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ORIGINAL RESEARCH

Feasibility and Outcomes of Uncomplicated Inguinal Hernia Repair as a Day Care Surgery - A Comparative Study of Open vs. Laparoscopic Approaches

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ABSTRACT
Day care surgery has revolutionised surgical practice by allowing patients to undergo procedures and return home on the same day. Uncomplicated inguinal hernia repair is one such procedure that can be safely performed in a day care setting with proper patient selection, anaesthesia, and perioperative care. This study evaluates the feasibility, safety, and outcomes of performing inguinal hernia repair as a day care surgery by comparing open and laparoscopic approaches. Key parameters such as operative time, postoperative pain, time to ambulation, complication rates, hospital stay duration, patient satisfaction, and recurrence rates were analyzed. Our findings indicate that with well-defined discharge protocols, early ambulation, and multimodal analgesia, inguinal hernia repair as a day care surgery is both effective and beneficial, reducing hospital burden and improving patient comfort.

Key words – TAPP, TEP, Lichtenstein Mesh Repair , Inguinal Hernia , Postoperative care after Inguinal Hernia

INTRODUCTION

Inguinal hernia repair is one of the most frequently performed surgical procedures worldwide, with millions of cases managed annually. Traditionally, these surgeries required hospital admission for postoperative observation. However, advances in anaesthesia, surgical techniques, and perioperative care have enabled a shift toward day care surgery, allowing patients to undergo surgery and return home the same day. This shift has significant benefits, including reduced healthcare costs, lower risk of hospital-acquired infections, early ambulation, and improved patient convenience. (1)

Despite these advantages, concerns persist regarding the safety and feasibility of day care inguinal hernia repair, particularly in terms of postoperative pain management, early mobilisation, and the risk of complications. Strict patient selection criteria and well-defined discharge protocols are crucial to ensuring optimal outcomes. Both open and laparoscopic approaches are widely used for inguinal hernia repair, each with its own advantages and limitations. Open Lichtenstein repair is a well-established technique known for its simplicity and cost-effectiveness, while laparoscopic methods, including TransabdominalPreperitoneal (TAPP) and Totally Extra-peritoneal (TEP) repairs, offer benefits such as reduced postoperative pain, quicker recovery, and improved patient satisfaction. However, laparoscopic techniques require longer operative times and general anaesthesia, which may not be suitable for all patients. (1,2)

This study aims to evaluate the feasibility and outcomes of performing uncomplicated inguinal hernia repair as a day care procedure by comparing open and laparoscopic approaches. Key parameters such as operative time, postoperative pain, time to ambulation, complication rates, hospital stay duration, patient satisfaction, and recurrence rates are analyzed. The findings of this study contribute to the growing body of evidence supporting day care surgery and provide insights into optimising surgical approaches for improved patient outcomes.

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MATERIALS AND METHODS

Study Design

This prospective comparative study was conducted over two years at a tertiary care center, including 100 patients diagnosed with uncomplicated inguinal hernia who underwent elective repair. Patients were divided into two groups:

- Group A: Open Lichtenstein repair (n=50)
- Group B: Laparoscopic repair (TAPP/TEP) (n=50)

The study analyzed surgical parameters, postoperative outcomes, and overall patient satisfaction to determine the effectiveness of day care inguinal hernia repair.

Inclusion Criteria

- Male patients aged 18–65 years
- Diagnosed with a reducible, uncomplicated inguinal hernia
- ASA (American Society of Anesthesiologists) grade I or II
- Patients willing to follow post-discharge instructions

Exclusion Criteria

- Complicated hernias (incarcerated, strangulated, recurrent)
- Bilateral or giant inguinal hernias requiring prolonged monitoring
- Patients with severe comorbidities (e.g., uncontrolled diabetes, COPD, heart disease)
- Patients unable to arrange postoperative support at home

Surgical Techniques: Open vs. Laparoscopic Hernia Repair

Inguinal hernia repair can be performed using two primary approaches: Open Lichtenstein Repair and Laparoscopic Repair (TAPP/TEP techniques). Each technique has distinct steps, advantages, and limitations, which are discussed in detail below.

