

Minimally invasive hernia repair: Techniques and outcomes.

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Introduction

Hernia repair, a common surgical procedure, has seen significant advancements from open methods to minimally invasive laparoscopic and robotic approaches. This evolution drives extensive research comparing techniques based on efficacy, safety, recurrence, pain, hospital stay, and patient quality of life. Informed surgical decisions require a thorough understanding of these comparisons.

For inguinal hernias, a meta-analysis comparing Transabdominal Preperitoneal (TAPP) and Total Extraperitoneal (TEP) techniques suggests TEP may offer advantages like lower complication risk and faster recovery in some aspects. Both techniques are safe and effective, with outcomes varying based on surgeon experience and patient factors [1].

Robotic surgery presents another minimally invasive option for inguinal hernia repair. A systematic review and meta-analysis found that robotic repair, despite potentially higher costs and longer operating times, could offer benefits in reduced post-operative pain and faster return to activity, especially for complex cases. Both techniques show similar long-term recurrence rates [4].

Managing recurrent inguinal hernias also involves TAPP and TEP. A study confirmed both techniques are effective for recurrent cases, providing favorable outcomes with low complication rates. The choice often depends on the initial repair, surgeon expertise, and recurrence characteristics [10].

Ventral hernias are another common surgical challenge. A meta-analysis comparing laparoscopic and open ventral hernia repair indicated that laparoscopic repair leads to shorter hospital stays, reduced pain, and fewer wound complications. While recurrence rates may be comparable, laparoscopic repair is often favored [2].

Laparoscopic incisional hernia repair outcomes are significantly influenced by patient comorbidities and hernia characteristics, impacting recurrence and post-operative complications. Careful patient selection and optimized surgical technique are crucial for good long-term results [3].

For complex ventral hernias, laparoscopic component separation

techniques have emerged as a viable and effective option. A systematic review and meta-analysis showed this advanced approach reduces wound complications and shortens hospital stays compared to open component separation, improving abdominal wall reconstruction outcomes for challenging cases [7].

Laparoscopic umbilical hernia repair has also proven beneficial. A meta-analysis concluded it significantly reduces hospital stay and post-operative pain, maintaining comparable recurrence rates to open repair. It is advocated as a safe, effective, and minimally invasive option with quicker recovery [6].

Laparoscopic hiatal hernia repair effectively manages symptoms and improves quality of life. However, recurrence rates, particularly for large hernias, remain a concern. This highlights the importance of proper surgical technique, including mesh reinforcement in selected cases, to optimize long-term outcomes [5].

In pediatric patients, laparoscopic inguinal hernia repair offers advantages such as reduced post-operative pain and improved cosmetic outcomes, with recurrence rates similar to open surgery. A key benefit is the ability to identify and repair contralateral patent processus vaginalis [9].

Regarding mesh fixation in laparoscopic TAPP inguinal hernia repair, a prospective randomized study compared absorbable and non-absorbable methods. Both were effective and safe with no significant difference in recurrence. Absorbable fixation might reduce chronic pain, offering a balance of efficacy and comfort for some patients [8].

This body of research underscores ongoing efforts to refine hernia repair, emphasizing the benefits of minimally invasive approaches while acknowledging the need for careful patient selection and surgical optimization.

Conclusion

The provided studies explore various hernia repair techniques, primarily focusing on minimally invasive approaches. For inguinal hernias, comparisons between TAPP and TEP indicate both are safe,

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with TEP potentially offering advantages in recovery and complications, influenced by surgeon expertise and patient factors [1]. Robotic inguinal hernia repair might incur higher costs and longer operating times but could lead to reduced post-operative pain and faster return to activity, particularly in complex cases, with similar long-term recurrence rates to laparoscopic methods [4]. Both TAPP and TEP are effective for recurrent inguinal hernias, chosen based on prior repair and surgeon expertise [10].

Laparoscopic repair for ventral hernias is associated with shorter hospital stays, less pain, and fewer wound complications compared to open repair, despite potentially comparable recurrence rates [2]. Laparoscopic incisional hernia repair outcomes are significantly affected by patient comorbidities and hernia characteristics, necessitating careful patient selection [3]. Advanced laparoscopic component separation techniques are effective for complex ventral hernias, reducing complications and hospital stays [7]. Laparoscopic umbilical hernia repair reduces hospital stay and pain while maintaining comparable recurrence rates to open repair [6]. For pediatric patients, laparoscopic inguinal hernia repair offers reduced post-operative pain, improved cosmetic outcomes, and the ability to address contralateral patent processus vaginalis, with similar recurrence rates to open surgery [9]. Lastly, absorbable mesh fixation in TAPP inguinal hernia repair may reduce chronic pain compared to non-absorbable methods [8], and laparoscopic hiatal hernia repair is effective for symptoms, though recurrence remains a concern for large hernias, requiring proper technique and mesh reinforcement [5].

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