

Original Research Article

Role of laparoscopy in incisional hernia and relative benefit of the laparoscopic incisional hernia repair to the open incisional hernia repair

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ABSTRACT

Background: Incisional hernia is a common complication of abdominal surgery. Historically the open repair with or without mesh was the mainstay of treatment. However, many recently published laparoscopic repair studies have challenged surgeons to re-evaluate which technique provides the best short and long term outcomes.

Methods: The study was conducted on 50 patients admitted at GMC Bhopal with approval from college ethical committee.

Results: In 50 cases 21 were male and 29 were female. 7 male (14%) and 15 female (30%) patients had undergone laparoscopic mesh repair (LMR) and 14 male (28%) and 14 female (28%) patients had undergone open mesh repair (OMR). Total complication in OMR group is 10 (35%) and in LMR group is 2 (9.09%). Mean duration of hospital stay in LMR group was 6.6 days and in OMR group was 15.57 days. Post-operative patients of LMR group returned back to the work early (mean 12 days) compared to OMR group (mean 20.7 days). Mean post-operative day of movement in LMR group was 1 day and in OMR group was 2.03 days. Pain measured using visual analogue score on 3rd post-operative day showed decreased pain score in laparoscopic group (mean 2) compared to open group (mean 5.35).

Conclusions: Laparoscopic incisional hernia repair provides lesser post-operative pain, lesser complications, shorter hospital stay and lesser economic impact as they returned to work early. Thus patients have less morbidity and improved quality of life.

Keywords: Laparoscopic mesh repair, Open mesh repair, Outcome

INTRODUCTION

Incisional hernia refer to abdominal wall hernia at the site of previous surgical incision. It is a type of ventral hernia. Mid line incisional hernias are more common than other sites. Incisional hernia may be either symptomatic or aesthetically distress.

These problems with risk of obstruction and incarceration are the most common reasons for the patients seeking surgical repair of the hernia.¹

Advances made in the basic and clinical science have allowed for the understanding of pathophysiology of hernia formation. Pascal's law of hydro static forces and law of Laplace that incisional hernia will continue to grow over the time, if not treated. With no substantial comorbid condition presence of incisional hernia is an indication for the repair. Surgical innovation like tension free repair, use of prosthetic mesh to repair fascial defect and laproscopic approaches have increased the option and decreased the recurrence rates of incisional hernia. Laproscopic repair of hernia with placement of mesh in

sublay position found to be effective and to have low recurrence in incisional hernia, although randomized control trials are limited.

METHODS

The study was conducted on patients admitted at Gandhi Medical College and Hamidia Hospital Bhopal. A prospective and retrospective observational study was planned. The study was undertaken on cases admitted in General Surgery department from 2017 to 2019. The study was approved by ethics committee of the hospital and informed written consent was obtained from all patients. Patients with age between 20 years to 70 years having incisional hernia were included in the study. The

All patients underwent surgical procedure. All patients received one dose of preoperative antibiotic, 1 gm of 3rd generation cephalosporins during immediately after induction of anaesthesia. Patients were operated either under spinal anaesthesia or general anaesthesia. On operative table betadine scrub given to anterior abdominal wall. Patients underwent polypropylene mesh repair either Inlay repair or Onlay repair by open method. Laparoscopically mesh (dual layer mesh) was placed intraperitoneally after reduction of hernia.

The patients having BMI>40, ASA IV, a prior mesh repair, hernia defect size <2 or >10 cm, emergency operation were excluded from the study.

Chi square and Fisher Exact test has been used for qualitative parameters. Student t-test has been used to find the significance of quantitative parameters. Mann Whitney U test is used for pain scoring comparison. The Statistical software namely SPSS 10.0 and Systat 8.0 were used for the analysis of the data and Microsoft Word and Excel have been used to generate graphs, tables etc.

RESULTS

Majority of the patients were in the age group of 40-49 years accounting to 34% of total cases. Mean age of presentation is 42.88 year. Female clearly outnumbered the male in present study (Figure 1).

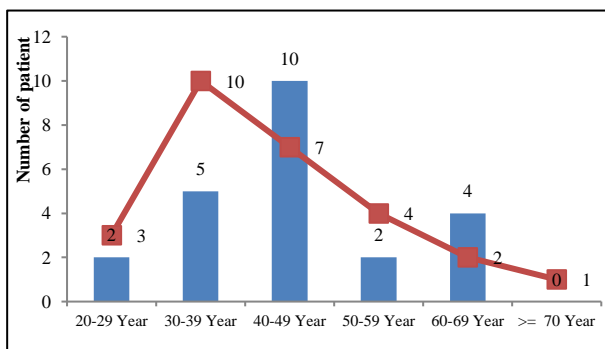


Figure 1: Age and sex distribution.

