



OUTCOMES OF PREPERITONEAL MESHPLASTY OF INCISIONAL HERNIA

General Surgery

Dr. Md Noman

Senior Resident, Department Of Surgery, ANMMC&H, Gaya, Bihar

**Dr. Shri Krishna
Ranjan***

Associate Professor, Department Of Surgery, ANMMC&H, Gaya, Bihar *Corresponding Author

ABSTRACT

BACKGROUND: Incisional Hernia is a common surgical condition which occurs after abdominal surgery. Preperitoneal mesh repair technique showed reduced number of postoperative complications and recurrence compared to other techniques.

AIMS: The aim of the study was to evaluate the technique of preperitoneal meshplasty of incisional hernias.

MATERIAL AND METHODS: This prospective study consisting of 21 cases was done from February 2019 to August 2019. Preperitoneal meshplasty was done in all the 21 cases. Follow up of 6 months was carried in the OPD with regards to postoperative complications and recurrences if any.

RESULTS: No recurrence was noticed in the present study. Less number of postoperative complications were noticed in the present study.

CONCLUSION: We conclude that preperitoneal meshplasty is the ideal technique for incisional hernia repair.

KEYWORDS

Incisional Hernia, Preperitoneal Meshplasty, Postoperative Complication.

INTRODUCTION

Incisional hernia is defined as a defect occurring through the operative scar. It is one of the most common conditions requiring major surgery despite advances in surgical techniques and suture material. The incidence of incisional hernia in literature is 2- 11% following all laparotomies¹ and it is a source of morbidity and requires high health care costs. It is seen more in females, obese and older age group. As a result of high recurrence rate in the repair of incisional hernia, various types of repairs have been used both anatomical and prosthetic. But the results have been disappointing with a high incidence of recurrence-about upto 50% after an anatomical repair and upto 10% following prosthetic mesh repairs^{2,3,4}.

The introduction of prosthetics has revolutionized hernia surgery with the concept of tension free repair. The implantation of prosthetic mesh remains the most efficient method of dealing with incisional hernia⁵. The prosthetic mesh can be placed between the subcutaneous tissues of the abdominal wall and the anterior rectus sheath (onlay mesh repair) as well as in the preperitoneal plane. The main advantage of pre peritoneal mesh repair are - Less chance of mesh infection and erosion through skin because the graft lies in preperitoneal plane between posterior rectus sheath and peritoneum, avoids adhesions, bowel obstruction, enterocutaneous fistula and erosion of mesh, minimal morbidity and duration of hospital stay is less compared to other techniques. The main disadvantage is more time consuming, extensive preparation of preperitoneal plane and surgical experience. The preperitoneal (sublay) mesh hernia repair was first described by Renestopa, Jean Rives, and George Wantz. This technique is considered by many surgeons to be the gold standard for the open repair of abdominal incisional hernia^{6,7,8,9}.

The present study was undertaken to evaluate the technique of preperitoneal mesh repair of incisional hernias with regards to postoperative complications and recurrences.

MATERIAL AND METHODS

This prospective clinical study consists of 21 patients with incisional hernia managed by Preperitoneal mesh repair in ANM Medical College & Hospital, Gaya, Bihar during the period from February 2019 to August 2019. The patients who were admitted to surgical wards, diagnosed to have incisional hernia and managed by Preperitoneal mesh repair were included in this study.

All patients underwent thorough clinical examination and a detailed history and details of earlier operation were asked for. All patients were evaluated for systemic disease or precipitating cause. Patients who had hypertension, diabetes mellitus or cough were controlled preoperatively. Routine investigations were done for all patients including chest x-ray and ultrasonography of the abdomen. A day prior to surgery, shaving of the abdomen and genitalia was done. A nasogastric tube and Foley's catheter was passed and broad-spectrum

antibiotics was given to all patients before the procedure. Patient was explained about the effects and complications of the procedure. The procedure was done under general anaesthesia, spinal or epidural anaesthesia in supine position.

