

A comparative study of various methods of incisional hernia repair.Dr. Rajnish Patel^{1*}, Dr. Hitendra Desai², Dr. Pranjal Banthia³¹Associate Professor, ²Assistant Professor, ³3rd year Resident, Department of General Surgery, B.J.M.C and Civil Hospital, Ahmadabad**Abstract:**

Aim: All incisional hernias should be repaired surgically. Repair is done upon diagnosis to avoid the technical and physiological consequences and complications that occur with delay, such as loss of domain, incarceration, bowel obstruction and similar events¹. To make comparison between various methods of incisional hernia repair. **Material and Method:** 50 cases of ventral hernia repair were taken and observations were made regarding the duration and ease of operation, wound complications, hospital stay, morbidity and recurrence. **Results:** Mean age of study group is 56.5 years. In our study one patient who undergone onlay meshplasty developed mesh infection making removal of mesh mandatory². Mesh infection rate is 4.55% in this study. In our study wound infection rate is 24%. Wound infection is more after onlay meshplasty (40.91%), as compared to laparoscopic (0%) and preperitoneal (11.11%) which is low. Overall recurrence rate is 4% in our study. **Conclusion:** Most common presenting complaint was swelling followed by pain over the scar site. Commonest predisposing factors for incisional hernia were wound infection in previous operation and obesity. Wound Infection is also more common in onlay meshplasty and shoelace method. Mesh infection is most important complication of incisional hernia repair as it can lead to surgical failure and recurrence. Recurrence was more in our study with on-lay repair and laparoscopic method due to local complications and mesh migration respectively.

Keywords: Incisional Hernia, Onlay repair, Preperitoneal repair, Mesh repair**Introduction**

Incisional hernias occur in up to 40% of patients after midline laparotomy³. An innate problem with suture closure of laparotomy is that tension is required to approximate the rectus abdominis muscles and counter tension of the lateral abdominal wall musculature. Such tension may contribute to over-tightening of sutures and ischemia to the midline tissues.

There are three types of incisional hernias: acute wound dehiscence and evisceration due to sutures tearing through tissue, subacute with early gapping of the tissues approximated under tension, and chronic remodelling of the scar tissue causing "Swisscheese" or "cheese-cutting" hernias, formed as sutures cut through the weakened scar tissue. Thus, technical factors such as slipped knots, tension, and overtightened sutures can predispose to hernia development. Surgical site infection (SSI) has also been found to increase the risk of hernia by 50%.

Various procedures for repair of abdominal incisional hernias have been

developed. Among them, reinforcement with a prosthesis is favourable and it may be very effective. Finally, laparoscopic hernioplasty has also been developed and its use is increasing⁴.

Prolene has emerged as a most ideal and inert material to be used as a prosthesis. Prolene mesh has become the gold standard in any hernia repair requiring reinforcement. Laparoscopy has proved to be a safe, effective, efficient, and less painful technique for many types of surgery. Laparoscopic incisional hernia repair is a widely used and accepted operative technique, assuming general advances of laparoscopy are also valid for this group. Recent studies have shown that in the short-term laparoscopic repair is superior to open repair in terms of less blood loss, fewer perioperative complications, and shorter hospital stay. The current study was carried out to compare the various techniques of incisional hernia repair in terms of advantages and disadvantages and to find out best repair according to individual patient criteria.

Methodology

The study was conducted in 50 patients of incisional hernia admitted in surgical wards of Civil Hospital, Ahmadabad. 50 cases of ventral hernia were operated by any one of the four repair

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techniques: - shoelace repair group, On-lay repair group, Pre peritoneal repair group and laparoscopic group. Observations were made with regards to duration and ease of operation, wound complications, mesh infection, hospital stay, morbidity and recurrence. Informed and Written consent of every patient included in study was taken. All patients were assessed preoperatively, intra-operatively and postoperatively, and the findings were recorded in a pre-tested structured questionnaire (Proforma). Proforma was designed to record the history, chief complain, past history, family history, personal history, obstetric and menstrual history (in case of female patient), physical examination, local examination, operative history, investigations and management. After filling the details of Proforma detailed analysis was done & various observations derived, discussed & concluded. Shoelace Repair is only Anatomical repair-no mesh kept⁵, Onlay Meshplasty is done by Mesh placement on the sheath after closing defect, Pre Peritoneal Meshplasty is done by Mesh placement in the preperitoneal space, Laparoscopic Intraperitoneal Meshplasty is done by Mesh placement in the peritoneal space, Prolene mesh of adequate size was used to reinforce the abdominal wall at hernia site.