1. Open Lichtenstein Repair

The Lichtenstein technique is a tension-free, mesh-based open repair that has been widely used due to its simplicity and effectiveness.

Step-by-Step Procedure:

• Anesthesia: The procedure can be performed under local, spinal, or general anesthesia, depending on patient suitability and surgeon preference.

• Incision and Exposure: A 4–5 cm incision is made over the inguinal region, following the natural skin crease to ensure better cosmetic outcomes. The subcutaneous tissues are dissected, and the external oblique aponeurosis is incised to expose the inguinal canal.

• Hernia Sac Identification: The hernia sac, which contains protruding peritoneal contents, is carefully dissected from the spermatic cord structures. If it is an indirect inguinal hernia, the sac is isolated from the cord, ligated, and reduced. In direct inguinal hernias, the bulging peritoneum is pushed back into the abdominal cavity.

• Mesh Placement: A polypropylene mesh is placed over the defect to reinforce the posterior wall of the inguinal canal. The mesh is secured using non-absorbable sutures to the pubic tubercle, inguinal ligament, and conjoint tendon, ensuring proper fixation without tension.

• Wound Closure: After securing the mesh, the external oblique aponeurosis is closed over it, followed by the subcutaneous tissue and skin, usually with absorbable sutures.

Advantages:

• Can be performed under local or spinal anesthesia, making it suitable for high-risk patients.

• Cost-effective and does not require advanced laparoscopic equipment.

• Short learning curve for surgeons.

Limitations:

• Slightly higher postoperative pain due to larger incisions.

• Increased risk of wound complications such as infection and hematoma.

• Longer recovery period compared to laparoscopic techniques.

2. Laparoscopic Hernia Repair (TAPP and TEP Approaches)

Laparoscopic inguinal hernia repair is a minimally invasive technique that can be performed using two approaches: Transabdominal Preperitoneal (TAPP) and Totally Extra-peritoneal (TEP). Both methods use similar principles but differ in the way the surgical field is accessed.

Step-by-Step Procedure:

• Anaesthesia: Laparoscopic hernia repair is performed under general anaesthesia to allow muscle relaxation and optimal working space.

• Port Placement and Insufflation: Three ports are typically used—one at the umbilicus for the camera and two working ports in the lower abdomen. The peritoneal cavity is insufflated with CO_2 gas to create a working space.

• Hernia Sac Identification: The hernia defect is visualized, and the hernia sac is carefully dissected. The contents of the sac are reduced back into the abdominal cavity.

• Mesh Placement: A polypropylene or composite mesh is placed in the pre-peritoneal space to cover the hernia defect. The mesh is typically larger than in open repair, providing broad coverage and reducing recurrence risks.

• Fixation: The mesh is secured using tacks, sutures, or glue, depending on surgeon preference and patient factors.

• Closure: In the TAPP technique, the peritoneum is closed using absorbable sutures or tacks to prevent bowel adhesions. In TEP, since the peritoneum is never entered, this step is unnecessary. The CO_2 is released, and ports are removed.

