Section: General Surgery

Original Research Article

A CLINICAL STUDY ON INCISIONAL HERNIA

Sri Lakshmi Rachuru[1], Budamala Sarada[2], P.Adeppa[3], G.V. Prakash[4]

[1]Assistant Professor, Department of General Surgery, Nellore Medical College, Nellore, Andhra Pradesh, India
[2]Associate Professor, Department of General Surgery, S.V. Medical college, Tirupati, Andhra Pradesh, India.
[3]Professor, Department of General Surgery, SVMC, Tirupati, Andhra Pradesh, India.
[4]Retired Professor and HOD, Department of General Surgery, S.V. Medical college, Tirupati, Andhra Pradesh, India.

Received : 07/03/2023
Received in revised form : 20/04/2023
Accepted : 05/05/2023

Keywords:
Incisional hernia; suture repair; mesh repair; complications.

Corresponding Author:
Dr. Budamala Sarada,
Email: drbsarada@gmail.com

DOI: 10.47009/jamp.2023.5.3.497

Source of Support: Nil,
Conflict of Interest: None declared

Int J Acad Med Pharm
2023; 5 (3); 2539-2543

Abstract

Background: Incisional hernia is a common complication of abdominal surgery and an important source of morbidity. It may be repaired using anatomical, mesh or laparoscopic methods. This study analyses the various etiopathogenesis, modes of presentation, modalities of treatment like anatomical, mesh repair and its outcome. **Materials and Methods:** Between September 2015 and August 2016, 60 patients with incisional hernia who got admitted in a Tertiary care hospital in the department of surgery were subjected to anatomical or mesh repair depending upon the surgeon's choice and size of the hernial defect. Data was collected and analyzed. **Result:** Incisional hernia was found to be the 2nd most common type of hernia. The incidence was more common in females, who underwent gynecological procedures by lower midline incisions. It was found to be more common in the age group of 30-50 years. Predominant risk factors being post-operative wound infection and obesity. Majority of the patients presented with swelling and within 3 years of previous surgery. The complications following surgery was found to be less with mesh repair than anatomical repair and was significantly reduced by using drains. The post operative complications noted were mainly wound infections and seroma formation. **Conclusion:** Mesh repair results in less post operative complications than anatomical repair for incisional hernia provided drains are used.

INTRODUCTION

Incisional hernia is a true iatrogenic hernia. Ian Aird defines incisional hernia as a diffuse extrusion of peritoneum and abdominal contents through a weak scar of an operative or accidental wound. Incisional hernia occurs in 5-11% of patients subjected to abdominal operations.[1,2] Many factors are associated with incisional hernia like age, sex, obesity, chest infections, type of suture material used and most importantly, wound infection1. All these present a challenging problem to the surgeon.

Incisional hernia usually starts early after surgery, as a result of failure of the lines of closure of the abdominal wall following laparotomy. If left unattended they tend to attain large size and cause discomfort to the patient or may lead to strangulation of abdominal contents. An incisional hernia can incarcerate, obstruct, perforate or can cause skin necrosis all of which markedly increase the risk to patient's life.[3,4]

With the advent of anaesthesia, antisepsis, antibiotics and greater understanding of anatomy, the scientific approach to hernial treatment dawned. Currently by the judicious use of the above three concepts, incisional hernia is repaired with least morbidity, mortality and recurrence rates. Almost every surgeon has got his own techniques and may modify it to suit the situation.[5]

Laparoscopic technique of hernia repair has becoming more popular the treatment of incisional hernia repair by reducing the morbidity and less hospital stay to the patient. This study has been undertaken to assess the magnitude of this problem, various factors leading to development of this condition and the different modalities of treatment practiced in our set up.

Aims and Objectives

The aim of this study is to study the following aspects of incisional hernia.

- To study the etiological and risk factors associated with development of incisional hernia.
- To study the incidence of incisional hernia in relation to various abdominal incisions.

MATERIALS AND METHODS

The present study "A CLINICAL STUDY ON INCISIONAL HERNIA" is a prospective study which has been carried out in the Department of

ISSN (O): 2687-5365; ISSN (P): 2753-6556

surgery, in a Tertiary Care Hospital, during the period from September 2015 to August 2016.

A total number of 60 cases were studied and the follow up period is from 6 months to 12 months. Exclusion criteria included incisional hernias associated with other abdominal wall hernias, and patients aged above 70 years.

