

Comparison Between Open And Laparoscopic Repair (IPOM-Intraperitoneal Onlay Mesh) In Incisional Hernia Patients

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Abstract: Controversy still exists regarding the ideal treatment of incisional hernias. The purpose of this study was to compare open and laparoscopic methods of incisional hernia repair in terms of complications, recurrence and post operative recovery. In our study laparoscopic repair was followed by shorter hospital stay, less ileus, faster recovery and early return to work and recurrence rate in both groups were equal.

Keywords: Incisional Hernia, IPOM, Open Repair

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I. Introduction

History of incisional hernia can never be told completely, it came in existence after birth of abdominal operations. In 1887 Homans¹ stated that 10 percent of all abdominal operations were followed by incisional hernia. Mayo² in 1899 described the transverse overlapping technique for repair of umbilical hernia which was soon adopted for incisional hernia repair. From that time, wide spectrum of surgical techniques had been recommended ranging from fascial suture techniques to use of various types of prosthetic mesh. Laparoscopic repair is a novel approach being introduced in 1990 with expectations of recurrence rates similar to those of open mesh repair along with improvement in post operative recovery, hospital stay and complication rate. Various complications of laparoscopic repair can be seroma, wound infection, ileus, pain. Small bowel injuries are less common. The incidence of incisional hernia is steadily decreasing due to proper selection of suture material, use of good surgical techniques including mass closure, draining of subcutaneous space in selected cases, proper use of antibiotics and introduction of laparoscopic surgery.

II. Material And Methods

This study is a prospective study, conducted from July 2015 to June 2016 including all the patients of incisional hernia operated in Mahatma Gandhi Medical College and Hospital, Jaipur within this period fitting into the study requirements according to inclusion and exclusion criteria. During this period 25 patients underwent open repair and 25 patients underwent laparoscopic repair. All procedures were performed by a single surgeon.

Inclusion criteria:

1. Patients between 20 – 70 yrs of age of either sex.
2. Suffering from primary or recurrent incisional hernia.
3. Fit for General Anaesthesia.
4. Patients available for follow up.

Exclusion criteria:

1. Cases with active wound infection and sinus.
2. Obstructed or incarcerated hernia.
3. Mentally ill patients/any cognitive impairment.

A detailed work up was done regarding present complaints and past history of any surgical procedure. Prophylactic antibiotic coverage was given 24 hr before surgery. In open repair subcutaneous flaps are raised up to 3 to 5 cm around the defect, the hernial sac is found, contents reduced back, then posterior rectus muscle and peritoneum closed primarily and mesh of suitable size with minimum of 3 cm overlap beyond the margin of defect is placed over posterior rectus sheath / peritoneum. In laparoscopic repair/ IPOM (Intra Peritoneal Onlay Mesh) repair first adhesiolysis was performed, and the margins of the defect were clearly delineated. The mesh is rolled up and inserted into the abdomen. After the mesh is positioned correctly, the suture ties are pulled through the abdominal wall with a suture passer (cobble needle) and the threads are knotted smoothly with the

knots buried in the subcutaneous tissue. Absorbable tackers were applied every 1 to 2 cm all around the hernial orifice and along borders of the mesh. Follow up was done in 1st, 3rd, 9th and 12th month post operatively and all the possible post operative complications were assessed including recurrence.

Observation And Results

Table 1: Sex Distribution

Sex	Open Repair	Lap. Repair	Total
Male	6	8	14
Female	19	17	36
Total	25	25	50

Of total 50 cases, 36 were females and 14 were males with a ratio of F:M 2.5:1.

Table 2: Age Distribution

Age Group	Open Repair	Lap. Repair	Total
20 – 35 yrs	8	6	14
36 – 50 yrs	8	13	21
51 – 65 yrs	7	4	11
>65 yrs	2	2	4
Total	25	25	50

Most of patients in our study were in age group of 36 – 50 yrs (42%). 70% of cases were in younger age group.

Table 3: Hernia Site Distribution

Site of previous operation	Number of Hernia	Percentage
Midline Lower	24	48%
Midline Upper	15	30%
Paramedian	4	8%
Rutherford Morrison	5	10%
Other	2	4%
Total	50	100%

Maximum number of hernia occurred in midline incision (78%).

Table 4: Interval between Hernia and Previous Surgery

Duration	Total	Percentage
<1 yr	26	52%
1 – 5 yrs	16	32%
5 – 10 yrs	6	12%
>10 yrs	2	4%
Total	50	100%

Out of 50 cases, more than half i.e. 26 patients (52%) developed hernia within a year.

Table 5: Contents of sac

Content	Open Repair	Lap. Repair	Total
Omentum	18	19	37
Small Intestine	3	3	6
Large Intestine	3	2	5
Other	1	1	2

Omentum was present in 74% of cases (37 patients) as the content of sac, while small and large intestine in much smaller number of cases.

Table 6: Duration of Surgery

Duration	Open Repair	Lap. Repair	Total
1 to 2 hrs	19	17	36
2 to 3 hrs	6	8	14
3-4 hrs	0	0	0
>4 hrs	0	0	0
Total	25	25	50

Of total 50 cases, 36 patients (72%) were operated in less than 2 hrs (mean of 96 min). But laparoscopic surgery took longer time (mean of 112 min).