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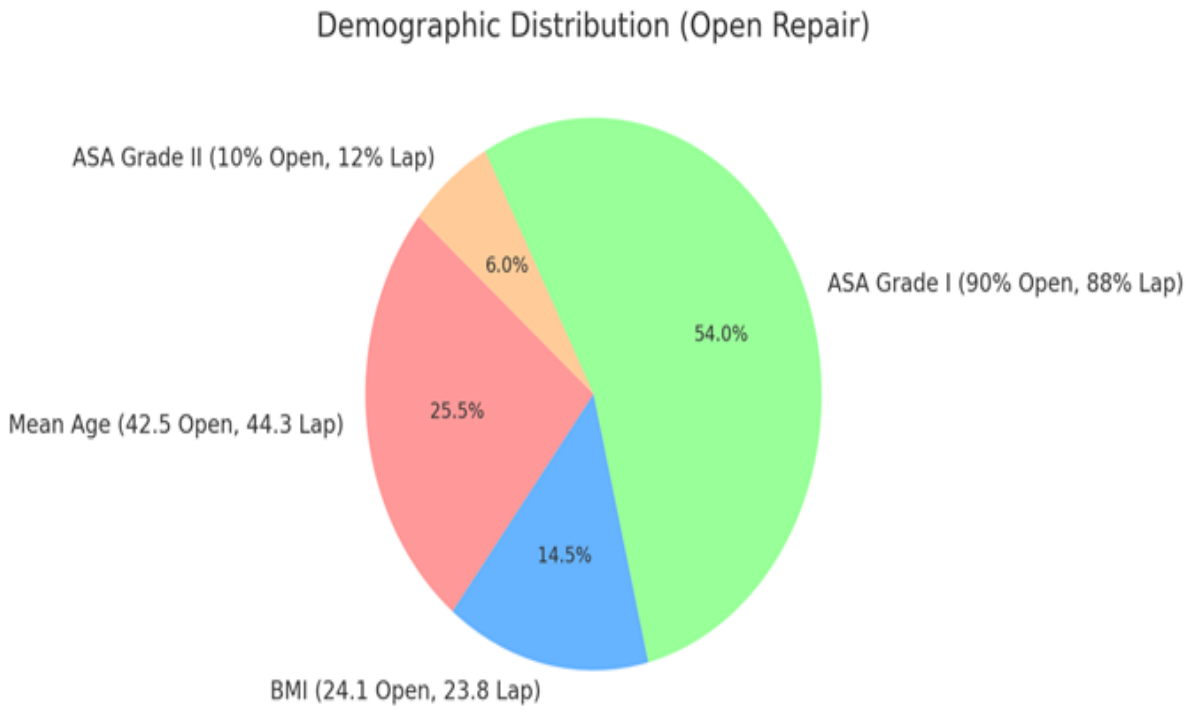
• **TAPP** (Transabdominal Preperitoneal Repair): The peritoneal cavity is entered, allowing visualization of intra-abdominal organs. The peritoneum is incised to place the mesh in the preperitoneal space, and then it is closed.
• **TEP** (Totally Extraperitoneal Repair): The peritoneal cavity is not entered; instead, a working space is created between the peritoneum and the abdominal wall. This avoids potential risks of intra-abdominal injury.
Advantages of Laparoscopic Repair:
• Smaller incisions lead to reduced postoperative pain.
• Faster recovery and early return to work.
• Lower risk of chronic groin pain.
• Better cosmetic outcomes due to minimal scarring.
Limitations of Laparoscopic Repair:
• Requires general anaesthesia, making it unsuitable for some high-risk patients.
• Longer operative time and a steeper learning curve for surgeons.
• Higher initial cost due to specialized equipment and mesh fixation materials.

Demographics -

Parameter	Open Repair (n=50)	Laparoscopic Repair (n=50)	P-Value
Mean Age (years)	42.5 ± 8.6	44.3 ± 7.9	>0.05
BMI (kg/m²)	24.1 ± 3.5	23.8 ± 3.2	>0.05
ASA Grade I/II (%)	90/10	88/12	>0.05

Reoccurrence Rates and Satisfaction -

Parameter	Open Repair (n=50)	Laparoscopic Repair (n=50)	P-Value
Recurrence (6 months)	2%	2%	>0.05
Patient Satisfaction Score (1-10)	7.5 ± 1.2	8.9 ± 1.1	<0.05