A detailed history of all patients was taken and a thorough clinical examination was done to determine the type and cause of hernia. All patients were analyzed in various aspects like age, sex, risk factors, mode of presentation, previous operation and site of previous scar. Patients were also evaluated for other risk factors like obesity, HTN, DM and malignant disease.

Routine investigations like Blood, Urine, CXR, and ECG were done. All the cases were operated and procedure adopted was anatomical repair or mesh repair. The immediate post-operative complications were evaluated. Long term complications like recurrence, chronic infections and sinus tract formation were also evaluated.

The analyzed data was compared with other series in literature and discussed. A master chart dealing with all aspects has been designed and presented. The following proforma has been used for the study purpose - refer annexure.

RESULTS

From the above table, it can be seen that during the study period, 432 patients have been treated for various types of hernia. Out of these, 67(15.5%) cases were incisional hernia. And it was the second most common type of hernia. [Table 1]

In this study of 60 cases, it has been found that, incidence of incisional hernia is more common in females than males and the overall male to female ratio is 1.8 approximately. [Table 2]

From the above table it is learnt that, the incidence of incisional hernia is maximum in the age group of 30-50 years (68%). In this study the youngest patient was 22 years old and the oldest was 70 years old. [Table 3]

From the above table it was found that in our study 80% of the patients had underwent gynaecological procedures. Among which hysterectomy was the most common operation followed by LSCS. [Table 6]

Table 1: Total Number of Operations.

Type of hernia	No.of cases	Percentage(%)
Inguinal hernia	311	71.9
Incisional hernia	67	15.5
Umbilical hernia	33	7.63
Epigastric hernia	18	4.1
Paraumbilical hernia	2	0.46
Femoral hernia	1	0.23
Total	432	

Table 2: Distribution of patients according to sex

Total no. of patients	60	% age
Male	7	11.7%
Female	53	88.3%

Table 3: Age incidence

Age group	No.of cases	Percentage (%)
11-20	0	0
21-30	6	10
31-40	19	31.6
41-50	22	36.6
51-60	7	11.6
61-70	6	10

Table 4: Mode of presentation

Mode of presentation	No.of cases	Percentage (%)
Swelling	51	85
Swelling and pain	08	13.3
pain	01	1.6

Table 5: Size of the defect

Size of the defect	No.of patients
Up to 20 sq.cm	38
20-40 sq.cm	17
40-60 sq-cm	05

Table 6: Previous surgeries

Name of the operation	No.of patients
Hysterectomy	27

ISSN (O): 2687-5365; ISSN (P): 2753-6556

LSCS	12
Tubectomy	9
DU perforation closure	2
Exploratory Laparotomy	2
Peritonitis	1
Appendecetomy	5
Cholecystectomy	1
Nephrectomy	1

Table 7: Previous incisions used

Incision	No.of cases
Lower midline	47
Upper midline	4
Mc.Burney	4
Transverse	3
Para median	1
Oblique lumbar	1

Table 8: Risk factors

Risk Factors	No.of patients
Wound infection	19
Wound dehicense	3
Post op cough	6
Repeat surgery	6
Respiratory complications	2
No complications	25
Obesity	20
Diabetes	2
Hypertension	2

Table 9: Time of onset of hernia after previous surgery

Duration since surgery	No.of patients
0-3 months	8
3 mnths-01 year	29
1-3 years	18
>3 years	5

Table 10: Anatomical versus mesh repair

Type of repair		No.of patients
Anatomical repair		8
Mesh repair		
Onlay		50
Underlay		2
Complications	**Anatomical repair**	**Mesh repair**
Wound infection	1	3
Wound dehiscence	0	2
Seroma	0	1

8 patients underwent anatomical repair whereas 52 patients underwent mesh repair. The complications noted following these procedures were wound infection (AR-1,MR-3) and seroma (AR-0,MR-1).

Table 11: Post operative complications.

Complications	No.of patients	Percentage(%)
Wound infection	4	6.6
Wound dehiscence	2	3.3
Seroma	1	1.6
No complications	53	88.3
Expired	1	1.6
Respiratory complications	2	3.2

DISCUSSION

60 cases of incisional hernia admitted in Tertiary Care Hospital, for treatment between September 2015 August 2016 are presented in this dissertation. This study may not reflect all the aspects of incisional hernia, as the series is small and follow up has been for a short period in most of the cases. Incisional hernia is the second most common hernia among all the hernias operated in our institution (15.5%).

