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Research Article

Incisional hernia: incidence, clinical profile, risk factors and prevention

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ABSTRACT

Background: Incisional hernias are very common. They are the second most common type of hernia after inguinal hernias. This study was undertaken to study the incidence and various risk factors leading to incisional hernia.
Methods: This prospective study was conducted in department of surgery, Sri Devaraj URS Medical College, Kolar, India from May 2010 to May 2012. All the cases were analyzed in various aspects like age, sex, parity, relative incidence, clinical presentation, nature of previous operation, site of previous scar, precipitating factors like obesity, wound infection, abdominal distension.
Results: The incidence is around 7.5%. Patients in the age group of 30-60 years found to have highest incidence of incisional hernia. Females outnumbered the males with the ratio of 4:1. Incisional hernia was more common in patients with previous history of gynecological operation. Most of the patients presented with incisional hernia in the infra umbilical region.
Conclusions: Incisional hernias are iatrogenic and preventable by avoidance of midline incisions, especially in the infra umbilical region.

Keywords: Incisional hernia, Incidence, Risk factors, Prevention, Kolar

INTRODUCTION

Incisional hernias are very common. They are the second most common type of hernia after inguinal hernias. Approximately 4 million laparotomies are performed in the United States annually, 2-30% of them resulting in incisional hernia. Between 100,000 and 150,000 ventral incisional hernia repairs are performed annually in the United States.[1] Incisional hernias after laparotomy are mostly related to failure of the fascia to heal and involve technical and biological factors. Approximately 50% of all incisional hernias develop or present within the first 2 years following surgery, and 74% occur within 3 years.[1] Depending on size, the repair of an incisional hernia varies from simple suturing to major reconstruction of the abdominal wall with creation of muscle flaps and the use of large pieces of mesh. This can be done with an open approach or laparoscopy. Incisional hernia occurs in approximately 5-11 % of patient's subjects to abdominal operations.[2] Many factors are associated with incisional herniation like age, sex, obesity, chest infection, type of suture material used and most important wound infection. All these present a challenging problem to the surgeon. Recent studies have shown that about 2/3'd appear within the first five years and that at least another third appears 5-10 year after operation.[3] In 1993, Le Blanc reported the

first case of laparoscopic incisional hernia repair with the use of synthetic mesh. The procedure involves the placement of a mesh inside the abdomen without abdominal wall reconstruction. The mesh is fixed with sutures, staples, or tacks. The recurrence rate of the laparoscopic repair is reported as equal as or less than that done with the open approach. Incisional hernia repair is considered a challenging procedure, especially in recurrent hernias, in which the chances of failure increase with each surgical attempt.

Risk factors for hernia formation

A 0.1% rate of acute laparotomy wound failure has been reported in the literature.[1] The true rate of laparotomy failure is about 11%, of these patients, 94% present with recurrence in the first 3 years after the operation. The real laparotomy wound failure rate is therefore 100 times greater than previously thought. The early mechanical failure, therefore, occurs early in the course of the disease, and the healing skin conceals a myofascial defect that enlarges or appears later. Perioperative shock is a recognized risk factor for incisional hernia formation. Upper midline incisions have a higher incidence of hernia formation than other types of incision do.[1] Few studies was done on incisional hernia, hence this study was undertaken to study the incidence and various risk factors leading to incisional hernia.

METHODS

This prospective study was conducted in department of surgery, Sri Devaraj URS Medical College, Kolar, India from May 2010 to May 2012. Institutional ethical committee permitted for study. Informed consent was taken from patients and patient attenders. A prospective study of 30 cases of incisional hernias treated in R.L.Jalappa Hospital Kolar, India are collected consequently during the period of May 2010 to May 2012 with the help of available data. No particular criteria were adopted during selecting the patients for the study and cases were studied as per the proforma attached. Detailed history of the illness was taken as this is very important for the type and cause of hernia. A detailed general and local examination was made. All the cases were analysed in various aspects like age, sex, parity, relative incidence, clinical presentation, nature of previous operation, site of previous scar, precipitating factors like obesity, wound infection, abdominal distension. The contributory factors like chronic bronchitis, chronic constipation and enlarged prostate were particularly lock for. While presenting the cases, only relevant and positive findings were recorded in the proforma case sheet enclosed and a master chart dealing with all the aspects has been designed and presented. The diagnosis was made clinically in all the cases without difficulty. Routine investigations were done to obtain fitness for surgery. Collected data was tabulated and stastically analysed by using SPSS software.

RESULTS

The factors causing incisional hernia can be preventable; the incidence is around 7.5%. Patients in the age group of 30-60 years found to have highest incidence of incisional hernia. Females outnumbered the males with the ratio of 4:1. Incisional hernia was more common in patients with previous history of gynecological operation. Most of the patients presented with incisional hernia in the infra umbilical region. More than half of the patients have presented with incisional hernia within 3 years of operation. Wound infection remains the most popular risk factor associated with wound failure.

Table 1: Incidence of inguinal hernia.

