Research Paper Medical Science

A Comparative Study of Open vs Laparoscopic Incisional Hernioplasty - Which is Better?

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ABSTRACT

Incisional hernia is multifactorial but usually starts early after surgery as a result of failure of line closure following laparotomy. If left untreated, they attain large size and cause discomfort to the patient and may lead to complications like strangulation. The most important aspect of surgical management of Incisional hernia is anatomical repair and reinforcement by mesh. This can be achieved by either open method or by laparoscopic surgery. In this study we compare open method of Incisional hernioplasty vs laparoscopic method.

KEYWORDS Incision Hernia, open, laparoscopic, repair, mesh repair, suturing techniques, abdominal incisions.

Introduction:
Incisional hernia is a common complication after laparotomy [1]. An Incisional hernia occurs after surgery in the abdomen region that may usually occur in months or even years after surgery[2-4]. In this study we have performed a comparative study of open and laparoscopic Incisional hernia repair.

Materials and Methods
The present study was carried out for a period of 2 years from November 2013 to December 2015 in upgraded department of general surgery at Osmania General Hospital, Hyderabad.

The study subjects consisted of 40 patients with a diagnosis of incisional hernia that underwent incisional hernia repair at Osmania General Hospital.

Patients were non-randomly distributed into 2 groups of 20 each according to the discretion of operating surgeon. One group was subjected to laparoscopic incisional hernia repair and the other to open incisional hernia repair. Follow up from 6 months to 18 months.

Inclusion Criteria
All patients admitted in surgical wards with incisional hernia are included.

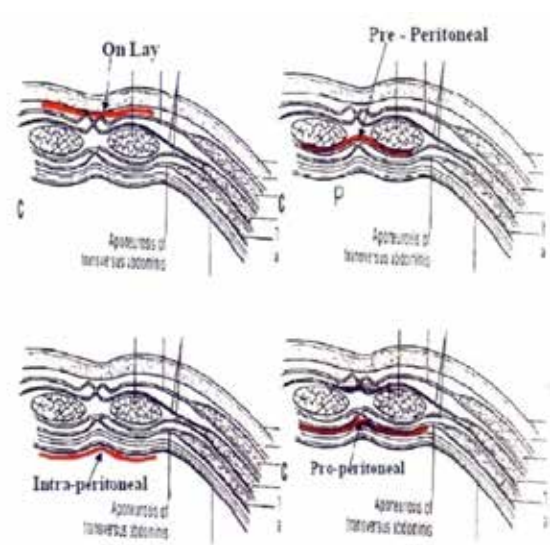
Exclusive Criteria
1. Patients with co morbid conditions who carry a high risk for general anesthesia especially for laparoscopic incisional hernia repair.
2. Patients undergoing non mesh repairs for incisional hernia
3. Patients >70 years
4. Patients who require conversion due to various reasons like bowel injury, morbid obesity etc.,
5. Patients with surgical emergency like acute intestinal obstruction

Surgical Procedures:
All operations were performed by consultant surgeon. Mesh repair was done.

Mesh of choice was polypropylene as it is the government supply provided to our hospital.

Open technique

Operations were performed either under general or spinal anesthesia depending on the site of incisional hernia and associated co morbid conditions.

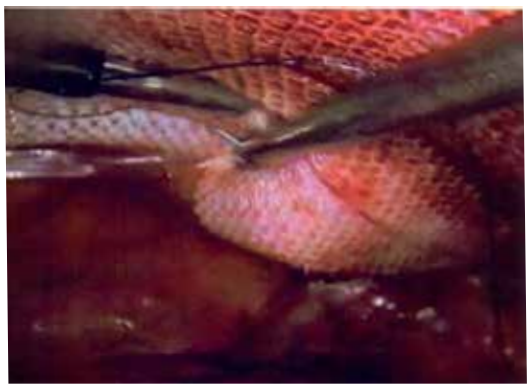


Open mesh repair techniques

Laparoscopic technique
All patients in laparoscopic repair are operated under gener-

al anesthesia. The position of patients and surgical equipment varies according to the site of hernia.

Adhesiolysis was performed using dissecting scissors and ultrasound scalpel. Contents of the hernia sac were reduced and hernia defect was clearly delineated.



Laparoscopic Mesh placement

Data Collection
Data was collected prospectively and included patients demographics, ultrasound findings, operative findings (defect size, any complication, type of repair), operating time, postoperative complications like (would infections, seroma, hematoma), duration of postoperative hospital stay, postoperative pain assessment including duration of analgesic usage and recurrence rate. The patients were also asked to grade their perception to the cosmetic results on a scale of 1-5.

Statistical analysis
Data is analyzed manually by comparing various parameters between open and laparoscopic repair in terms of percentages and number.

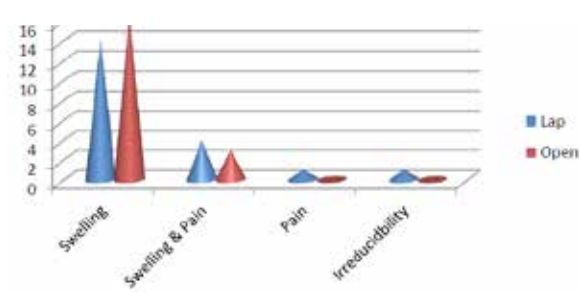
Statistical tests used are chi-square test and student T test

Statistical software used was Microsoft office 2007 to generate bar charts and pie diagrams.