Among the patients in the study, 7 male (14%) and 15 female (30%) patients had undergone laparoscopic mesh repair and 14 male (28%) and 14 female (28%) patients had undergone open mesh repair (Figure 2).

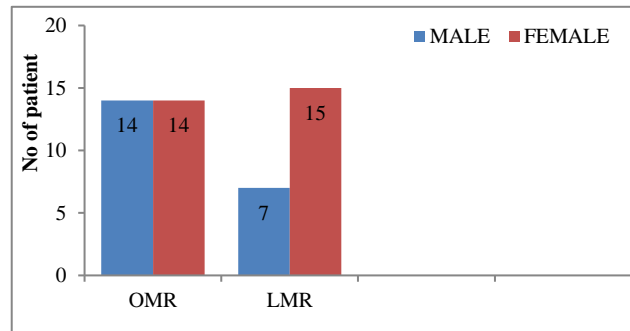


Figure 2: Type of repair.

LMR: laparoscopic mesh repair; OMR: open mesh repair.

In present study majority of patients 20 (40%), had lower midline incision, followed by 15 (30%) midline abdomen incision. Paramedian, Mcburney's and Kocher's incision was used in 3 (6%), 4 (8%) and 6 (12%) patients respectively (Figure 3).

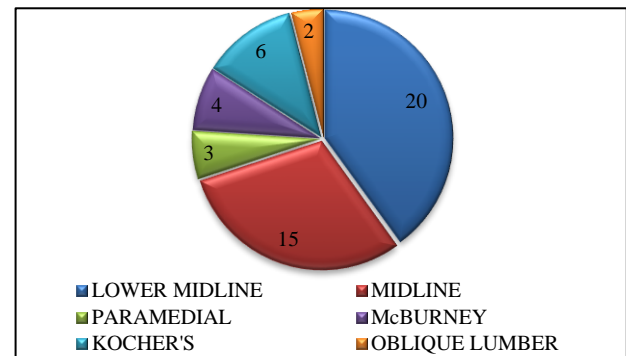


Figure 3: Previous incisions used in the study.

Total complication in open group is 10 (35%) and in laparoscopic group is 2 (9.09%) (Table 1).

Table 1: Complications in the study.

	LMR	OMR
SSI	1	5
Seroma	1	3

SSI: surgical site infection; LMR: laparoscopic mesh repair; OMR: open mesh repair.

Table 2: Duration of hospital stay.

Duration of hospital stay	5-10 days	11-15 days	16-20 days	Mean duration of hospital stay
LMR patient	21	1	0	6.6 days
OMR patient	0	10	18	15.57 days

LMR: laparoscopic mesh repair; OMR: open mesh repair.

In our study mean duration of hospital stay in laparoscopic mesh repair (LMR) group was 6.6 days and in open mesh repair (OMR) group was 15.57 days (Table 2).

Post-operatively patients of laparoscopic group returned back to the work early (mean 12 days) compared to open group (mean 20.7 days) (Table 3).

Table 3: Post-operative days of return to work.

Post operative days of return to work	10-15 days	16-20 days	21-25 days	Mean days of return to work
Patients of LMR	22	0	0	12 days
Patient of OMR	0	10	18	20.7 days

Mean post-operative day of movement in laparoscopic group was 1day and in open repair group was 2.03 days. Our study showed the early post-operative movement in laproscopic group (Table 4).

Table 4: Post-operative day of movement.

Post-operative day of movement	1	2	3	Mean post-operative day of movement in laproscopic
LMR patients	22	0	0	1 day
OMR patients	1	26	1	2.03 days

Pain measured using visual analogue score on 3rd post-operative day showed decreased pain score in laparoscopic group (mean 2) compared to open group (mean 5.35) (Table 5).

Table 5: Pain measured using visual analogue score.