Table 7: Return of Bowel Function

Period	Open Repair	Lap. Repair	Total
1 – 2 days	10	15	25
2 – 3 days	11	7	18
3 – 4 days	4	3	7
4 days or more	0	0	0

Bowel function returned earlier in patients treated by laparoscopy. 86% cases had bowel function within 3 days. Mean duration for laparoscopic group was 1.8 days v/s 2.5 days for open group.

Table 8: Duration of Stay in Hospital

Duration	Open Repair	Lap. Repair	Total
2 days	1	4	5
3 days	13	18	31
4 days	6	3	9
5 days or more	5	0	5
Total	25	25	50

Mean stay for open approach was 4.5 days, 3 days for laparoscopic group.

Table 9: Indications for Surgery Preceding Incisional Hernia

Indication	Open Repair	Lap. Repair	Total
Perforation Peritonitis	4	4	8
Resection Anastomosis	3	2	5
Hysterectomy	8	5	13
Caesarean	7	8	15
Sterilization	1	0	1
Recurrent Hernia Repair	2	2	4
Others	0	4	4

Maximum number of cases of incisional hernia followed gynaecological procedures i.e. hysterectomy and caesarean section (56%) by lower midline incision followed by perforation peritonitis (8%).

Table 10: Wound Infection in Previous Surgery

Infection	Open Repair	Lap. Repair	Total
Present	13	11	24
Absent	12	14	26
Total	25	25	50

24 cases, almost half of the cases had history of wound infection prior to appearance of incisional hernia.

Table 11a: Early Complications (<1 month)

Complication	Open Repair	Lap. Repair	Total
Seroma	4	0	4
Ileus	3	1	4
Obstruction	1	0	1
Recurrence	1	1	2
Total	9	2	11

During the first month and seroma (16%) and ileus (12%) was more common in open repair.

Table 11b: Late Complications

Complication	Open Repair	Lap. Repair	Total
Pain	5	3	8
Foreign Body Sensation	3	3	6
Obstruction	0	0	0
Recurrence	0	0	0
Enterocutaneous fistula	0	0	0
Total	8	6	14

After first month pain and foreign body sensation were (due to mesh) were comparable in both groups. There was no late recurrence, obstruction or enterocutaneous fistula in longer follow up.

III. Discussion

Of the total 50 cases in this study, 36 were females and 14 male with ratio of F:M 2.5:1. The sex incidence reported by J. L. Poonka³ was more in females. On excluding the pelvic operations in females, incidence is almost equal in both sexes. Most of the patients in our study were in age group of 36 – 50 yrs (42%). Age group affected from incisional hernia varies from various series. J. L. Poonka, in his series found 92% of incisional hernia after the age of 40 yrs. Obney⁴ reported 72% of incisional hernia after the age of 50

yrs. In this study younger age group was affected mostly because of shorter average life span with frequent gynaecological operations in comparison to western countries.

Midline subumbilical incision is most commonly used so is the most common site for incisional hernia. In this study 48% were due to lower midline incision. J. L. Poonka found 26% of incisional hernia in midline below umbilicus. Obney observed 84% cases in his study were from lower midline incision.

Out of 50 cases, 26 patients (52%) presented within 1 yr of previous surgery and 42 cases (84%) presented within 5 yrs. J. L. Poonka found 77% of incisional hernia in the first yr. King⁵ observed 75% incisional hernia cases in the first year. Omentum was present in 74% of cases (37 patients) as the content of sac, while small and large intestine in 22% of cases. Boughy J C and Nottingham J M observed that omentum and small intestine are by far the most common viscera involved. Mean stay for open approach was 4.5 days v/s 3 days for laparoscopic approach. Holzman et al⁶ also reported less post operative stay in laparoscopic group. Laparoscopic surgery took longer time than open surgery in general but overall 72% cases were done in less than 2 hrs. Similar results were observed in studies performed by Chari et al⁷, Zanghi et al⁸, Holzman et al⁶ and Park et al⁹. Almost half of the case in this study has history of post operative wound infection prior to incisional hernia development. Fischer and Turner¹⁰ observed 88% of post operative wound infection prior to incisional hernia development. Blomstedt's¹¹ study revealed a five fold increase in incisional hernia following wound infection. Hence current data strongly support use of antibiotics in clean and clean-contaminated operations. In addition there should be good haemostasis and prevention of dead space. In the first month seroma (16%) and ileus (12%) were more common in open group. Formation of seroma was reported at 4% by Molloy et al¹², 6% by Lewis¹³ and 5.8% by Usher¹⁴.

After the first month pain and foreign body sensation were almost equal in both open and laparoscopic group. In the study done by Carbajo et al¹⁵ complications were fewer and hospital stay was significantly shorter in laparoscopic group. In our study recurrence was seen in 2 cases (4%) one in open group and one in laparoscopic group in the first month. J.L. Poonka reported 9% recurrence. Arnaud et al(1999)¹⁶ reported recurrence rate in range of 6 – 10%.

IV. Conclusion

1. Incisional hernia is common in middle age i.e. 36 – 50 yrs and in females.
2. Maximum incidence is after midline incision, particularly gynaecological procedure and if complicated by wound infection.
3. In any procedure mesh should extend 3 cm. beyond healthy border of hernia defect.
4. Laparoscopic repair takes longer time to perform but has advantage of shorter hospital stay, less ileus, faster recovery and early return to work.
5. Recurrence rate in both groups are comparable.
6. Antibiotic prophylaxis should be given in all cases.

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