Results and Discussions
The median age groups of the patients were 39 and 40 years in the laparoscopic and open group respectively. In both the groups incisional hernia is common in 3rd and 4th decade. In this study youngest was 27 years oldest was 65 years in the laparoscopic group. In open group youngest was 29 and the oldest was 66 years.

Mode of Presentation

Presentation	No of Patients	
	Lap	Open
Swelling	14(70%)	17(85%)
Swelling & Pain	4(20%)	3(15%)
Pain	1(5%)	0
Irreducibility	1(5%)	0



17 patients (85%) in open group and 14 patients (70%) in laparoscopic group presented with swelling. This is the most common mode of presentation in both the groups.

3 patients in open group and 4 patients in laparoscopic group presented with both swelling and pain. In laparoscopic group one patient presented with a pain as a chief complaint. Only one patient with irreducibility in this study (laparoscopic group) was recorded.

Previous Surgeries

Previous surgery	No. of Patients	
	Lap	Open
Hysterectomy	6(30%)	4(20%)
LSCS	8(40%)	8(40%)
Tubectomy	1(5%)	1(5%)
Acute Abdomen	4(20%)	3(15%)
Appendicectomy	1(5%)	1(5%)
Cholecystectomy	0	1(5%)
Incisional Hernia	0	0

Risk Factors

Risk Factor	No. of Patients	
	Lap	Open
Wound infection	8(40%)	7(35%)
Wound disinfection	2(10%)	1(5%)
Obesity	2(10%)	4(20%)
Respiratory Problems	1(5%)	2(10%)
Diabetes mellitus	0	2(10%)
Hypertension	2(10%)	1(5%)
Constipation	2(10%)	1(5%)
No Complications	3(15%)	2(10%)

In our study 18 patients in open group and 17 patients in laparoscopic group had previous post operative complications in the form of wound infection (35% in open & 40% in laparoscopic) and wound dehiscence (5% in open & 10% in laparoscopic). The other risk factors were obesity (4 patients in open & 2 patients in laparoscopic), respiratory complications (2 patients in open & 1 patient in laparoscopic), diabetes mellitus (2 patients in open) hypertension (one patient in open & 2 patients in laparoscopic) and constipation (1 patient in open & 2 patients in laparoscopic).

Most common previous postoperative complication in both the groups is wound infection.

Size of Hernia defect

Size of hernia defect (sq cm)	No. of patients	
	Lap	open
Up to 20	11(55%)	13(65%)
21-40	6(30%)	5(25%)
41-60	3(15%)	2(10%)

65% in open group and 55% in laparoscopic group had a hernia defect less than 20 sq cm. patients in open group and 3 patients in laparoscopic group had a larger defect greater than 40 sq cm. Difference was found t be not statistically significant.

Patient and Medication

Pain score	No. of patients	
	Lap	Open
VAS(Grade 0-5) (Range)	Grade 3 (1-5)	Grade 4 (2-5)
Analgesic usage(days) (Range)	5 (3-7)	7 (5-7)

***P<0.05**

Visual analogue scale was median grade 4 in open group as compared to median grade 3 in laparoscopic group.

Duration of analgesic administration was more in open group (median-7 days) as compared to laparoscopic group (median-5 days) difference was statistically significant with p value less than 0.05.

Post Operative Recovery

Laparoscopic group patients were started on oral feeds earlier (median-24 hrs) as compared to open group (median- 12 hrs). The difference was found to be statistically significant with a P value < 0.05. This is due to return of bowel sounds earlier in laparoscopic group (median -12 hrs) as compared to open group (median- 24 hrs).

Post Operative Complications

Post-op Complications	No. of Patients	
	Lap	Open
Wound infection	0	5(25%)
Wound dehiscence	0	2(10%)
Seroma	2(10%)	3(15%)
No complications	17(85%)	10(50%)
Recurrence	1(5%)	0

***P<0.04**

(Chi-square test)

In our study 10 patients in open group and 3 patients in laparoscopic group had post operative complications in the form of wound infection (25% in open & 0% Laparoscopic), and wound dehiscence (10% in open & 0% Laparoscopic), which has been treated with antibiotics after culture sensitivity and secondary suturing respectively. 15% in open and 10% in laparoscopic group developed seroma who are treated by repeated aspirations and pressure dressing. One patient in laparoscopic group developed recurrence within 2 months of surgery. Overall complication rate was higher in open (50%) group as compared to laparoscopic (15%) group. Difference was found to be statistically significant.

Drawbacks

Some drawbacks/limitations of our study should be outlined. The lack of randomization, small sample size, lowers the power of the statistical analysis [5].

We did not assess hernia recurrence rates, which is one of the most important outcomes of incisional hernia repair. Considerable uncertainty exists, surrounding recurrence rates in open and laparoscopic incisional hernia repair [6,7]. Short follow up in our study could underestimate the problem of recurrence.

Conclusion

The laparoscopic repair offers secured key advantages over open repair with respect to Laparoscopic approach is associated with low complication rate; Post operative pain and its duration is less; The amount of analgesic requirement is less in laparoscopic repair; A single procedure allows large or multiple hernias to be repaired without the extending the incision and also allows the identifications of incidental pathologies; Method of choice in "swiss-cheese"n type of defects; Laparoscopic group tolerate oral feeds earlier and are mobilized faster; The duration of hospital stay is less;

Cosmetic advantages in laparoscopic group is obvious; However even laparoscopic approach has got disadvantages with regard to

Longer operating time which involves a learning curve.

It is not useful in patients whose significant concern is an unsightly scar, because the ability to revise the scar can be done only with the open approach.

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