

A Comparative Study of Laparoscopic Mesh Repair versus Open Mesh Repair for Incisional Hernia

¹Dr.M.Anto, ²Dr.V.S.Venkatesan

¹(Department of General Surgery, Thoothukudi Medical College and Hospital, India)

²(Department of General Surgery, Thoothukudi Medical College and Hospital, India)

Abstract:

Aim: To compare the outcome of laparoscopic incisional hernioplasty and open hernioplasty in terms of safety and effectiveness, duration of NPO status after surgery, post operative pain, post operative wound complications, duration of hospital stay, time required to resume regular activities and cost effectiveness.

Methods: Fifty cases of incisional hernia admitted in the department of general surgery Thoothukudi medical college and hospital. Detailed history taking done. Patients were divided in two groups. One group underwent laparoscopic mesh repair and group 2 underwent open mesh repair.

Results: Decreased incidence of post operative wound infections, less postoperative pain, early post operative enteral feeding, lesser duration of hospital stay, faster recovery, better visualization of hernial defect and hence better repair are all the extra added advantages found in laparoscopic incisional hernia mesh repair.

Conclusion: Laparoscopic mesh repair will probably have a positive effect on financial and human resources and apart from cost effectiveness laparoscopic incisional hernioplasty seems to be superior and has more advantages and a better alternative for open hernioplasty.

Keywords: incisional hernia, laparoscopic mesh repair, rectus defect, post operative.

I. Introduction

Incisional hernia, otherwise called as postoperative hernia or chronic abdominal dehiscence is a result of failure or loss of continuity of fascial closure which is usually covered from inside outwards by peritoneum, scar tissue and skin. Incisional hernia is a frequent complication of abdominal surgery. The incidence is about 3 to 11% after laparotomy. There are number of predisposing factors that are responsible for incisional hernia and may be related to specific patient characteristics, underlying pathological processes for which the laparotomy was done and iatrogenic factors like technique of wound closure and use of suture material.

Incisional hernia most often presents as asymptomatic bulge or swelling but can cause serious morbidity such as incarceration in about 6 to 15% of the patients and strangulation in 2% of patients. Because of these complications incisional hernia should be operated as soon as they are diagnosed. More than hundred years attempts have been made to develop successful methods of repairing incisional hernia but most attempts were followed by high incidence of recurrence that is after primary repair of incisional hernia with suture material alone it is 24 to 50%.

The use of biomaterial for incisional hernia repair markedly reduces the recurrence rates. The prosthesis are mainly place in lay or On lay position, ePTFE, polyester, polypropylene are preferred. In any of the method the mesh has to overlap the defect sufficiently because of wound contracture. Disadvantages are high rate of wound complications.

II. Background and Purpose of the Study

Incisional hernia is quite common among the general population in our setup and many frequent procedures have been identified and applied in treatment for incisional hernia repair. Our aim is to identify and analyze the various factors and outcomes that deal with the treatment of incisional hernia using standard open mesh repair versus the non conventional laparoscopic mesh repair of the incisional hernia. In order to reach to a conclusion of which procedure provides better outcome for the patient, we have comparatively studied the various outcomes after conventional open mesh repair and the non conventional laparoscopic mesh repair for incisional hernia and given the results based on our statistics which shows that the new non conventional laparoscopic hernia mesh repair has been proven to provide better outcomes in terms of overall outcome in the postoperative period for patients undergoing this procedure.

III. Materials and Methods

Study Area:

Thoothukudi Medical College Hospital [TKMCH] , THOOTHUKUDI.

Study population: Patients admitted in TKMCH with a diagnosis of Incisional hernia by clinical and radiological methods.

Inclusion criteria:

1. All patients with incisional hernia with fascial defect of less than 6 cm in the age group of 20 to 60 years were included in this study.

Exclusion criteria:

1. Recurrent Incisional hernias
2. Pediatric age group and patients below 20 years of age.
3. Patients with congenital abdominal wall weakness.
4. Incisional hernia patient with fascial defect of more than 6 cm.

Study Period:

12 Months .From May 2016 April 2017

Sample Size: 50. All patients eligible by inclusion and exclusion criteria are to be included in the study.

Study Design:

A Comparative study is to be conducted on patients admitted in TKMCH for Incisional hernia surgical management. Informed consent will be taken from each respondent.

