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Case Report

Laparoscopic transabdominal preperitoneal hernia repair: a case report

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ABSTRACT

This case report highlights the successful management of a complex inguinal hernia using the laparoscopic transabdominal preperitoneal (TAPP) approach. The patient, with a long-standing hernia complicated by loss of domain, underwent preoperative botulinum toxin injections, placement of a peritoneal catheter, and laparoscopic repair with mesh placement. Intraoperative findings and postoperative recovery were uneventful, demonstrating the safety and efficacy of the TAPP technique even in challenging cases. Recent literature supports the use of TAPP in emergency hernia repair, with advantages including reduced postoperative pain, shorter hospital stays, and improved visualization. Ongoing innovations in surgical training and technology continue to enhance outcomes in minimally invasive inguinal hernia repair.

Keywords: Inguinal hernia, TAPP, Laparoscopic surgery

INTRODUCTION

Laparoscopic transabdominal preperitoneal (TAPP) surgery is a minimally invasive technique for the repair of groin (inguinal and femoral) hernias. In TAPP, the surgeon gains access to the peritoneal cavity using laparoscopic ports, then incises the peritoneum to enter the preperitoneal space. The hernia sac is reduced, and a synthetic mesh is placed in the preperitoneal space to reinforce the myopectineal orifice and prevent recurrence. The peritoneum is then closed over the mesh to separate it from the intra-abdominal contents.[1-6]

CASE REPORT

A 45-year-old male, with a history of systemic hypertension, presented with a 7-year history of gradually enlarging right inguinal swelling diagnosed as an inguinal hernia, which had not been previously treated. Physical examination revealed a non-reducible right inguino-scrotal hernia containing intestinal content and fat, with no signs of complications (Figure 1). Imaging confirmed a 52×47 mm hernia sac containing mesenteric vessels, sigmoid colon, and diverticulosis without evident complications (Figure 2). The planned surgical intervention involved a laparoscopic TAPP approach, including preoperative botulinum toxin injections into the oblique muscles, placement of a peritoneal catheter, and creation of a pneumoperitoneum with 1250 cc. after two weeks the surgical intervention intraoperatively, reduction of hernia contents was achieved (Figures 3-5) and a polypropylene mesh was positioned to repair the defect, along with correction of an umbilical hernia. The procedure was completed successfully with stable vital signs, no intraoperative complications, and an estimated blood loss of 5 cc. Postoperative recovery was uneventful, and the patient was discharged after 2 days with instructions for activity restrictions, analgesics, and outpatient follow-up. The overall prognosis remains guarded due to the hernia's loss of domain and surgical complexity, with risks including infection, bleeding, organ injury, and recurrence.

Figure 1: Non-reducible giant right inguino-scrotal hernia.

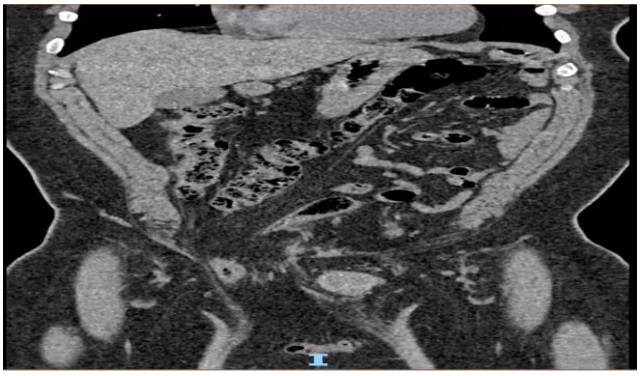

Figure 2: Coronal CT, right inguinoscrotal hernia containing intestinal loops.

Figure 3: Lateral (indirect) hernial contents of the omentum and intestinal loops with loss of domain.

Figure 4: Complete dissection of the myopectineal orifice and critical safety vision.

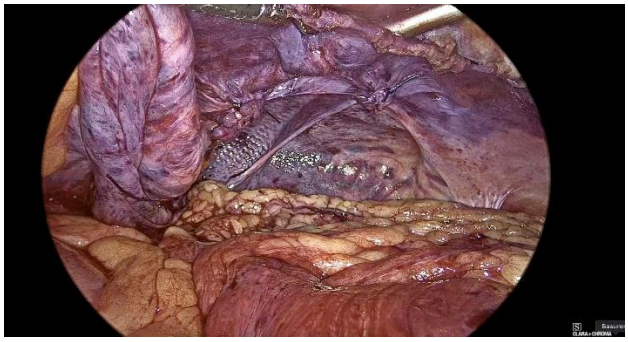

Figure 5: Deflation of the dissected space and verification of proper mesh placement, fixation of the hernial sac to the closure of the peritoneum.