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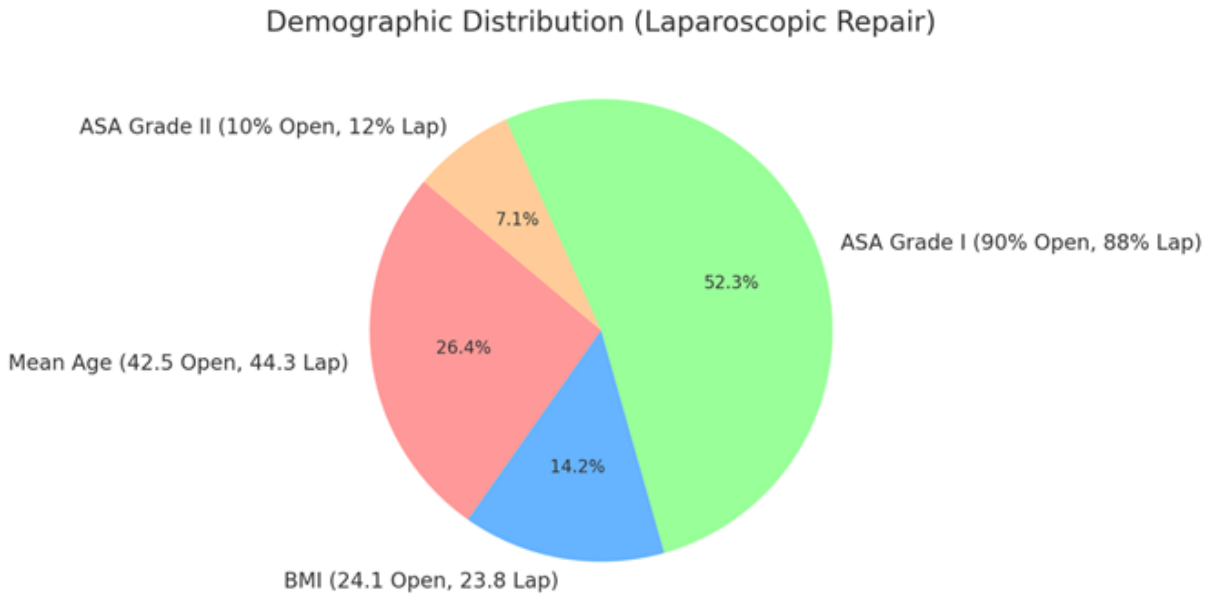