IV. Methodology

The data was collected in a prepared proforma. The diagnosis of incisional hernia was made by clinical examination and by ultrasound abdomen. The preoperative evaluation included history and clinical findings. Routine laboratory investigations like haemoglobin , urine examination , random blood sugar , blood urea and serum creatinine , HIV , HbsAg were done. X-ray and ECG were done for patients above 40 years for anesthetic evaluation.

Preoperative treatment included correction of anemia , weight reduction if obese , improvement of nutritional status , treatment of respiratory infection if any , abstinence from smoking / alcohol if any , advice regarding breathing exercises. The type of anesthesia used was spinal anesthesia and general anesthesia in selected patients. A single dose of preoperative broad spectrum antibiotic given followed by the same for 3 days postoperatively. Analgesics injection diclofenac sodium was given post operatively for two days and later if necessary. Postoperative care and complications – After surgery all patients were monitored carefully for pain , bleeding , paralytic ileus , seroma , hematoma , wound infection and wound gaping. Pain was assessed using verbal graphic rating scale. A wound infection ranged from minimal discharge of pus from a single cutaneous suture to extensive and invasive process requiring lengthy hospitalization and intravenous antibiotics. Bleeding was defined as subcutaneous hematoma which can result from careless ties or cautery.

Discharge – the patients were discharge when fit and asked to come for regular followup after 15 days , 1 month , 3 months , 6 months , 1 year. Different patients were followed up for different periods with many dropouts. The patients were advised to return to pre hernia lifestyle except lifting heavy weights. All were followed up for post operative pain, interference with activities of daily living , use of analgesics and recurrence.

V. Discussion

In this study out of 50 patients, 43 patients were female. The higher incidence in females is probably due to greater number of caesarean section, sterilization and hysterectomies being performed on them. In this study out of 50 patients, 4 out of 25 patients in laparoscopic group and 13 out of 25 patients in open group complained severe pain in the immediate post operative period. One patient in the laparoscopic group was pain free in the immediate post operative period. This shows that laparoscopic incisional hernioplasty is associated with lesser degree of postoperative pain compared to open hernioplasty. In this study , mean duration of NPO status is about 24.16 hours in laparoscopic group and 28.56 hours in open group. The P value was 0.0582. This shows that there is no significant difference in duration of NPO status. This may be due to less number of cases studied in our study. In this study , one patient in laparoscopic group and 5 patients in open group developed wound infection , it shows wound infection rate were 5 times more in open group in our study. In this Study , mean length of hospital stay was less [5.6 days] in laparoscopic group compared to open group [8.6 days] and hence it shows that there is decreased requirement of hospital stay in laparoscopic incisional hernia mesh repair. In this study , patients in the laparoscopic group takes 22.4 days and patients in the open group takes 30.2 days for return to their regular activities. This result shows that patients treated with laparoscopic incisional mesh repair return to their regular activities earlier than the patients treated with open mesh repair.

In this study the expenditure incurred by the government for laparoscopic surgery was approximately about Rs. 30,000 and open surgery about Rs. 5000. It showed that expense of laparoscopic surgery was 6 times

more than the open surgery in our hospital setup. This is mainly because of high cost of synthetic mesh and fixation tacker used in laparoscopic surgery. These cost differences were partly offset by higher cost of post operative complications in open group. Even though stay in surgical ward and sick leave was shorter for patient undergoing laparoscopic repair than those with open repair, Laparoscopic surgery is associated with more surgical expense in our hospital setup. Only some of the patients in open surgery whom developed complications had to spend more health expense than laparoscopic surgery.

VI. Conclusion

This randomized control study included total of 50 cases. 25 cases underwent laparoscopic repair and same number underwent open repair. There was increased incidence of incisional hernia among females. There was lesser incidence of post operative wound complications among the patients who underwent laparoscopic repair. Laparoscopic repair favours less post operative pain , early post operative enteral feeding and lesser duration of hospital stay. Faster recovery in laparoscopic repair allows early return to regular activities. Laparoscopic incisional hernioplasty offers better visualization of the rectus sheath defect and hence better repair. Because of the above mentioned factors laparoscopic repair will probably have a positive effect on financial and human resources. Hence, apart from cost effectiveness laparoscopic incisional hernioplasty seems to superior, more advantageous and a better alternative for open incisional hernioplasty.

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