

Original Research Article

A Study of Surgical Management of Incisional HerniaDr. Sayyad Jahangir Gulab¹, Dr. N.V Mohan^{2*}¹Associate Professor, Department of General Surgery, Institute of Medical Sciences and Research Satara, Maharashtra²Associate Professor, Department of General Surgery, Melmaruvathur Adhiparasakthi Institute of Medical Sciences and Research, Melmaruvathur, Tamilnadu India***Corresponding author**

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Abstract: Background: Incisional hernia a common surgical problem, and uncommon sequel of surgical intervention. It occurs as a result of excessive tension and inadequate healing of previous incision, which is often associated with surgical site infection. The main aim of the study was to identify the etiological factor to highlight the strategies for prevention of incisional hernias, to find the best management procedures for the incisional hernias. **Materials and Methods:** This is a prospective and descriptive study done in Department of General Surgery, Tertiary care teaching hospital over a period of 6 months after obtaining the institutional ethics committee approval on 60 patients. **Results:** Out of 60 patients, 43 patients (71.6%) were found to have hernial defect more than 3cm and 16 (26.6%) patients have the defect 3cm or less than 3cm. Size of defect dictated the type of repair (suture repair/mesh repair) in present study. Forty-four (73.3%) patients had lower midline incision while 13 (21.6%) patients had upper midline incision. Paramedian, transverse and McBurney's incision was used in 1 (1.6%) of patients. **Conclusion:** Proper pre-operative preparation, choice of surgery for repair, aseptic technique, and careful closure of the abdominal wound decreases the incidence of incisional hernia. The use of synthetic prosthetic material provides the tension free repair and rate of recurrence. Good pre-and postoperative antibiotics and wound care is essential mesh repair is the almost the gold standard for the incisional hernias.

Keywords: Incisional hernia, Prolene mesh, McBurney's incision.

INTRODUCTION

Incisional hernia (IH) is one of the most common complications of abdominal surgery. Its prevalence varies between 11% and 23% depending on the presence of the specific risk factors, the site of the incision and the technique and suture material used for closure of abdominal incisions [1]. The recurrence rate of IH varies, depending on the method of repair. It is as high as 58% following suture repair; using prosthetic mesh the rate of recurrence is dependent on the type of mesh, technique and site of placement of mesh and methods of fixation of the mesh [2]. The onlay technique is followed by 20% recurrence rate, the sublay by 2–12% and the inlay technique by 4% recurrence rate and the laparoscopic repair of IH (LRIH) has a lower rate of recurrence compared to open repair [3].

The risk factors of IH can be patient-related and these include age >60 years, obesity body mass index (BMI) >25 kg/m², co-morbidities diabetes, chronic lung diseases, obstructive jaundice, immuno-suppression in transplant patients and chemotherapy and steroid therapy [4]. Surgery related risk factors include: Emergency operations, bowel surgery, abdominal aortic aneurism, stoma formation

and closure, operations for peritonitis, re-laparotomy, technique and suture material used for closure of the abdominal incisions, wound infection, long operating time, increased blood loss and surgeon experience [5]. The biological factors that play a role in the development of IH are collagen and metalloproteinase synthesis, smoking, and nutritional deficiencies [6].

Incisional hernia should be repaired, because if left it will enlarge and make repair difficult. The surgical treatment of IH is indicated to relieve symptoms (abdominal pain and discomfort), to prevent the possible complications (strangulation, skin ulceration) or for urgent treatment of the acute complications (incarceration, strangulation or the rare rupture of IH). Symptoms of IH can develop in 33–78% but only 5–15% of them develop acute symptoms [7]. IH is better repaired electively because the emergency treatment of IH is associated with higher postoperative complications especially in the elderly patients [8].

MATERIALS AND METHODS

This is a prospective and descriptive study done in Department of General Surgery, Tertiary care teaching hospital over a period of 6 months after

obtaining the institutional ethics committee approval on 60 patients.

Exclusion criteria

Included patients 18-70 years of age and incisional hernias associated with other abdominal wall hernias. A detailed history of all the patients was taken and a thorough clinical examination was done to determine the type and cause of hernia.