In all cases, old operative scar was excised, generous skin incision were used to permit adequate exposure of hernial sac and defect. The sac was opened and contents were reduced after lysis of the adhesions. The excess sac was excised, peritoneum was closed with absorbable synthetic suture. Adequate preperitoneal plane was prepared between the posterior rectus sheath and peritoneum, mesh was placed and fixed with prolene no. 2-0 or 3-0 sutures. Suction drains were laid on the mesh and brought out through separate stab wounds. Muscular aponeurotic structures were repaired with prolene no.1 suture. Skin was closed after insertion of suction drain in subcutaneous plane. In the postoperative period, nasogastric aspiration was done, every two hourly in first 24 hours.

The nasogastric tube was removed once the patient passed flatus. Foley's catheter was removed on postoperative day one. Suction drain was removed once the drainage falls to 25 to 30 cc. Antibiotics were continued for five days. Postoperatively, deep breathing exercises, movement of limbs in bed was advised as soon as patient recovered from anaesthesia. Early limited ambulation was done once the patient was able to bear the pain. Skin sutures removed on 10th day and in few cases after 10th day. At discharge, patients were advised to avoid carrying heavy weights and advised to wear abdominal belt. Patients were reviewed after one month and three months in all cases and few cases upto six months. At review, symptoms were asked for and operative site examined for any recurrence. These cases were then analyzed and results were compared with existing literature. An extensive review of literature is carried out.

Statistical Methods: Chi-square and Fisher exact test have been used to test the significance of proportions of postoperative complications between present study and other Mesh Repairs (Other studies).

Statistical software -The statistical software namely SPSS 11.0 and Systat 8.0 were used for the analysis of the data and Microsoft word and Excel have been used to generate tables etc.

RESULTS

STUDY DESIGN:

A prospective clinical study consisting of 21 patients with Incisional hernia who were managed by preperitoneal mesh repair is undertaken to investigate the role of preperitoneal mesh repair and its postoperative complications.

Twentyone patients underwent preperitoneal mesh repair of incisional hernia during two year study from February 2019 to August 2019. The youngest patient was 26 years old and the oldest was 70 years old.

Forty patients (n=17, 81%) were females which outnumbered the thirteen (n=4, 19%) male patients. The female to male ratio was 4:1 showing that incidence of incisional hernia is higher in females. In all the twentyone patients, hernia appeared within two years after surgery, 7 developed incisional hernia in first year while 14 had in second year.

Table 1: Age & Sex wise Distribution of Patients with Incisional Hernia

| Age in year | Male | Female | Total (%) |
|-------------|------|--------|-----------|
| 15 – 30 | 1 | 3 | 4 (19%) |
| 31- 50 | 1 | 8 | 9 (43%) |
| 51- 70 | 2 | 6 | 8 (38%) |

The main presenting complaint in all the twentyone patients (100%) was swelling of abdomen in the vicinity of the previous operative scar. This was associated with dragging pain at the site of hernia in fourteen patients (n=14) and irreducibility in two patients (n=2). None of the patients had obstruction or strangulation.

Eighteen (n=18,85%) patients had midlines incision causing the incisional hernia. This was followed by Pfannensteil incision in two (n=2, 9%) and paramedian incision in one (n=1,6%) patients.

Table 2: Type of Incision causing hernia

| Incision type | Frequency (%) |
|-----------------------|---------------|
| Lower Midline | 16 (76.5) |
| Upper Midline | 2 (9.5) |
| Pfannensteil incision | 2 (9.5) |
| Paramedian | 1 (4.5) |
| Transverse | 0 (0) |
| Total | 21 (100) |

After preperitoneal meshplasty, the postoperative complications are shown in Table 3. Major wound infection was encountered in two patients (n=2, 10%) but the mesh was not removed in any of the cases. Only two patients had seroma formation. There were no postoperative complications in 80% of cases.