VAS at D3	1	2	3	4	5	6	7	8	9	10
LMR patient	0	22	0	0	0	0	0	0	0	0
OMR patient	0	0	0	0	9	18	1	0	0	0

DISCUSSION

Laparoscopic ventral hernia repair was started by LeBlanc et al.² After that, evaluation were done to make laparoscopic surgery easier and safer for ventral hernia repair. In this clinical study, 50 patients with incisional hernia were admitted and treated with different surgical procedures from 2017 to 2019. The patients were divided into two groups, laparoscopic and open. Patients were studied for clinical features, treatment, postoperative complications and quality of life pertaining to study

period. Discussion is mainly concentrated on relative benefit of laparoscopic repair over open repair. This study showed that majority of the patients are in the age group of 40-49 years accounting to 34% of total cases. The next most common age group affected was 30-39 years (30%). Mean age of presentation was 42.88 year. Youngest patient in the study was 20 years old and eldest patient was 70 year old. Sex incidence in the study was matched between the two groups. 21 male patients were included in our study corresponding to 42% of cases and 29 female patients participated in the study accounting to 58% with female to male ratio 1.38:1. Thus female clearly outnumbered the male in present study. Majority of patients 32 (64%) presented with swelling over anterior abdomen wall after previous surgery.

18 (36%) patients presented with both pain and swelling. At the time of admission all patients have reducible hernia. Most of the incisional hernia 15 (30%) occurred following exploratory laprotomy. It is followed by the 10 (20%) abdominal hysterectomy and 10 (20%) lower section cesarean section. 4 (8%) and 6 (12%) incisional hernia developed following appendicectomy and cholecystectomy respectively. In present study majority of patients 20 (40%) had lower midline incision, followed by 15 (30%) midline abdomen incision. Paramedian, Mcburney’s and Kocher’s incision was used in 3 (6%), 4 (8%) and 6 (12%) patients respectively. Among the patients in the study, 7 male (14%) and 15 female (30%) patients had undergone laproscopic mesh repair and 14 male (28%) and 14 female (28%) patients had undergone open mesh repair. Mean post-operative day of movement in laparoscopic group was 1days and in open repair group was 2.03 days.

The study showed the early post-operative movement in laparoscopic group. In our study mean duration of hospital stay in LMR group was 6.6 days and in OMR group was 15.57 days. There were no post- operative deaths, no major cardiovascular, pulmonary complications. The main complication encountered were seroma and surgical site infection. 1 patients in the laparoscopic group developed seroma compared to 3 patients among open repair group. These patients had larger hernial sacs which required greater dissection in subcutaneous plane and leading to seroma. 8 patients developed surgical site infection, 1 patients at laparoscopic port site and 7 who underwent open mesh repair. In comparison with the study conducted by Goodney et al and Park et al which showed complications as in the table, complications were similar.³⁻⁶

Table 6: Comparison of complication.

Study	Complication (lap vs open)
Raftopoulos et al⁴	1 vs 4, p<0.028
Goodney et al³	14% vs 27%
Park et al⁶	17.9% vs 36.7%
Itani et al⁵	31.5% vs 47.9%
Our study	9.09% vs 35 %

Post-operatively patients of laparoscopic group returned back to the work early (mean 12 days) compared to open group (mean 20.7 days). Raftopoulos et al study showed mean day of return of work 25.95 vs 47.8 days which was higher compared to Itani et al study which showed mean of 23 vs 28.5 days.^{3,4,6-10}

Table 7: Comparison day of return to work.

Study	Day of return to work (lap vs open)
Raftopoulos et al⁴	25.95 vs 47.8
Itani et al⁵	23.0 vs 28.5
Our study	12 vs 20.7

Pain measured using visual analogue score on 3rd post-operative day showed decreased pain score in laparoscopic group (mean 2) compared to open group (mean 5.35).^{5,7-9}

Table 8: Comparison of VAS.

Study	VAS
Itani et al⁵	3.22 vs 6.45
Our study	2 vs 5.35

CONCLUSION

Laparoscopic incisional hernia repair provides lesser post-operative pain, lesser complications, shorter hospital stay and lesser economic impact as they returned to work early. Thus patients have less morbidity and improved quality of life. As most of our patients involved in the study were working class involving moderate to heavy work, laparoscopic repair meant lesser economic impact and decreased loss of man-power hours. LMR may be considered a primary approach for most ventral and incisional hernias unless contraindicated for laparoscopy. Open hernia repair which are riddled with higher incidence of complications is reiterated once again in our study too. Thus management of incisional hernia with open method can be narrowed down to only cases which are complicated with multiple adhesions or irreducible, incarcerated, strangulated hernia.

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Conflict of interest: None declared

Ethical approval: The study was approved by the Institutional Ethics Committee

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