Depending on the size of defect either anatomical repair or onlay prolene mesh repair was carried out. Patients having defect 3cm and less than 3cm were subjected to anatomical repair while those has defect more than 3cm were subjected to prolene mesh repair.

RESULTS

During the study period, consecutive 60 patients of incisional hernia undergoing surgical repair were included.

Table-1: Age and sex incidence

| Age (years) | Number of cases | | Total | Percentage | Mean age |
|--------------|-----------------|--------|-------|------------|----------|
| | Male | Female | | | |
| 18 -30 | 4 | 2 | 6 | 10% | 38 years |
| 31-40 | 26 | 1 | 27 | 45% | |
| 41-50 | 11 | 2 | 13 | 21.6% | |
| 51-60 | 7 | 1 | 8 | 13.3% | |
| 61-70 | 5 | 1 | 6 | 10% | |
| Total | 53 | 7 | 60 | 100% | |

In table 1, the most vulnerable age group in this study was 31to 40 years (45%). The next most common age group affected was 41 to 50 years (21.6%). Mean age of the patient in our study was 38 years.

Table-2: Distribution of gender

| Gender | No. of patients | Percentage |
|--------|-----------------|------------|
| Male | 7 | 11.6 |
| Female | 53 | 88.3 |
| Total | 60 | 100 |

In table 2, Gender wise distribution, there were maximum no. of patients were 53 females and 7 males.

Table-3: Mode of presentation of patients.

| Incisional hernia | Number of cases | Percentage |
|-------------------|-----------------|------------|
| Swelling | 41 | 68.3% |
| Irreducible | 18 | 30% |
| Pain | 1 | 1.66% |

In table 3, majority of patients 41 (68.3%) presented with swelling over the anterior abdominal wall after previous surgery. 18 (30.0%) patients presented with both pain and swelling

Table-4: Distribution of patient according to reducibility.

| Incisional hernia | Number of cases | Percentage |
|-------------------|-----------------|------------|
| Reducible | 56 | 93.3% |
| Irreducible | 04 | 6.7% |
| Total | 60 | 100% |

In table 4, at the time of admission majority of patients 56 (93.3%) had reducible hernia while 04 (6.7%) patients presented with irreducible hernia?

Table-5: Size of defect of incisional hernia (Detected by USG)

| Size of defect (approx.) | Number of cases | Percentage |
|--------------------------|-----------------|------------|
| 2cm | 3 | 5% |
| 2.5cm | 5 | 8.3% |
| 3cm | 9 | 15% |
| 5cm | 38 | 63.3% |
| 8cm | 3 | 5% |
| 10cm | 1 | 1.6% |
| >10cm | 1 | 1.6% |

In table 5, out of 60 patients, 43 patients (71.6%) were found to have hernial defect more than 3cm and 16 (26.6%) patients have the defect 3cm or less than 3cm. Size of defect dictated the type of repair (suture repair/mesh repair) in present study.

Table-6: Type of repair

| Type of Repair | Number of cases | Percentage |
|-----------------------------|-----------------|------------|
| Anatomical (suture repair) | 17 | 28.3% |
| Prolene mesh (onlay) repair | 43 | 71.6% |
| Total | 60 | 100% |

In table 6, forty-three (71.6%) patients undergone onlay prolene mesh repair while anatomical repair was carried out in 17 (28.3%) patients.

Table-7: Previous abdominal surgeries

| Previous abdominal surgery | Number of cases | Percentage |
|---------------------------------------|-----------------|------------|
| Abdominal hysterectomy | 14 | 23.3% |
| Tubal ligation | 17 | 28.3% |
| LSCS (lower segment cesarean section) | 12 | 20% |
| Laparotomies for peritonitis | 9 | 15% |
| Ventral hernia repair | 3 | 5% |
| Appendicectomy | 3 | 5% |
| Cholecystectomy | 2 | 3.3% |
| Total | 60 | 100% |

In table 7, most of incisional hernias 17 (28.3%) occurred following tubal ligation. It is closely followed by Abdominal hysterectomy 14 (23.3%) and Lower segment cesarean section (20%). 15% patients developed incisional hernia following previous laparotomy for peritonitis.

