

Primary inguinal hernia: changing open repair technique likely cost-effective

Key Findings

- **Open pre-peritoneal mesh repair appears to be a safe and efficacious alternative to Lichtenstein mesh repair.**
- **Open pre-peritoneal mesh repair may offer substantial cost savings to the NHS compared to standard Lichtenstein mesh repair, whilst also offering the opportunity to improve patient outcomes.**
- **Further research is required to determine the long-term effects of these surgical procedures as well as the most effective type of open pre-peritoneal repair technique in terms of both clinical efficacy and costs.**

What problem was this research addressing?

A hernia (rupture) occurs when there is a weakness in the abdominal muscles. The abdominal contents may push through under the skin and appear as a swelling or a lump. Inguinal hernias (in the groins) are very common and usually require surgical repair. The most common surgical procedures involve using a 'mesh' in the abdominal wall through open surgery. Two methods of open repair can be used. The Lichtenstein repair, where the mesh is fixed to the edges of the 'rupture' in the posterior wall of the inguinal canal, is the most common technique (used by 96% of UK surgeons¹) for inguinal hernia repair. Whilst recurrences are usually low, chronic pain has been reported after Lichtenstein repair. The open pre-peritoneal repair, where the mesh is placed in the pre-peritoneal space and held in place with intra-abdominal pressure, has shown similar results and there is no consensus regarding the best surgical operation. With over 77,000 procedures carried out across the UK in 2012/13 and well over 100,000 NHS bed-days of hospital resources utilised^{2,3,4}, inguinal hernia repair is the most common surgical intervention in the UK, consuming a substantial amount of NHS resources and representing a significant cost burden.

What this research adds

This study⁵ compares the costs and outcomes of the open pre-peritoneal repair versus the standard Lichtenstein repair in people with unilateral (on one side) inguinal hernia. This is the first study to systematically review all the clinical and economic evidence to determine the best open mesh procedure to treat primary inguinal hernia.

It is also the first study to develop an economic model comparing the longer term cost-effectiveness and budget impact of implementing the different approaches.

Methods

We systematically reviewed all the relevant literature on clinical and cost-effectiveness. We obtained outcome data on pain, numbness, mortality, recurrence complications and time to return to work / usual activities from the included studies. Where possible, meta-analyses were used to produce a summary estimate of effect across the included studies.

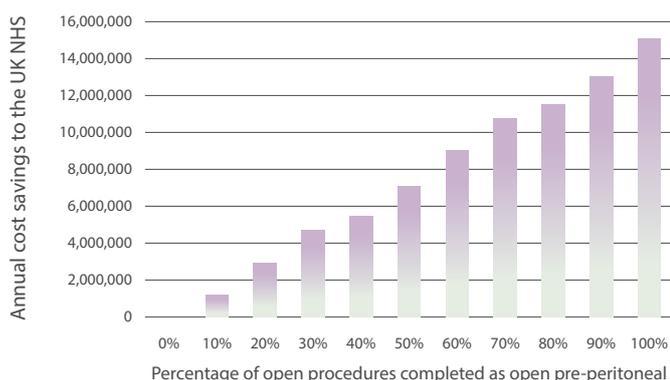
Due to a lack of UK relevant evidence on cost-effectiveness, we developed a new custom built decision model. The probabilistic Markov model was based on a cohort of 1000 people having primary inguinal hernia repair. The model estimated the proportion of the cohort with no further problems after surgery, developing complications, having a recurrence or dying each year over a 25 year time horizon. The model was thus used to estimate the expected costs, outcomes (Quality Adjusted Life Years (QALYs)), and the cost-effectiveness of the different surgical options. The impact of results on NHS budgets and costs to patients and society were considered as supplementary analyses.

Research Findings

We found 12 clinical studies (1,523 participants). People who underwent the open pre-peritoneal repair returned to work and usual activities earlier than those who underwent the Lichtenstein repair. In general, the open pre-peritoneal repair was associated with fewer episodes of pain, fewer recurrences and fewer complications than the Lichtenstein repair.

The costs of performing the different surgery techniques were similar. Cost savings were achievable to the NHS through fewer postoperative health problems, in particular post-operative chronic pain. Cost savings to the NHS were estimated as £256 per additional case treated with the open pre-peritoneal approach. Combined cost savings with potential for improvement in clinical outcomes means our model finds a 98% probability that open pre-peritoneal repair is cost-effective to the NHS. Given the large number of procedures currently completed using Lichtenstein repair, changing routine practice to open pre-peritoneal repair could generate substantial cost savings to the NHS. Figure 1 illustrates the projected annual UK cost savings based on the modelling analysis. Furthermore, earlier return to work and to normal activities for those under-going open pre-peritoneal repair would have positive financial implications for both patients and society.

Figure 1: Predicted budget impact of different update rates of open pre-peritoneal repair (£)



Policy relevance of the research findings

- The open pre-peritoneal approach may be a safe and efficacious alternative to the standard Lichtenstein approach for the treatment of inguinal hernia, with similar recurrence and complication rates, potentially lower incidence of postoperative pain, and a significant earlier return to work and to usual daily activities.
- If implemented in clinical practice, it is highly likely to be cost-effective and has the potential to save substantial NHS resources, thus impacting positively on NHS budgets. Earlier return to work or to normal activities would be a preferable outcome from both a patient and societal perspective.

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For further information see the full study report:

Sharma P, Boyers D, Scott N, Hernández R, Fraser C, Cruickshank M, Ahmed I, Ramsay C, Brazzelli M. The clinical effectiveness and cost-effectiveness of open mesh repairs in adults presenting with a clinically diagnosed primary unilateral inguinal hernia who are operated in an elective setting: systematic review and economic evaluation. *Health Technology Assessment*, 2015; **19**(92).

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