Table 3: Postoperative Complications of Preperitoneal Mesh repair in Incisional Hernia.

| Complications | Patients (%) |
|------------------|--------------|
| Wound Infection | 2 (10) |
| Seroma formation | 2 (10) |

Table 4: Comparison of postoperative complications in preperitoneal mesh repair (Present study) and other mesh repairs (Other Studies)

| Post operative complications | Present study (n=21) | Hameed et al (n=52) | Manohar et al (n=50) | Leber et al (n=200) | Antonie hamy et al (n=350) |
|------------------------------|----------------------|---------------------|----------------------|---------------------|----------------------------|
| Wound Infection | 2(10%) | 2(4%) | 1(2%) | 8(4%) | 14(4%) |
| Seroma | 2(10%) | 1(2%) | 5(10%) | 6(3%) | - |
| Deep vein thrombosis | - | - | 1(2%) | 1(0.5%) | - |
| Postoperative ileus | - | - | - | 16(8%) | - |
| Sinus | - | - | - | 12(6%) | - |
| Recurrence | - | - | - | 34(17%) | 11(3.1%) |

CONCLUSION

In the present study, we encountered 20% of cases with postoperative complications of which 10% of cases had postoperative wound infection and 10% had seroma formation. There was no postoperative complication in 80% of cases. Postoperative complications in present study (20%) were comparable to other preperitoneal mesh repair studies by Manohar et al¹⁴ which was 14%. In present study, postoperative wound infection occurred in 2 cases (10%), which healed by secondary intention. In Ponka series¹⁵, it accounts for 24%. Bucknell, Cox and Ellis in their of 1129 laparotomy closures, found that 48% of their patients with incisional hernia had previous wound infection and those with wound infection developed hernias almost four times more often¹⁶. Hameed et al¹⁷ had wound infection in 4%, Antoine Hamy¹⁸ et al 4% cases, Leber et al¹⁹ 4% cases, while Manohar et al had 2% cases. Prevention of wound sepsis is therefore a prime objective in all abdominal operations.

Less number of postoperative complications noticed in present study. No recurrence noticed in this study. In the present study, preperitoneal meshplasty had excellent long-term results with minimal morbidity.

| | |
|--------------|---------|
| Recurrence | - |
| Sinus | - |
| Mesh removal | - |
| Nil | 17 (80) |

Drains were used in all the patients. The period of drainage ranged from 3-8 days with the average period being 4- 6 days. Followup was carried out for minimum 3 months and maximum 6 months. No recurrence was encountered in the followup group.

DISCUSSION

In present study, age ranged from 26 years to 70 years and with peak incidence in 31 to 50 age group (43%). As per the Maingot's studies, mean age was around 45 years¹⁰. There is a female preponderance noticed with 81%. In Bhutia WT et al study, the female : male ratio was 3:1.5 with female preponderance 84%¹¹, in this study all patients are presented with history of swelling, associated pain was present in 14 cases. Most of cases in our series, it was reducible hernia (92.5%) and with 7.5% of cases had irreducible hernia. We had approximately 34% of cases with early onset of incisional hernia (within one year of previous surgery) whereas 66% of cases had onset of incisional hernia in second year. Majority of incisional hernias (80%) developed in the first two years as per international studies¹².

In this study, 76.5% of cases developed incisional hernia through lower midline incision, 9.5% through Pfannensteil incision, 9.5% through upper midline incision, 4.5% through paramedian incision.

Seroma formation is comparable with Manohar et al study but significantly more compared to Leber et al study¹⁰. In our study, the most of the hospital stay spent in preoperative workup and in the treatment of associated medical illness, if any, to reach the normal parameters for safe surgery. Total duration of hospital stay is increased when risk factors are present and duration of hospital stay after surgery also increased when the risk factors are present. In present study, we had followed up all the patients after discharge for 15 days, 1month, 3 months and few cases upto 6 months of duration.