The maximum age incidence of incisional hernia in our study has been 30-50 years. Ellis, Gajraj and George in their study noticed a mean age of 49.4 years.[3] The youngest patient in our study was 22years and the oldest was 70 years.

The sex incidence of incisional hernia among the 60 cases studied is 1:8 (M:F) approximately showing a

ISSN (O): 2687-5365; ISSN (P): 2753-6556

female preponderance. This is because of laxity of abdominal muscles due to multiple pregnancies and also an increased incidence of obesity in females. Ellis, Gajraj and George obtained an incidence of 64.6% female population in their study of 383 patients. J.B.Shah studies and Goel and Dubey5 series have male to female ratio 1:1.17 and 1:1.25(M:F) ratios respectively.[4]

In our study 78.3% of the incisional hernia occurred in midline infra umbilical incisions. This may be because of the following features: Intra-abdominal hydrostatic pressure is higher in lower abdomen compared to upper abdomen in erect position i.e., 20 cm of water and 8 cm of water respectively. Absence of posterior rectus sheath below arcuate line. This incision is used in gynaecological surgeries who have poor abdominal wall musculature.[5]

This is comparable with A.B. Thakore et al,[6] studies (67.1%) and Goel and Dubey studies (44.6%).

Over 80% of cases occurred following gynaecological procedures (Hysterectomy, Tubectomy, Caesarean sections). This may be because most of these procedures were done through lower midline incisions. Ponka in his study noted 36% incidence and Goel and Dubey noted 28.76% incidence among gynaecological procedures.[7]

In considering the risk factors promoting incisional hernias, wound infection accounted for 31.6% in our study.[8] The other risk factors observed were obesity (33.3%) and COPD (8%). This is comparable with that of Bose et al,[9] studies in which wound infection (59 out of 110 patients-53.63%), obesity (33/110-30%), COPD (23/110 - 20.90%) and stricture urethra (10/110 - 9.09%). 3 patients (10%) had undergone more than one operation previously which is also one of the risk factors in our study which can be compared with Ponka series (25%). Brenden Devlin,[8] states that repeated wounds in the same region or just parallel to each other will often lead to the development of herniation.

During the clinical examination in our study 38 patients (63.3%) were found to have hernial defect of up to 20sq cms and 5 patients had defects more than 40sq cms. Thomas A.Santora et al,[9] believes that the size of the fascial defect and the appearance of the fascia should dictate the selection of the most appropriate method of hernia repair. Jack Abrahamson,[10] believes that mesh repair is excellent method of repair for large ventral abdominal hernias but has not specified the size of the defect.

In our study polypropylene mesh and the suture material of the same type was used to repair the incisional hernias and the technique of the repair was decided by the size of the hernial defect, abdominal muscle tone, whether hernial defect could be approximated without tension and general condition of the patient. 52 out of 60 were treated with polypropylene mesh repair and 8 with anatomical repair. Incidental surgeries were performed in 2 patients; appendectomy in 1 patient and TAH + BSO in another. Seroma collection in suture line (AR-0, MR-1), wound dehiscence (AR-0, MR-2) and wound infection (AR-1, MR-3) occurred in both the groups which were treated appropriately. Khaira H.S. et al,[11] reported seroma formation in 6 out of 35 patients and wound infection in 1 out of 35 patients.

In our study we had no recurrences, however the follow-up period was variable and short to comment upon. Usher,[12] reported zero percent recurrence in 48 patients who were treated by polypropylene mesh repair. Jacobus W.A et al,[13] reported a 10 year cumulative rate of recurrence of 63% in anatomical repair and 32% in mesh repair. The recurrence rate thus varies in different studies but all studies favour mesh repair to decrease the recurrence rate.

With thorough patient evaluation, pre-operative skin preparation, meticulous operative technique, use of non-absorbable sutures for musculo aponeurotic tissue, use of suction drain, use of peri-operative broad spectrum antibiotics, nasogastric aspiration, early ambulation and chest physiotherapy, complication rates in our study were minimized.

With prosthetic mesh, defects of large size can be repaired without tension. The polypropylene mesh, by inducing inflammatory response sets up scaffolding that in turn induces the synthesis of collagen. Thus the superiority of mesh repair over suture repair can be accounted for.