Types of hernia	BL Coley series		JB Shah Bombay		RLJH 2010-2012	
	No of cases	%	No of cases	%	No of cases	%
Inguinal hernia	2793	93	880	88	650	81.25
Incisional hernia	38	1.3	50	5	60	7.5
Umbilical and para umbilical hernia	14	0.5	36	3.6	70	8.75
Femoral hernia	54	1.5	22	22	5	0.62
Epigastric hernia	101	3.3	12	1.2	15	1.87

Table 2: Distribution of cases based on previous incision was made.

Name of operation	Ponk %	Goel and Dubey %	Present study
Hysterectomy	34	-	10
LSCS	2	28.76	10
Tubectomy	-	-	53.3
Appendisectomy	16	3.42	10
Gastrojejunostomy + vagotomy	11	12.32	-
Cholecystectomy	21	-	3
Closure of peptic ulcer perforation	-	15.06	13
Colon and colostomy operations	9	-	-
Suprapubic cystostomy	-	15	-
Kidney operations	-	9.58	-
Miscellaneous	17	15.74	-

Table 3: Various risk factors associated with incisional hernia.

Risk factors	A.B. Thakore et al		Present study	
	Numbers	%	Numbers	%
Wound infection	35	46.05	4	13.3
Wound gaping	10	13.15	5	16.6
Late eventeration	1	1.3	-	0
Chest complication	10	13.15	5	16.6
Retention of urine	2	2.63	-	0
Obesity	-	-	6	20
Diabetes mellitus	-	-	5	16.6
No complications	24	31.5	5	16.0
Not mentioned	14	18.42	-	0

Table 4: Previous incision leading to incisional hernia.

Incision	A.B. Thakore		Goel - Dubey		Present study	
	Number of cases	%	Number of cases	%	Number of cases	%
Lower midline	51	67. 10	65	44.6	16	53.3
Upper midline	6	7.8	41	28.0	4	13.3
Para median	75	19.65	21	14.2	1	3.3
Mc burney	4	5.2	5	3.6	3	10
Transverse (pfann enstial)	-	-	-	-	6	20
Oblique lumbar	-	-	14	9.6	-	-
Total	76	100	146	100	30	100

DISCUSSION

A study of 30 cases of incisional hernia admitted to RE Jalappa Hospital during the year of May 2010 to May 2012 was made. The following is the analytical results of all the cases and conclusion drawn from it. In this study out of 800 cases of hernias operated in our hospital, incisional hernia constitutes 7.5%. In Devlin HB studies, De Bord JR studies, Gibson CL studies series the incidence is 1.7%, 11.5%, 5%, respectively.[4-6]

Female predominated the picture in my study with 4:1 ratio (80%) with that of males. Though Thomas A Santora stated the male gender has propensity to develop incisional hernia.[7] Ellis have obtained a 64.6% of female population in their study of 342 patients.[8] Incidence of incisional hernia is more common in females in our country may be because of multiple child births which leave the abdominal wall weak. The incidence of incisional hernia is higher in 30-60 years age group with mean age of 45 years in my study. Ellis in their study noticed a >mean age of 49.4 years.[8] The youngest patient in my study was 23 years old and oldest was 70 years old.

Majority of patients were house wives and agricultural workers were the next common occupants. In nearly 83% of patients the site of hernia was infraumbilical, of which only three patients had incisional hernia following appendisectomy, the rest of patients underwent gynecological operations, most commonly tubectomy, hysterectomy and caesarian section. This may be due to the frequency of female pelvic surgery through infraumbilical midline approach, where the linea Alba is thinner and less well protected compounded by multiparty. Jack Abrahamson stated that lower abdominal incision apart from other causes is one of the factors with a higher rate of incisional hernia and recurrence after repair. In my study also, incisional hernia is more common after lower midline incisions.[3]

In considering risk factors promoting incisional hernia, wound infection and dehiscence is the commonest. It occurred in 30% of patients in my study. This is comparable with that of JN Parekh studies.[9] There were six obese patients with incisional hernia out of 30 cases (20%) in my study. Ellis noted 30 obese patients who developed incisional hernia out of 200 cases i.e. 15%, though other factors also play a role in causation of incisional hernia.[8] Ellis group found that obesity was associated with a threefold increase in herniation and recurrence, but it is difficult to pin point the actual cause for this or technical factors involved.

All studies showed that most of the incisional hernia appears within the first year or second year after surgery. In this study, the history reveals 54% of them developed

hernia within 3 years of operation. Jack Abrahamson noticed 80% of hernia appearing within first 2 years Kings north AN and studies 77% developed within 3 years after operation.[3,10] Late hernias were not common up to 5 years after operation. Mudge and Hughes noticed 35% manifesting after 5years and in my study they accounted for 46%.[11] The probable cause may be because of aging and weakening of tissues and raised intra-abdominal pressure associated with chronic cough, constipation. Wound infection and wound gaping constituted 30%. Obesity constitutes 20%, diabetes mellitus constitute 16.6% and postoperative respiratory complication accounted for 16.6%. In 16.6% of patients no complications were found.

CONCLUSION

Incisional hernias are iatrogenic and preventable by avoidance of midline incisions, especially in the infra umbilical region. Incisional hernia was more common in patients with previous history of gynecological operation. Proper preoperative preparation of the patients with high risk is as important in preventing recurrence.

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