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Original Research Article

Incisional hernia: predictive factors, clinical presentation and management

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ABSTRACT

Background: Incisional hernia is an iatrogenic complication of abdominal surgery and an important cause of morbidity. It occurs in 11-20% of the patients after abdominal surgery. The present study aimed to evaluate predictive factors associated with causation of incisional hernia, clinical presentation, modalities of management and their post-operative complications.
Methods: In a hospital based observational study, the subjects were diagnosed cases of incisional hernias with or without comorbidities undergoing planned or emergency surgeries. Patients unfit for anaesthesia were excluded. Predictive factors studied were multiparity, obesity, diabetes mellitus, postoperative wound infection, retention of urine and cough. Time of onset of incisional hernia after initial abdominal surgery, type of abdominal incision was recorded. Local examination of hernia was done to record the position, size, cough impulse, and reducibility of hernia. Patients were either managed by open or laparoscopic approach which was compared with respect to post-repair complications and recurrence.
Results: Total of 64 patients were enrolled with mean age of 48.3 and SD ± 8.82 years. Incisional hernia was more common in middle-aged patients (31-50 yrs) and in females. Majority of hernias have occurred within one year (73.43%) of previous surgery. Commonest predictive factors were midline high BMI (87.5%), multiparity (64.06%), infraumbilical incision (59.37%) and postoperative surgical site infection (56.25%). Laparoscopic repair was done in 5 patients (7.83%) and was not associated with any complications while in rest 59 patients (92.17%) treated by open repair, seroma and SSI were common complications. On mean follow up of 34.8months there was 1 recurrence observed in open onlay repair.
Conclusions: Middle age females with multiparity with BMI>25 having midline infraumbilical incision with history of SSI commonly developed incisional hernia in first year of previous surgery. Laparoscopic repair had no complications or recurrence.

Keywords: Incisional hernia, Lap IPOM, Onlay mesh repair, Antomical repair

INTRODUCTION

Incisional hernia is a common surgical condition encountered in day to day practice. It is an iatrogenic ventral hernia as sequelae to complications after abdominal surgery. The reported incidence varies from 11-20% after abdominal surgery.[1,2] Inspite of progress made by modern surgery with optimization of surgical techniques in abdominal wall closure, incisional hernia still remains an unanswered problem. The list of predictive factors associated with development of incisional hernia is obesity, diabetes mellitus, steroid,

smoking, old age, malnutrition, COPD, type of incision, type of suture material and SSI post laparotomy.[2-4] There was a need to identify modifiable predictive factors associated with causation of incisional hernia to reduce its occurrence by developing a preventive strategy to patients undergoing laparotomy.

Introduction of prosthetic mesh revolutionized the treatment of abdominal wall hernia with recurrence rate post incisional hernia repair getting reduced from 30 to 15%. Component separation is another step directed to repair hernia defect without tension and is expected to further bring down the recurrence rate. Laparoscopic repair is a new technological advance which comes with costly dual mesh making it unaffordable for common man in Indian population. The present study evaluated different surgical modalities with its post op complications and short term recurrence rates.

METHODS

This was a tertiary care hospital based observational study carried out from September 2014 – October 2018 with aim to evaluate the predictive factors associated with causation of incisional hernia, clinical presentations and to assess the final outcome after various modalities of management, complications and recurrences.

The subjects enrolled were patients diagnosed clinically and confirmed by imaging modalities namely USG abdominal wall and CECT abdomen as incisional hernia and unfit patients, recurrent hernia, pregnant patients and patients not willing to get operated were excluded.

Demographic and clinical data of the patients was recorded in the study proforma. History was taken regarding duration of hernia, progression in size, associated complaints like pain in the swelling or abdomen, vomiting, irreducibility, chronic cough, constipation, difficulty in micturition, abdominal distension, history suggestive of ascites and other causes of abdominal distension, number of pregnancies. History regarding previous surgeries with respect to nature of operations, duration, type of incisions, type of closures, post -op complications (SSI) was recorded. Local examination included position of previous laparotomy scar, position of swelling, size of swelling, cough impulse, reducibility, and size of defect.

USG was done in all patients to determine the size of hernial defect and co related later intra operatively. Patients underwent either open or laparoscopic repair. Open repair included anatomical repair, onlay mesh repair and sublay mesh repair. Post-operative complications such as seroma, surgical site infection (SSI), wound dehiscence and cuticular necrosis were compared among the various treatment modalities. Recurrence in follow up was evaluated by return of swelling at site of previous repair confirmed by presence of defect on USG.

An ethical clearance was obtained from Institutional ethical committee of the institute. The data was analysed using descriptive statistics which included mean**,** standard deviation**,** range and is presented in tables.

RESULTS

A total of 64 patients were enrolled with mean age of 48.3 years, SD ±8.82 with range of 33-75 years. Almost 70% of the patients were observed in the age group of 31-50 years. There was a female pre ponderance with male to female ratio of 1:6.4.

On evaluation of predictive factors associated Incisional Hernia, 41 patients (64.06%) were multipara and 56 patients (87.5%) were clinically overweight or obese (BMI > 25). Diabetes was found in 16 (25%) of patients who developed incisional hernia. The predictive factors associated with previous laparotomy showed that 71.87% patients underwent gynaecological or obstetric procedure. Lower midline incision was observed in 38 (59.37%) patients which was done for hysterectomy, tubectomy or LSCS. Upper midline was found in 10 (15.62%) patients. Pfannesteil incision was seen in 8 (12%) patients and there were 4 (6%) patients with port site hernia.The mean duration of occurrence of Incisional Hernia after initial laparotomy was 15.3±6.43 years. A majority of 73.43% patients developed incisional hernia within 1 year of previous abdominal surgery. SSI was observed in 36 (56.25%) patients in post-op period. While post op cough was observed in 8 (12.5%).

