

Case Report

Triple mesh technique in repair of recurrent lumbar incisional hernia

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ABSTRACT

Lumbar hernias occur infrequently and can be congenital, primary (inferior or Petit type, and superior or Grynfelt type), post-traumatic, or incisional. They are bounded by the 12th rib, the iliac crest, the erector spinae, and the external oblique muscle. Most postoperative incisional hernias occur in nephrectomy or aortic aneurysm repair incisions for which various surgical method in context of meshplasty are available. In this case 60 yr. male hypertensive patient presented to the outpatient clinic of institute with recurrent left side lumbar incisional hernia, patient was previously operated for left side nephrolithiasis 15 years back and onlay meshplasty 2 years back for incisional hernia. The patient was operated under high risk for recurrent incisional hernia repair by triple layered meshplasties in the same sitting. Lumbar incisional hernias are often diffuse with fascial defects that are usually hard to appreciate. Computed tomography scan is the diagnostic modality of choice with adjuvant clinical findings, which allows differentiating them from abdominal wall musculature denervation atrophy complicating flank incisions. Repairing these hernias is difficult due to the surrounding structures for which our surgical approach included a triple mesh repair consisting of underlay, inlay and onlay meshplasty thereby anticipating further such incidences of incisional hernia.

Keywords: Incisional hernia, Left lumbar region, Post-operative recurrence and pain incidence, Triple meshplasty, Ultra-pro mesh

INTRODUCTION

Incisional hernias develop in 3.8-11.5% of cases after abdominal surgery. The incidence depends on a number of factors including old age, sex, obesity, bowel surgery, suture type, chest infection, abdominal distension and wound infection.^{1,2} Ninety percent of incisional hernias occur within 3 years of operation.³

Repair of large abdominal incisional hernias is a difficult surgical problem with recurrence being a common complication. Recurrence rates of up to 33% after first repair and 58% after second repair have been reported.⁴

CASE REPORT

A case of 60-year-old male patient was reported who is a known case of hypertension; presented to the institute with chief complaint of swelling in the left flank for 6 months. On further evaluation, it was known that the patient was previously operated 15 years ago for left side renal stones through open left flank approach and subsequently operated for incisional hernia 2 years before. Subsequently, local examination of the patient revealed a diagonal incisional scar wound as well as cough impulse and reducibility thereby leading to a probable diagnosis of recurrent left lumbar hernia.

The hernia was approximately 10*8 cm on inspection (Figure 1), with smooth surface, showing expansile impulse on coughing, there were no dilated veins on the surface, and it was not associated with any tenderness or abdominal distension; though it was having uneven consistency on palpation. Further on palpation and a 6*6 cm gap defect within the herniation was palpable, contents of which could possibly be the bowel loops as well as left kidney.



Figure 1: Swelling present over left flank region in between 12th rib and iliac crest with impulse on coughing and scar mark of previous surgical intervention was seen.

Patient was then subjected to CT scan abdomen-pelvis, which revealed a gap defect of 6.6x7.7 cm with herniation of omental fat, left kidney and splenic flexure of the colon through the defect. Interestingly, a cortical cyst of size 17x17 mm over the upper pole of the right kidney was also seen on CT scan which is of no interest on the surgical aspect of intervention.

Patient was operated for left side recurrent incisional hernia repair under high risk in general anaesthesia. Surgery included triple meshplasty consisting of underlay, inlay and onlay mesh-plasties with negative drain insertion in respective layers.

DISCUSSION

Patients with primary lumbar hernias, complain of a palpable swelling that increases in size during coughing and disappear, when in supine position. They also have vague, non-specific abdominal or back pain. Moreover, lumbar hernias occasionally might lead to intestinal and urinary obstruction, which results in hydronephrosis.⁵ Most patients present in non-emergency situations, and only 9% present with surgical emergencies.⁶

Surgical management is the only treatment option for such type of hernias, and is better, if performed early to avoid complications. In the past, majority of lumbar hernias were corrected using muscle flaps that are taken from gluteus maximus, medius, latissimus dorsi muscles

and fascia lata, but the management has very high recurrence rate because of high tension of the repair and poor fascial strength.⁷ Later on, the surgeons used the artificial mesh with polypropylene, prolene or Marlex for bridging the defect.⁸

Although there is plethora of operative techniques that have been described, there is no recommended specific approach for its management. The most recent management in the meshplasty era is the nonabsorbable mesh, which is preferred for its management; it could be placed onlay, inlay or underlay according to the defect size, and it should cover all the area that is present between the 12th rib and the iliac crest. Traditionally, it is fixed to the floor by interrupted nonabsorbable stitches.⁹

Technique used was the same well-described methods for the repair of lumbar hernia with all three overlying mesh, aiming to decrease the recurrence rate.

In this case, intra-operatively, two gap defects were found (Figure 2), of which the lateral defect contained the retroperitoneal tissue along with left kidney and the medial gap allowed herniation of the colon. Prolene mesh fixation of 15 x 15 cm [underlay] was done under these two gap defects at extraperitoneal layer; (Figure 3) following which another prolene mesh of same size was fixed over it between the two-muscle layer [inlay], which was sutured with the adjacent underlying muscle (Figure 4).



Figure 2: Two separate gap defects were present which are shown in figure above. Medial defect is shown from which herniation of colon is seen as in the first image and lateral defect is shown from which herniation of retroperitoneal structure (left kidney).

Before placing this mesh, a negative drain was introduced in extraperitoneal layer to the exterior to look for any internal output in the post-operative period. One additional negative drain was kept between this two-muscle layer. After the sheath closure, the dissecting plane was then extended in the left subcostal region

towards the superior aspect and was also extended downwards towards the left iliac crest along with medial and lateral extensions paving way for consequent onlay meshplasty, which was done by fixing an ultrapro mesh of size 30x30 cm (Figure 5) along with insertion of another two negative suction drain for post-op drain output monitoring. Post operatively, patient was vitally stable with 20 cc, 15 cc and 100 cc output from the underlay, inlay and onlay drains respectively on post-operative day 1. Drain output gradually reduced to 10 cc, 10 cc and 5 cc respectively on post-operative day 5th and were then subsequently removed on 6th and 7th post-operative day. Patient was monitored thoroughly and was maintaining vitals throughout; which led to his discharge on 12th post-operative day after the skin stitch removal.



Figure 3: Underlay meshplasty with 15*15 cm size of prolene mesh was done in extraperitoneal layer and few fixation stiches were taken of mesh with gap defect is shown along with single negative drain was passed outside from this layer.



Figure 4: Inlay meshplasty with 15*15 cm size of prolene mesh is shown covering the gap defect between the two-muscle layer and one negative drain driven outside from this layer.

Petersen et al, have used the sublay method only, as this technique is well known having passed the test of time

since many passing decades, particularly by French surgeons.^{9,10} Petersen et al, used mesh that was ~25x38 cm in size for repairing flank incisional hernias, and they have observed that there is no recurrence of the hernia in their four patients who underwent mesh repair for flank hernia.⁹ Therefore, results of Petersen et al, proved that mesh repair of hernia could decrease the recurrence rate of hernia up to ~10%.^{9,11,12} However, the disadvantage is that there are a huge number of patients complaining of surgical site discomfort, for example, abdominal stiffness and persistent pain. A study on the same grounds was conducted by Gamal Osman et al, in 2018 over 20 patient, out of which in 10 patient double layer meshplasty [mesh plug and onlay] was done where as in other 10 patient single layer meshplasty was done in repair of lumbar incisional hernia, also suggested decrease in the future recurrence rates as well as decrease in the post-operative complication alongside allowing restoration of integrity of the abdominal wall.¹³



Figure 5: Onlay meshplasty with 30*30cm ultrapro mesh is shown over sheath. Flap was made in the left subcoastal region towards the superior aspect and was also extended downwards towards the left iliac crest along with medial and lateral extensions paving way for consequent onlay meshplasty and two negative drain was brought outside from this layer.

As no single technique has been proved more beneficial, this surgery was carried out using triple mesh, in view of covering multiple gap defects, and also to reduce chances of recurrent herniation; more so with proper post-operative analgesia, patient's overall condition was fair, and was discharged without any post-operative complication.

CONCLUSION

A case of an elderly male was presented, who had recurrent left side incisional hernia, which was repaired using triple mesh technique, consisting of underlay, inlay and onlay meshplasty. Lumbar incisional hernias are not so common surgical entity, hence needs proper evaluation before planning a surgery; pre-operatively, patient should

be thoroughly examined by the clinician and patient's work-up must always include a CT scan so as to be well versed with herniated contents, location and the size of the gap defect. Triple mesh fixation technique using all three known techniques of open incisional hernia repair methods, proved to be rather new contemporary approach in today's slowly diminishing era of open surgeries, patient was well managed post-operatively, which led to minimal post-operative complications over 2 weeks period using the technique for lumbar incisional hernia meshplasty.

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