DISCUSSION

TAPP allows for direct visualization of the intra-abdominal cavity, which facilitates assessment of hernia contents, identification of contralateral or occult hernias, and management of incarcerated or strangulated hernias if present.[2,7] The approach is applicable to both elective and emergency settings, although its use in emergencies requires careful patient selection and surgical expertise.[2,7] TAPP is considered technically less demanding than the totally extraperitoneal (TEP) approach, particularly for surgeons early in their learning curve, but it does involve entering the peritoneal cavity, which may increase the risk of visceral injury compared to TEP.[1,4,8]

Clinical outcomes for TAPP, including rates of serious adverse events, hernia recurrence, and chronic pain, are comparable to those of TEP, with the choice of technique often determined by surgeon experience and patient-specific factors.[1,3,4] TAPP is also feasible and safe in the hands of appropriately trained surgical residents under supervision, with outcomes similar to those achieved by board-certified surgeons.[4,8] In pediatric populations, TAPP can be adapted for anatomical repair without mesh, although this is less common and typically reserved for select cases.[9]

The common indications for laparoscopic TAPP surgery are primarily the repair of inguinal and femoral hernias, both in elective and selected emergency settings. TAPP is widely utilized for primary unilateral and bilateral inguinal hernias, as well as for recurrent hernias after previous anterior repair, given its ability to address both groins and to provide a tension-free repair with mesh placement.[10-12] It is also indicated in patients with a high risk of recurrence, such as those with obesity or bilateral hernias, due to the advantages of minimally invasive access and the ability to comprehensively assess the myopectineal orifice.[2]

In the emergency setting, TAPP can be considered for incarcerated or strangulated groin hernias in carefully selected patients—typically those who are younger, have fewer comorbidities, and present with less severe clinical

scenarios. The literature supports its feasibility and safety in these cases, with potential benefits including reduced postoperative complications, shorter hospital stays, and the opportunity to diagnose and repair contralateral occult hernias during the same procedure.[3-6] However, TAPP is generally not recommended in the presence of peritonitis, extensive bowel compromise, or in patients with significant comorbidities that increase operative risk.[4]

Postoperative care following laparoscopic TAPP hernia repair is guided by principles of enhanced recovery and multimodal analgesia, with the goal of minimizing complications, facilitating early mobilization, and expediting return to normal activities. Early ambulation and resumption of oral intake are recommended as soon as the patient is awake and stable, with diet advanced as tolerated and intravenous fluids discontinued promptly unless there is evidence of ileus or other complications.[1] Pain management should prioritize opioid-sparing strategies, utilizing non-opioid analgesics and regional techniques such as transversus abdominis plane (TAP) blocks or laparoscopic-guided local anesthetic infiltration, both of which have demonstrated efficacy in reducing postoperative pain and opioid consumption without increasing adverse events.[2-4] Routine use of thoracic epidural analgesia is not recommended for minimally invasive procedures such as TAPP.[4]

Patients are typically encouraged to resume normal activities, including return to work and leisure, within a few days postoperatively, with the median convalescence reported as 3–5 days, although this is influenced by preoperative counseling and patient expectations.[5] Monitoring for complications such as seroma, infection, and persistent pain is essential, but routine imaging is not indicated in the absence of clinical concern.[1,6] Discharge criteria include adequate pain control with oral analgesics, tolerance of a solid diet, absence of fever, and return of bowel function; early discharge is feasible in low-risk patients with appropriate follow-up.[1,4,6] Laboratory testing and additional interventions should be individualized based on clinical status.[1]

CONCLUSION

In conclusion, the recent advances and comparative studies in laparoscopic inguinal hernia repair, particularly using the TAPP technique, demonstrate its safety, efficacy, and favorable outcomes even in emergency settings such as incarcerated hernias. The integration of innovative training methods, including 3D simulation, and the adoption of robotic assistance further enhance surgical precision and patient recovery. While the procedure offers significant benefits over traditional open approaches, careful patient selection and surgical expertise remain critical to minimizing complications and ensuring successful long-term results. Ongoing research and technological advancements continue to solidify laparoscopic TAPP as a preferred modality for inguinal hernia management.

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