Table-8: Site of previous abdominal incision

| Site of previous abdominal incision | Number of case | Percentage |
|-------------------------------------|----------------|------------|
| Upper midline | 13 | 21.6% |
| Lower midline | 44 | 73.3% |
| Paramedian | 1 | 1.6% |
| Transverse | 1 | 1.6% |
| McBurney | 1 | 1.6% |
| Total | 60 | 100% |

In table 8, forty-four (73.3%) patients had lower midline incision while 13 (21.6%) patients had upper midline incision. Paramedian, transverse and McBurney's incision was used in 1 (1.6%) of patients.

Table-9: Complications in anatomical and mesh repair group.

| Complications | Anatomical repair (suture repair) (N=17) | | Mesh repair (onlay) (N=43) | | P value |
|---------------------------|--|------------|----------------------------|------------|---------|
| | No. of cases | Percentage | No. of cases | Percentage | |
| Wound infection | 3 | 17.6% | 3 | 6.9% | 0.734 |
| Seroma | 1 | 5.8% | 2 | 4.6% | 0.663 |
| Hematoma | 1 | 5.8% | 1 | 2.3% | 0.686 |
| Sinus formation | 1 | 5.8% | 1 | 2.3% | 0.531 |
| Skin necrosis | 0 | 0 | 1 | 2.3% | - |
| Respiratory complications | 0 | 0 | 1 | 2.3% | - |

In table 9, in present study 6 patients developed post-operative wound infection which was treated by daily dressing of the wound and IV antibiotics according to culture and sensitivity. In 3 patients seroma was developed which was treated by aspiration with wide bore needle. Hematoma was detected in 2 patients which was treated conservatively. 1 patients developed skin necrosis of margins of the

wound which were treated with simple wound debridement along with antibiotics and dressings. One patient in mesh repair group developed respiratory distress in post-operative period.

DISCUSSION

In our study, the most commonly affected age group was 31 to 40 years. These findings are in accordance with the studies conducted by Bose SM SD *et al.* study [9]. In our study, male patients were predominant. Similar observations were reported in Kumar V *et al.* [10] In the study by Rajsiddharth B *et al.*, female-to-male ratio was 1.6:1. [11] The reason behind this could be laxity of the abdominal muscles due to multiple pregnancies and increased number of lower abdominal incisions in females.

In addition, majority of patients in present study presented with abdominal swelling in the vicinity of previous operative scar. This finding is consistent with the study conducted by Venkatesan KP *et al.* [12] Incisional hernias treated by mesh repair method. Recent trend is to use the prosthetic mesh judiciously. Mesh repair was found to be significantly better for large defects and multiple defects [13].

In present study, majority (74%) of the incisional hernias occurred following lower midline incisions. The findings in present study are comparable with various Sagar *et al.* [14] Higher incidence of incisional hernia in lower midline incision may be due to absence of posterior rectus sheath below arcuate line in lower abdomen. Intraabdominal hydrostatic pressure is higher in lower abdomen as compared to upper abdomen in erect position i.e. 20cm of water and 8cm of water respectively.

Complication such as wound infection rate in our study was 10% which is less as compared with Srivastava A *et al.* study. [15] Wound infection rate is higher in emergency operated cases and this could be attributed to the lack of pre-operative preparation and possibility of making larger incisions in emergency situation. The overall recurrence rate noted in our study nil. The recurrence rate observed in Singla SL *et al.*, study is 9.25% [16].

CONCLUSION

Proper pre-operative preparation of the patient with high risk is an important factor in preventing recurrence of incisional hernia. Care is therefore required in optimally timing the surgery, minimizing the predisposing factors and also in choice of surgery for repair. The use of midline incision should be restricted to operations in which unlimited access to the abdominal cavity is necessary. Meticulous aseptic technique and careful closure of the abdominal wound is necessary to prevent incisional hernia.

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