Table 1: Post hernia repair complications.

Complications	Anatomical repair (n=7)	Onlay mesh repair (n=22)	Pre peritoneal mesh repair (n=30)	Lap IPOM (n=5)
	N (%)	N (%)	N (%)	
Seroma	1 (14.28)	9 (40.90)	1 (3.33)	-
SSI	1 (14.28)	4 (18.18)	4 (13.33)	-
Wound dehisence	-	1 (4.54)	1 (3.33)	-
Cuticular necrosis	1 (14.28)	4 (18.18)	5 (16.66)	-
Drain removal (mean duration)	-	8.4 days	7.2 days	-

All the patients were managed surgically. Of them, 59 (92.17%) patients underwent open surgery and rest 5 (7.83%) had laparoscopic repair. Anatomical repair was performed in 7 (10.93%) patients in defects <4 cm with seroma formation in 1 patient (14.28%), SSI in 1 patient (14.28%) and cuticular necrosis in 1 (14.28%) patient. Onlay mesh repair was done in 22 (34.37%) patients. Of them, 9 (40.9%) patients developed seroma, 4 (18.15%) patients had SSI and cuticular necrosis in 1 (4.5%) patient. Pre-peritoneal repair was carried out in 30 (46.87%). Of them, 4 (13.33) patients developed SSI and 5 (16.66%) developed cuticular necrosis and 1 patient developed seroma and wound dehiscence. There was no post op complication in laparoscopic repair. The mean post operative drain duration was 8.4 days in onlay and 7.2 days in preperitoneal repair.

The patients were followed up after discharge from hospital. The mean follow up period was 36.8 months. 1 (1.56%) patient had recurrence which was observed in open Onlay mesh repair.

DISCUSSION

Incisional hernias is common surgical problem which results due to failure of fascial tissues to heal and close following laparotomy.[5] Incisional hernia accounts for 15-20% of all abdominal wall hernias and are most frustrating and difficult to treat.[4-6] Mean age of occurrence of incisional hernia in present study was 48.3 years which is earlier as compared to mean age of western studies and is consistent with Indian studies.[5-7] Incisional hernias were commonly observed in females in present study which is quite consistent with studies from Indian sub- continent.[8-11] Multiparity was one of the major risk factor observed in present study.(64.06%) and these results are consistent with literature.[3]

Obesity and overweight is a well-known predictive factor associated with development of incisional hernia as fat acts as a pile driver. In present study majority of patients were overweight or obese (87.5%) which is a predictive factor difficult to modify. These results are consistent with results from literature.[5,6,10,11] Majority of incisional hernias developed within one year of previous abdominal surgery. These results are consistent with literature except with a study from Najappa et al where majority of incisional hernias developed late i.e. after 1 year of previous surgery.[3,9,12,13] The hernia occurring within 1 year are mainly due to peri operative causes while those occurring after 1 year are explained on basis of collagen defects. Sixteen (25%) patients in the present study were diabetic which is quite consistent with literature.[2,14-16] Obstetrical and gynaecological procedures were the commonest surgeries after which incisional hernias developed in the present study (71.87%) and these results corelate with literature.[12,14] Majority (75%) of incisional hernia in present study developed from midline incision of which lower midline was associated with major chunk. The results are quite consistent with literature which quotes 70-84% cases developing incisional hernia from midline incision.[8,11,16,17] SSI was a major risk factor associated with incisional hernia seen in 56.25% of the patients which is quiet consistent with literature.[3,8]

Majority of patients in the present study underwent open surgical repair which included anatomical repair and mesh repair. Anatomical repair is now getting obsolete and generally practise is limited to defects <4 cm in size where fascial approximation can be done without any tension at site of repair. Only 10.93% underwent anatomical repair which is quite consistent with range from 5-15%.[3,11] In open repair, preperitoneal repair was done in 46.87% and 34.37% underwent onlay mesh repair. Laparoscopic IPOM was done in 5 (7.83%) of the patients. The results cannot be compared with literature due to very small number of cases in the present study. On evaluation of postoperative complications, the commonest postoperative complication observed was SSI seen in 14.06% which is well within range of 2-26%.[3,10,12] When observed with reference to surgical procedure done, SSI was seen only in mesh repair (40.4%) and lap IPOM was not associated with any complications.

The next common complication was seroma accounting to 17.18% patients which is consistent with literature.[3,14] On further evaluation of occurrence of seroma with relation to surgery procedure, it was most commonly observed in overlay procedure (40.9%). The reason for this high occurrence is extensive dissection of subcutaneous space for anchoring the mesh on both the sides and this dissection causes dissipation of lymphatics and inflammatory ooze in post operative period which ultimately leads to collection of serous fluid (seroma). Lap IPOM was not associated with seroma formation. Cuticular necrosis is another complication observed in 15.62% patients and this can be explained on basis of dissection in subcutaneous plane causing devascularisation of skin leading to cuticular necrosis. One patient of open onlay mesh repair developed recurrence.

The present study has its own limitations as this was an observational study without any controls. Hence, risk factor assessment could not be possible as we could not calculate the Odd's ratio. As present study was only a hypothesis generating study, no formal sample size calculation was carried out. The choice of surgical management was totally based on clinical judgement of treating surgeon. Hence, there was a bias in the management procedure.

CONCLUSION

Majority of the patients underwent open surgical procedures which were associated with post operative complications. However, a very small number of patients underwent laparoscopic repair and no post operative complications were reported.

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