

Case Report

Posterior Wall Pitfall: Clinical Insights from Lumbar Incisional Hernia

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Abstract: Lumbar incisional hernias are considered infrequent. They account for less than 1.5% of the abdominal wall hernias. The management of lumbar incisional hernia often presents as a surgical challenge, as the defect is situated adjacent to bony prominences and retroperitoneal structures. Different methods including open suture-based repair, polypropylene mesh strip reinforcement with and without component separation and laparoscopic mesh placement are available to repair lumbar incisional hernia. We present a case of a 50 years old female patient with right flank swelling for 6 months diagnosed as lumbar incisional hernia. In this case defect closure was performed successfully using polypropylene mesh strip sutures. Patient was followed for 1 year and had no recurrence clinically as well as on CT scan.

Keywords: Lumbar incisional hernias, Bony prominences, Retroperitoneal structures, Open suture-based repair, Polypropylene mesh strip reinforcement, Laparoscopic mesh placement.

INTRODUCTION

Lumbar incisional hernias are relatively uncommon accounting for less than 1.5% of abdominal wall hernias [1, 2]. Lumbar hernias of primary origin are categorized as superior (aka Grynfeltt-Lesshaft) and inferior (aka Petit) lumbar triangle hernias. In contrast, a specific classification for lumbar incisional hernias has not been established. These hernias predominantly arise in the lower lateral zone of the abdominal wall.

Prior surgical interventions, particularly those with flank incisions or procedures that disrupt the integrity of lateral abdominal wall musculature serve as one of the most important predisposing factor. Other risk factors include advancing age, raised BMI, increased intra-abdominal pressure and prior surgical site complications such as wound infection or dehiscence. Clinical presentation ranges from ill-defined fascial defects due to atrophy of abdominal wall musculature to well defined reducible bulge [3]. As lumbar incisional hernias are diffuse with fascial defect, they are difficult to appreciate. In order to distinguish whether the bulge in abdominal wall is due to denervation atrophy of muscles or fascial defect, CT scan of abdomen and pelvis with contrast is required [4].

The optimum management option for lumbar incisional hernias present as a surgical challenge because of their

location adjacent to bony landmarks and retroperitoneal structures. There has been an increasing interest in alternative reinforcement techniques in order to optimize even tension distribution while minimizing tissue tension. One such approach is use of polypropylene mesh strip reinforcement. This technique offers potential advantage in terms of tension distribution equally particularly in anatomically constrained region. Polypropylene mesh provides favorable tensile strength. It is widely available as well as affordable. However, careful placement and secure fixation is required particularly in areas where soft tissue coverage is limited to prevent mesh displacement, chronic pain and recurrence [3, 5].

Here, we present a case of 50 years old female who presented to us with the complain of swelling in flank region since 6 months which was causing her discomfort. It was diagnosed as lumbar incisional hernia and was repaired successfully using polypropylene mesh strip sutures.

The case report has been prepared in accordance with the SCARE guidelines.

CASE REPORT

50 years old female patient with no known co-morbid who underwent right sided open pyeloplasty 1 year back, presented to us with the complain of a right sided flank swelling for 6 months. On Examination, there was healed incisional scar of 16cm and a large well circumscribed swelling in the right flank. It was completely reducible

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and exhibited a positive cough impulse. Bulge became less prominent in left lateral decubitus position.

CT scan of abdomen and pelvis with contrast reported a large defect in right lateral abdominal wall measuring 8.33 x 9.33cm, causing thinning of abdominal wall musculature including external oblique, internal oblique and transverse abdominis. There was herniation of hepatic flexure, ascending colon and cecum, ileocecal junction terminal ileum and other right sided small bowel loops along with mesentery and peritoneal fat through the defect causing significant right sided posterolateral abdominal contour bulge. The impression of Lumbar incisional hernia was made and planned for Open Mesh Repair. We used "Polypropylene Mesh Strip" sutures for closure of the defect (Fig. 1).



Fig. (1): CT Scan Abdomen and Pelvis with Contrast Showing Right Sided Postero-Lateral Abdominal Wall Defect with Herniation of Bowel Loops through the Abdominal Wall Defect.

Informed consent was obtained before the procedure. Under general anesthesia, the patient was placed in a right modified flank position during the procedure. Appropriate padding of pressure points was done to ensure stability and prevent intra-operative complications. After taking all aseptic measures paint and drape was done. Site of hernia was marked by using sterile pen and linear incision was made at the site of previous scar. External oblique muscle was thinned out. Careful dissection was done through the subcutaneous tissue maintaining hemostasis throughout. The hernia sac was identified and adhesiolysis was performed. Sac contained healthy cecum, ascending colon and omentum. Given the location and size of the defect, a decision was made to reinforce the

repair using polypropylene mesh strips. Using polypropylene mesh 3cm wide and 16cm long strips were prepared. Each strip was passed through the full thickness of abdominal wall on either side of the defect and was carefully placed at regular interval to avoid injury to the underlying structures. 1-0 polypropylene suture was used to secure the PMSS. After adequate closure, the repair was inspected for stability and symmetry. Hemostasis was secured and wound was irrigated with normal saline. Redivac drain was placed in the subcutaneous plane. Skin was closed in interrupted manner. Sterile dressing was applied. Estimated blood loss was minimal. Intraoperatively, TED stockings were used for DVT prophylaxis.

