

Laparoscopic Incisional Hernia Repair reduces length of In-Hospital Stay

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Abstract

Incisional hernias develop in approximately 25% of patients following abdominal surgery. Symptomatic hernias require mesh repair which is increasingly being performed laparoscopically. The advantages of a laparoscopic approach include a full inspection of the abdominal wall and accurate placement of an intra-peritoneal mesh. It is also reported to be associated with a shorter in-hospital stay. In this study, we performed an audit of laparoscopic incisional hernia repair at a district general hospital to assess its feasibility and compare in-hospital stay with open surgery. All procedures were performed by the same surgeon. Patients' names were obtained from the surgeon's logbook. Demographics and operating times were provided by computerized theatre data (Galaxy, iSOFT, Sydney, Australia) and length of stay and complications obtained from

patient records. Eighty-five incisional hernia repairs were identified, 67 being performed laparoscopically and 18 open. Mean in-hospital stay was significantly higher in the open group (mean (sd) stay (days) open versus laparoscopic group respectively: 5.1(3.8) versus 1.6(1.4) $p=0.001$). Mean operating time was longer in the open group, but was not statistically different (mean (sd) time (minutes) open versus laparoscopic group respectively: 99.5(83.46) versus 78.18 (31.28), $p=0.67$). Complications were rare and similar in both groups. Laparoscopic incisional hernia repair is associated with significantly shorter in-hospital stay compared to open surgery with similar complication rates and holds promise as the treatment of choice for uncomplicated incisional hernias.

Keywords: Incisional hernia, laparoscopic, hospital stay.

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Introduction

Incisional hernias will develop after approximately 25% of all abdominal procedures [1]. Where symptoms warrant intervention, mesh repair is essential for all but small defects due to unacceptable recurrence rates with suture repair alone [2]. First described in 1993 [3], laparoscopic incisional hernia repair (LIHR) is gaining acceptance as an alternative to the open technique [4]. The ability to assess the entire abdominal wall detecting even small fascial defects and the biomechanical advantage of placing mesh by an intra-peritoneal route may offer better long term outcomes. A major additional benefit of LIHR is in the potential for reduced in-patient stay and conversion to day case surgery [5]. Concerns regarding a higher enterotomy rate seem unfounded with being an extremely rare complications with both laparoscopic and open techniques [4]. The aim of this study was to assess the feasibility of LIHR and to compare the length of in-hospital stay of with open repair performed in a District General Hospital. All procedures were performed by the same surgeon.

Methods

The names of patients treated by a single surgeon were obtained from his logbook and from computerized theatre data (Galaxy, iSOFT, Sydney, Australia) covering a three year period. Demographics and operating times were provided by this system and length of stay obtained from patient hospital notes. LIHR was performed using a three or four port technique with placement of an intra-peritoneal mesh (PROCEEDTM, Ethicon, USA) fixed with metal tackers (PROTACKTM, Tyco USA). Open repair consisted of abdominal wall dissection and tension free repair with suture fixation of a pre peritoneal polypropylene mesh. Open repairs were performed only where laparoscopic repair was contraindicated either due to a hostile abdomen or where the fascial defect was small.

Results

85 incisional hernia repairs were identified in this period, with 67 being performed laparoscopically and 18 open. One laparoscopic case was converted to open and has been included in the open group. Patients were marginally older in the open group (median (range) age (years) of open versus laparoscopic groups respectively: 69(29–76) and 60(28–89)) although this difference was not statistically significant ($p=0.95$). The male to female ratio was similar in both groups (35 male versus 32 female and 8 male versus 10 female in open and laparoscopic groups respectively). The mean in-hospital stay and mean operating time in both groups is shown in Table 1. Mean in-hospital stay was significantly higher in open group (mean (sd) stay (days) open versus laparoscopic group respectively: 5.1(3.8) versus 1.6(1.4) $p=0.001$). