

## Case Report

# The Implementation of Various Surgical Approaches in Management of Recurrent Incisional Hernias

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**Abstract:** Management of recurrent incisional hernias still remains a challenge for surgeons in determining the best technique to ensure successful repair. Decision making will be more difficult when the recurrences occur at multiple sites within the abdominal wall. We reported a case of a 66-year-old man with underlying history of laparotomy for perforated diverticulum presented with 3 episodes of incisional hernias which were repaired with three different methods. Discussion is focused towards the various methods of incisional hernia repair and the superiority of one technique to the others.

**Keywords:** Incisional hernia, Mesh repair

## INTRODUCTION

An incisional hernia is defined as a postoperative defect of the abdominal wall through which the protrusion of intra-abdominal viscera occurs and associated with high recurrence [1]. Despite the advances in surgical fields, the correction of incisional hernia continues to be problematic and has not been able to reach the stage of elimination. The best surgical technique is still remained highly debatable and it is up to the surgeons' discretion with the current evidences so far.

The principles and goals of the hernia repair should however remain unchanged: reduction of the hernia content into the abdominal cavity with incorporation of the remaining abdominal wall in the repair to prevent hernia eventration, provision of dynamic muscular support and restoration of abdominal wall continuity in a tension-free manner with sutures or mesh [2].

## CASE REPORT

A 66-year-old Chinese gentleman with comorbidities of hypertension, hyperlipidemia and benign prostatic hyperplasia was previously admitted multiple times for recurrence of incisional hernias.

He had laparotomy and large bowel resection (subtotal colectomy) done for perforated diverticulitis in 2008. He had temporary ileostomy done which was reversed 6 months later. He was then presented with midline and right iliac fossa incisional hernias a year after. Open inlay mesh hernia repair was done.

The second recurrence happened in 2011 and he was electively admitted for primary closure at the midline and onlay mesh repair at the right iliac fossa (previous ileostomy site).

He was again electively admitted in 2013 for laparoscopic hernia repair for recurrent incisional hernia (Fig. 1). He was presented with multiple incisional hernias with positive cough impulse. Multiple adhesions were found between liver, bowels, omentum to hernia site and abdominal wall; adhesiolysis was then done. 30x30cm composite mesh was inserted into the peritoneal cavity through 10 mm port site, anchored to the abdominal wall using protack with approximately 5 cm margin (Fig. 2 & 3).

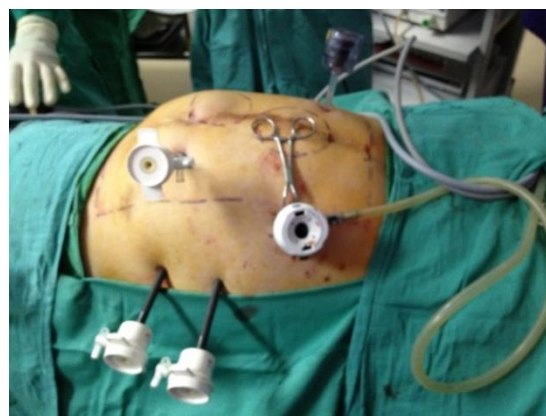
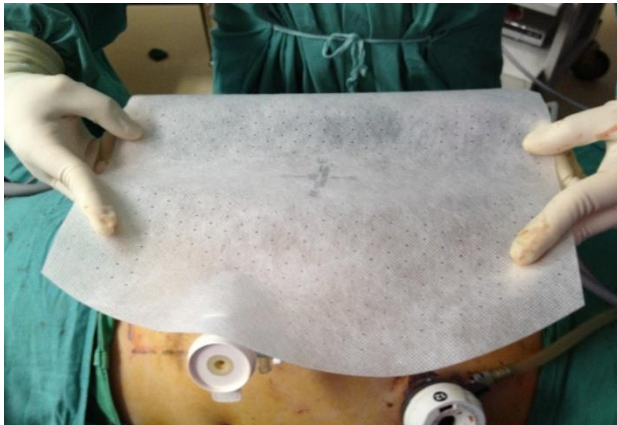


Fig. 1: Port placement during laparoscopic repair



**Fig. 2: 30x30cm composite mesh was measured from outside**



**Fig. 3: Placement of composite mesh which was fixed with tackers**

## DISCUSSION

The concern raised was the multiple recurrence of incisional hernia in this case study. The discussion of surgical management of incisional hernia is done with regards on the superiority of the following comparison: open vs laparoscopic, suture vs mesh repairs and mesh placement technique with considerations of the recurrence, complications, patients' satisfaction, pain and cosmesis.

### Open vs Laparoscopic

The laparoscopic approach has the advantages of being minimally invasive, the recurrence rate and reduction of post-operation pain with the considerations of careful patients' selection and distinct laparoscopic surgical skills [3]. Several studies were done, also revealed similar advantages of laparoscopic approach with addition of faster return to work, normal oral diet, better cosmetic results, shorter convalescence and lower the incidence of major complications [4-8]. Their studies concluded the superiority of laparoscopic approach. Thus laparoscopic hernioplasty should be considered as the principle mode or standard approach of repair [9].

Despite its advantages, the main complications after the approach such as incidental enterotomy, protracted pain and mesh infection are its impediment [8]. However, the open technique (onlay, inlay and sublay) is remarkable with the ability to treat loss domain with the components separation and restoration of abdominal wall anatomy and function [10].

Neither did open nor did laparoscopy yield the best technique, open sublay mesh repair and laparoscopic intraperitoneal onlay mesh repair are the most widely use techniques for its cure. Long term studies for new technique are needed for evidence to gain confidence of its use in the future.

### Suture vs Mesh repair

Simple suture repair was used to be the gold standard for incisional hernia. Due to its high recurrences rates in multiple retrospective studies, mesh repair has drawn the attention for incisional hernia repair [11-13]. The America Hernia Society has declared the use of mesh currently as the standard of care [14].

Previously, the suture repair was safe and did not result in higher recurrence rates but the trial was however discontinued due to the severity of mesh infections in their study sample at that time [15].

Results in a comparison study showed that suture repair had almost double the recurrence rate compared to mesh repair in a three-year cumulative rates and indeed concluded the superiority of mesh repair with regard to the recurrence of hernia, regardless of the size of the hernia [11]. Open suture repair for incisional hernia carries an unacceptably high recurrence rate and therefore open mesh and laparoscopic mesh techniques are encouraged [16].

A randomized controlled trial was the first to provide long-term follow-up of incisional hernia repair had proved that mesh repair is superior than suture repair for both small and large incisional hernias with lower rates of recurrence, complications and abdominal pain. They suggested the suture repair to be abandoned [12].

The comparison between suture repair and mesh repair was done where hernia recurrence was shown to be more frequent in suture repair although it has lower infection wounds compared to the onlay or sublay mesh groups [17]. With the evidences collected, mesh repair is in fact more superior in terms of recurrence than suture repair.

### Mesh Placement Techniques

Onlay technique avoids direct contact with the bowel and less tension imparted which makes it popular among surgeons. However it requires wide tissue undermining which predisposes wound infection and

thus the pressure required to disrupt the mesh is lesser compared to other techniques [13].

The laparoscopic (inlay) is an inferior operation as it does not restore the anatomy and physiology of the abdominal wall [10]. The mesh-facial interface which is the weakest point of repair will face significant tension with increased intra-abdominal pressure as this technique does not have underlying support of anterior abdominal wall [18].

Rives developed the sublay technique and reported to have good results, low recurrence and acceptable morbidity [19]. The laparoscopic transperitoneal sublay mesh repair which has emerged as a new approach and technique was compared to Rives-Stoppa (R-S) technique. It revealed to have longer operating time but hospital stay was shorter. There were no significant results in term of postoperative complications and recurrences in this series so it was said to be effective and safe in small and medium sized incisional hernias [20].

Many articles revealed the advantages of R-S technique. The tension free repair of incisional hernia with Stoppa's sublay repair mesh repair technique is safe, effective and easy procedure with acceptable morbidity and no recurrence [21]. The use of R-S technique has markedly diminished recurrence rate [22]. The retromuscular sublay position was said to be the ideal position of the mesh with lowest incidence of recurrence reported [23]. With the evidence gathered, it proved the superiority R-S technique.

However, there is no difference in term of recurrence between onlay and sublay positions [17].

## CONCLUSION

In conclusion, the exact rate of recurrence is far remained unknown. No meta-analysis or RCTs were done to compare the recurrence, pain, cosmesis and satisfaction between different modalities. The options between open and laparoscopic incisional repair are made based on multifactorial considerations. Different methods of repair may be indicated for specific locations, sizes or defects. The best choice is still being debated. The surgeon experiences and techniques used are of prime importance in the repair of abdominal incisional hernias.

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