Summary

60 cases of incisional hernia which were admitted in Tertiary Care Hospital were studied. The statistical data and analysis of the cases studied during this period are presented in this study. Incisional hernia (15.5%) was the 2nd most common hernia preceded by the inguinal hernia (71.9%).

It was more common in females than in males with a ratio of approximately 8:1. Incidence of incisional hernia was highest in the age group ranging from 30-50 years. Most of the patients presented with swelling (85%) and swelling with pain (10%).

Incisional hernia was more common in patients with previous history of gynaecological operations (80%).

The incisional hernia was more common in the infra umbilical region (78.3%). In majority of patients (91.6%) the incisional hernia occurred within 3 years of previous operation.

Wound infection following previous surgery was the most important risk factor associated with wound failure. The other major risk factors were obesity and COPD.

The size of the hernial defect less than 20sq cms was found in 38 patients (63.3%).

52 patients (86.6%) underwent mesh repair and 6 patients had post- operative complications- wound infection being the commonest.

Post-operative complications included wound infection (5%), seroma (1.6%) and wound dehiscence (3.2%). Respiratory complication was observed in 2 patients (3.3%).

Post-operative complications were minimized by the use of closed suction drains.

There was no recurrence in our study though the period of follow-up was not adequate to make correct

ISSN (O): 2687-5365; ISSN (P): 2753-6556

assessment of recurrence. There was one mortality, but not related to surgery.

Post-operative complications included wound infection (5%), seroma (1.6%) and wound dehiscence (3.2%). Respiratory complication was observed in 2 patients (3.3%).

Post-operative complications were minimized by the use of closed suction drains.

There was no recurrence in our study though the period of follow-up was not adequate to make correct assessment of recurrence. There was one mortality, but not related to surgery.

CONCLUSION

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. Proper preoperative preparation of the patients with high risk is an important factor in preventing recurrence of incisional hernia. Mesh repair results in less post-operative complications than anatomical repair for incisional hernia provided drains are used.

REFERENCES

1. Bucknall TE, Cox PJ, Ellis H. Burst abdomen and incisional hernia: A prospective study of 1129 major laparotomies. British Medical Journal 1982;284:931-3
2. Mudge M, Hughes LE. Incisional hernia: A 10 year prospective study of incidence and attitudes. Br J Surg 1985; 72: 70-1
3. Ellis H, Gajraj H, George CD. Incisional hernias- when do they occur? Br J Surg 1983; 70: 290.Ellis H, Heddle R. Does the peritoneum need to be closed at laparotomy?. Br J Surg 1977; 64: 733
4. Goel TC, Dubey PC. Abdominal incisional hernia-Anatomical technique of repair. Indian Journal Of Surgery 1981;43:324-27
5. Parekh JN, Shah DB, Thakore AB. Incisional hernia- A study of 76 cases. Indian Journal Of Surgery 1988; 50: 49-53
6. Bose SM, Lal Roshan, Kalra Manju, Wig JD, Khanna SK. Ventral hernia A review of 175 cases. Indian Journal Of Surgery 1999; 61(3): 180-84
7. Ponka JL, Hernias of the abdominal wall. Phildelphia, PA :WB Saunders; 1981.
8. Devlin HB, Kingsmith HB. Abdominal wall and hernias. Chapter 10th in A new aids companion in surgical studies, 2nd edition. Keim GB Lunard, Edingburgh Churchill Livingstone; 1998:688-99
9. Khaira HS, Lall P, Hunter B, Brown HJ. Repair of incisional hernias.J R Coll Surg Edinb 2001; 46: 39-43
10. Abrahamson Jack. "Hernias" Chapter 14th in Michael J Zinner, Seymour Schwartz, Harold Ellis, Editors. Maingot's Abdominal Operations. Volume 1. 10th edition. Connecticut: Prentice hall international inc; 1997. 479pp
11. Jacobus WA et al. Long term follow-up of a randomized controlled trial of suture versus mesh repair of incisional hernia. Annals of Surgery 2004; 240(4): 578-8
12. Usher FC, Oschner J, Tuttle LLD Jr. Use of marlex mesh in the repair of incisional hernia. Am J Surg 1958; 24: 969
13. Andrew Kingsnorth: The management of incisional hernia.Ann R Coll Engl 2006:88:252-260.

ISSN (O): 2687-5365; ISSN (P): 2753-6556