Results

Wound infection is more common with onlay meshplasty as compared with other three methods with laparoscopic method wound infection is almost nil. Mesh infection occurred in only one patient operated by onlay meshplasty method.

Table 1: Wound infection rate in various operative methods

Operative Method	Wound Infection	Mesh Infection
Laparoscopic Hernia Repair	0	0
Onlay Hernioplasty	40.91%	4.55%
Pre-Peritoneal	11.11%	0
Shoelace Repair - Anatomical repair; No Mesh	20%	N.A
TOTAL	24%	2.2%

Shoelace repair is associated with significant incidence of chronic pain. While chronic pain at operative site is less common after

laparoscopic type of repair. Recurrence most common after laparoscopic method followed by onlay meshplasty.

It is less common in another two methods. Seroma formation rate in postoperative period is 50% and 40% with onlay meshplasty and shoelace repair respectively⁶. It is less common with preperitoneal technique and almost nil in laparoscopic repair⁷.

Table 2: Rate of chronic pain and recurrence

Operative Method	Chronic Pain	Recurrence
Laparoscopic Hernia Repair	20%	20%
Onlay Hernioplasty	22.73%	4.54%
Pre-Peritoneal	5.56%	0
Shoelace Repair - Anatomical repair; No Mesh	40%	0
TOTAL	14%	4%

Discussion

In the present study total 50 cases of incisional hernia were taken and studied for various methods of repair and followed for 1 year after hernia repair surgery. 5 shoelace repair, 22 onlay meshplasty, 18 preperitoneal meshplasty and 5 laparoscopic intraperitoneal meshplasty done. Mean age of study group is 56.5 yrs. In my study group number of female patients having incisional hernia were more as compared to number of males. This may be due to particular surgeries like LSCS and TL. Weakness of abdominal wall due to pregnancy is also a confounding factor. Incisional hernia was more common in midline abdominal incisions and lower abdomen⁸. In our study wound infection rate is 24%. Wound infection is more after onlay meshplasty (40.91%), as compared to laparoscopic (0%) and preperitoneal (11.11%) which is low. Although mesh infection is relatively less common with all methods owing to sterile precautions and highly effective antibiotics, in our study one patient who undergone onlay meshplasty developed mesh infection making removal of mesh mandatory. Mesh infection rate is 4.55% in this study, while Alaa Elsesy, et al found 6.3% mesh infection rate. Chi-square value of this comparison is 1.2987. An expected value is < 5. So, it is statistically significant. 40% of patients

who underwent Shoelace Repair developed chronic pain as a late complication of incisional hernia repair. Laparoscopic hernia repair is also surprisingly associated with 20% rate of chronic pain occurrence. This complication is less common with preperitoneal method. Chi-square value of this comparison is 3.4213. An expected value is < 5 . So, it is statistically significant. Overall recurrence rate is 4% in our study. With laparoscopic method rate is as high as 20% due to mesh migration and improper fixation of mesh. In a study by Olmi in 2007 recurrence rate in laparoscopic method is 2.35%. high rate of recurrence in our study with laparoscopic repair is due to lack of good quality instruments and less experience and exposure with this newer technique. Recurrence rate with Onlay technique is 4.54% which is comparable to 3.1% rate of study by Alaa Elsesy, et al., mostly due to local complications like wound infection and seroma formation. If mesh gets infected as in one of our patient relapse is inevitable. Chisquare value of this comparison is 4.3087. An expected value is < 5 . So, it is statistically significant. Recurrence rate is almost nil with preperitoneal and shoelace repair⁹.

Conclusion

To conclude all incisional hernias should be repaired surgically¹⁰. Repair is done upon diagnosis in order to avoid the technical and physiological consequences and complications that occur with delay, such as loss of domain, incarceration, bowel obstruction and similar complications. Incidence of incisional hernia was more following emergency surgery than planned surgery. In young patients' laparoscopic method is preferred due to less chance of recurrence and less tissue dissection. Laparoscopic method is very useful for small to medium size defect repair. For larger defect dissection becomes little difficult with laparoscopy. Multiple previous surgery-laparoscopy not preferable. The laparoscopic approach is generally associated with at longer learning curve and higher cost.

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