateral wall only, thereby avoiding inferior fixation due to the position of the external iliac

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