Within 4 hours of surgery patient was mobilized out of bed. Redivac drain was removed on the 6th postoperative day. For 8 weeks, abdominal binder was prescribed. Postoperatively, the patient was counselled to refrain from lifting heavy objects. At one year follow-up, there were no signs of hernia recurrence.

DISCUSSION

High BMI, smoking, postoperative abdominal distention, surgical site infection, constipation and surgical procedures involving the kidneys, retro-peritoneal approach for aortic aneurysm, grafting of pelvic bone and prior surgical site complications such as wound infection or dehiscence are some of the recognized risk factors for development of lumbar incisional hernia [3, 6].

The management of lumbar incisional hernia presents as a surgical challenge due to their location adjacent to bony landmarks and retroperitoneal structures [3]. Different methods including open suture based repair, polypropylene mesh strip reinforcement with and without component separation and laparoscopic mesh placement are available to repair lumbar incisional hernia. Neither of the technique has been proven to be superior to the other. Open mesh repair allows direct visualization and strong reinforcement but at the cost of larger incisions, increased morbidity, seroma formation and longer recovery time. Laparoscopic repair offers the advantage of reduced postoperative pain, shorter hospital stay and better cosmetic outcome. However, it is technically demanding in lumbar hernias due to bony landmarks, limited working space and challenges in achieving secure mesh fixation [7, 8]. As compared to anterior abdominal wall, posterior abdominal wall provides fewer options for secure mesh fixation. Hence, in order to prevent recurrence, achieving a tension-free repair is a key factor.

In our case, polypropylene mesh strip suture was used to close the defect. This technique has the advantage of evenly distributing the tension over a large surface area. It provides greater tensile strength as compared to simple mesh repair hence reduces the risk of recurrence [9]. It avoids technical difficulties during mesh fixation near bony prominences such as iliac crest and 12th rib which are often encountered in laparoscopic procedures. [3]. Primary suture closure and flap reconstruction requires securing mesh directly to bone which may cause injury to intercostal nerve leading to chronic postoperative pain. These challenges have emphasized the need for modified techniques in order to improve mechanical stability. In case of PMSS, soft tissue closure is reinforced by mesh strips, thus minimizing the risk of nerve injury [10].

Like any other surgical procedure this technique also carries a risk of potential complications such as surgical site infection, mesh exposure/erosion, seroma formation, adhesions and recurrence but it provides enhanced structural support [11]. However, it allows defect closure with minimal tissue disruption especially in patients with past surgical history. It provides an effective balance between decreased morbidity and recurrence.

Polypropylene mesh strip sutures represent a feasible option in selected cases for repair of lumbar incisional hernia due to its better tensile strength, effective closure in anatomically challenging spaces, improved resistance to pull through, lower rate of surgical site infection and recurrence. Although long term data is limited, the absence of recurrence during the follow-up period supports the reliability of this technique. Appropriate postoperative care and patient education also plays an important role in success of the procedure [12].

The present case report adds to the growing evidence suggesting that mesh strips based reinforcement, is a safe and effective approach. The present case adds to the existing literature by demonstrating its application in a more complex and large lateral lumbar defect, requiring a structured dual-layer closure of both the internal and external oblique muscles with multiple mesh strip sutures. This highlights the technical adaptability of PMSS in anatomically challenging lumbar incisional hernias and supports its reducibility. Further studies with large cohorts and long term follow-up are required to better define optimal techniques and establish more consistent treatment guidelines for this challenging condition.

CONCLUSION

Repair of Lumbar incisional hernia remains a challenging abdominal wall surgery requiring individualized approach to management. This case describes the successful use of PMSS for closure of abdominal wall defect with no complication and satisfactory wound healing. This technique allows effective distribution of mechanical force across the repair site. For long term success, role of postoperative care, patient compliance to activity restriction and gradual return to normal function is equally important.

LIST OF ABBREVIATIONS

BMI: Body Mass Index.

CT scan: Computed Tomography scan.

DVT: Deep Vein Thrombosis.

PMSS: Polypropylene Mesh Strip Suture.

SCARE Guidelines: Surgical Case Report Guidelines.

TED: Thromboembolism-Deterrent Stockings.

AUTHORS' CONTRIBUTION

Amna Khan: Conceptualization, Writing draft and Final approval, final proof to be published.

Hina Khan and Farhan Zaheer: Critical review and revision of the manuscript and Final approval, final proof to be published.

Danyal Zahoor and Syeda Mahjabeen Fatima: Writing draft and Final approval, final proof to be published.

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ETHICAL DECLARATIONS

Data Availability Statement

All data analyzed during the study are included within the case report.

Consent to Participate

Written informed consent was obtained from the patient for publication of the report.

Consent for Publication

All authors have provided the consent for publication.

Conflict of Interest

Declared none.

Competing Interest/Funding

Declared none.

Use of AI Assisted Technologies

The ChatGPT was used solely as an AI-assisted language refinement tool to improve readability and correct grammatical and punctuation errors. The authors retain full responsibility for the manuscript's accuracy, integrity and originality.

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