There was no recurrence of incisional hernia noticed in the present study. de Vries Rellingh TS et al reported a recurrence rate of incisional hernia following different techniques of mesh repair as follows: In onlay technique it was 28.3%, inlay technique 44%, and underlay technique 12%¹³. Leber et al reported a recurrence rate of 17%, Antoine Hamy et al 3.1% of cases¹². There was no recurrence in Hameed et al and Manohar et al study.

REFERENCES

- Da-silva al; Patroiaanu. A. Incisional hernias;factor influencing development. South Med. J. 1991; 84 : 1500-155.
- Cassar K, Munro A. Surgical treatment of incisional hernia. BJ Surg 2002; 89:534-545.
- George CD, Ellis H. The results of incisional hernia repair. A twelve year review. Ann R Coll Surg Engl 1986; 68: 185-7.
- Bauer JJ, Harris MT, Gorfine SR, Kreef I. Rives stoppa repair of giant incisional hernias. Experience with 57 patients. Hernia 2002; 6: 120-3.
- I. Ahmed; D. Mahmood; J.Khan. Use of Mesh in the management of recurrent incisional hernias. Pak. J. Surg. 1995; 11: 101-2.
- Berry MF, Paisley S, Low DW et al. Repair of large complex recurrent incisional hernias with retromuscular mesh and panniculectomy Am J Ssurg 2007;194: 199-204.
- Iqbal CW, Pham TH, Joseph A et al. Long term outcome of 254 complex incisional hernia repairs using modified Rives-Stoppa technique World J Surg 2007; 31: 2398-2404.
- Martin- Duce A. Nogueuales F, Villet AR et al. Modifications to Rives technique for midline incisional hernia repair. Hernia 2001; 5: 70-72.
- Langer C, Schaper A, Liersch T et al. Prognosis factors in incisional hernia surgery:25 years of experience. Hernia 2005; 9: 16-21.
- Michael Zimmer, Seymour I. Schwartz, Harold Ellis. Maingot's: Abdominal operations. 10th ed, Vol. 1, 423-425 and 548-572.
- Bhutia WT, Chandra SS, Srinivasan K, Ananthakrishna N. Factors predisposing to incisional hernia after laparotomy and influencing recurrences rate after different methods of repair: A prospective study of 220 patients. IJS 1993; 55 (11): 535-543.
- Richard J, Sanders S, Didementi D. Principles of abdominal wall closure, prevention of wound dehiscence. Arch Surg. 1977; 112: 1188-91.
- deVries Rellingh TS, Van Geldere D, Langenhurst B, Dejong D, van der wilt GJ, van GH. Repair of large midline incisional hernias with polypropylene mesh: Comparison of

- three operative techniques. *Hernia* 2004 Feb; 8 (1): 56- 59.
14. Manohar C S, Ramdev K. Management of Incisional Hernia by Peritoneal Mesh Repair. *International Journal Of Basic Medical Sciences*: Volume 1 issue 3 June 2010
 15. Ponka JL. *Hernias of the abdominal wall*. Philadelphia, W. B. Saunders, 1981
 16. Bucknell TE, Cox PJ. Burst abdomen and incisional hernia: A prospective study of 1129 major laparotomy. *Br Med J* 1982; 284: 931.
 17. Antoine Hamy, Patrick Pessaux, Tephania S, Serge Radriamananjio et al. Surgical treatment of large incisional hernia by an intraperitoneal Dacron mesh and an aponeurotic graft. *J Am Coll Surg* 2003 Apr; 196 (4): 531-534.
 18. Fakhhar Hameed , Bashir Ahmed, Asrar Ahmed, Riaz Hussain Dab, Dilawaiz. Incisional Hernia Repair by Preperitoneal (Sublay) Mesh Implantation. *A.P.M.C Vol: 3 No.1 January-June 2009*
 19. Leber Geoffrey E, Garb Jane L, Alexander Albert I, Reed WP. Long-term complications associated with prosthetic repair of incisional hernia. *Arch Surg* 1998 Apr; 133 (4): 378-382.