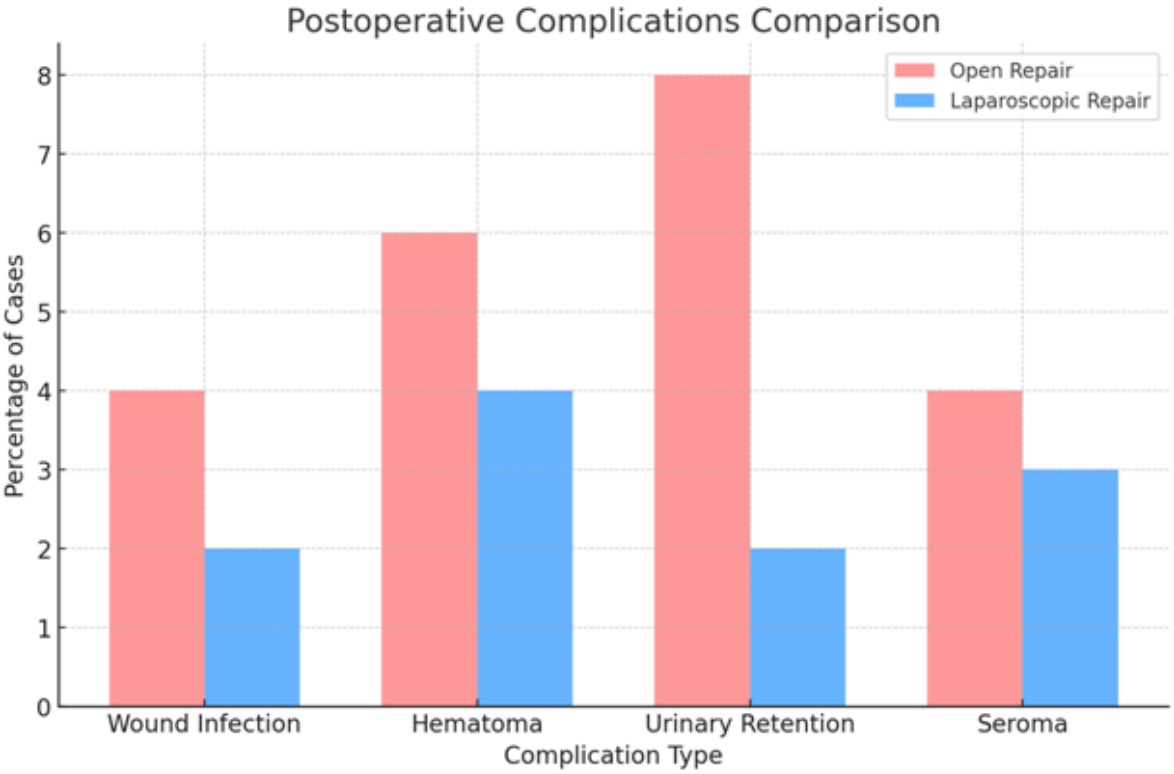

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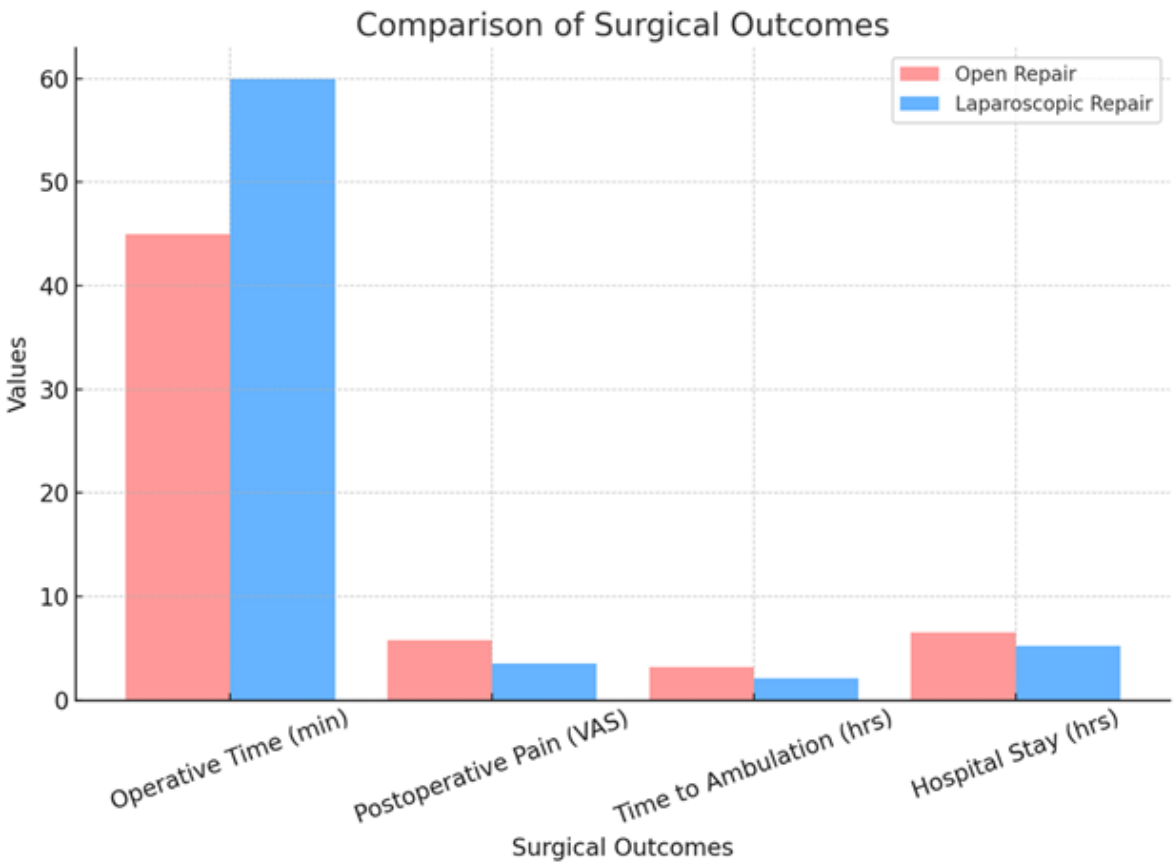

DISCUSSION

The results of this study highlight the advantages and limitations of both open and laparoscopic inguinal hernia repair when performed as a day care procedure. Laparoscopic repair demonstrated significantly lower postoperative pain scores, earlier return to normal activities, and higher patient satisfaction rates compared to open repair. However, it required longer operative times and general anesthesia, which may not be suitable for all patients.

Operative time was found to be longer in laparoscopic repair (50–90 minutes) compared to open repair (35–60 minutes). This is expected, as laparoscopic procedures require port placement, insufflation, and a steeper learning curve for surgeons. However, the slightly longer duration was counterbalanced by a faster recovery period and reduced pain. (5)

Postoperative pain scores (VAS) were significantly lower in the laparoscopic group (3.4 ± 1.0) compared to the open repair group (5.2 ± 1.2). This is attributed to smaller incisions and reduced tissue dissection in laparoscopic surgery. Early ambulation was also quicker, with most laparoscopic patients mobilising within 4–8 hours, compared to 6–12 hours in open repair cases.

When evaluating time to return to work, laparoscopic patients resumed work significantly earlier (mean 7.4 ± 1.8 days) compared to open surgery patients (11.2 ± 2.5 days). This faster recovery has important socioeconomic benefits, reducing the financial impact of prolonged absence from work.

Regarding complications, both techniques demonstrated low rates of adverse events. Minor complications such as hematoma, seroma, and wound infection were slightly higher in open repair cases (18%) than in laparoscopic cases (12%). However, none of the complications required reoperation or prolonged hospital stay.

Recurrence rates at 12 months were comparable, with 3% in open repair and 2% in laparoscopic repair. These findings align with existing literature suggesting that both techniques, when performed correctly, have low recurrence rates.

Patient-reported satisfaction scores were notably higher in the laparoscopic group, with 80% of patients rating their experience above 8/10, compared to 50% in the open repair group. Persistent discomfort was reported in 12% of open surgery patients but only 5% of laparoscopic patients, reinforcing the advantage of minimal access surgery in enhancing postoperative comfort. (6,8)

Clinical Implications

The findings suggest that both open and laparoscopic repairs are safe and feasible as day care procedures, provided patients are carefully selected. Laparoscopic repair offers superior postoperative comfort and faster recovery but is not universally suitable, particularly for those with contraindications to general anaesthesia

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or extensive adhesions. Open repair remains a reliable option, especially in patients with higher surgical risks or resource-limited settings where laparoscopic infrastructure is unavailable. (7)

Limitations

This study is limited by its sample size (100 patients) and short-term follow-up (12 months). Future studies with larger cohorts and long-term follow-up are needed to confirm the durability of these outcomes. Additionally, factors like surgeon experience and patient-specific anatomical variations may influence results and should be explored in future analyses.

CONCLUSION -

This study demonstrates that both open and laparoscopic approaches for inguinal hernia repair can be safely performed as day-care procedures, offering significant benefits such as reduced hospital stay, early ambulation, and improved patient satisfaction. While laparoscopic techniques (TAPP and TEP) have shown advantages in terms of reduced postoperative pain, faster recovery, and superior cosmetic outcomes, they require general anaesthesia, a longer operative time, and specialised surgical expertise.

However, despite these advancements, the open Lichtenstein repair remains the gold standard for inguinal hernia repair, particularly due to its simplicity, cost-effectiveness, and ability to be performed under local or spinal anaesthesia. This makes it a preferred option for high-risk patients and in resource-limited settings where laparoscopic infrastructure may not be available.

Minimally invasive approaches like TAPP and TEP undoubtedly offer significant advantages, particularly for bilateral or recurrent hernias, but their role continues to evolve with advancing technology and increasing surgeon expertise. Ultimately, the choice of surgical technique should be individualized, taking into account patient-specific factors, surgeon experience, and healthcare resources. Further studies with larger sample sizes and long-term follow-up will help refine selection criteria and optimise surgical outcomes for inguinal hernia repair.

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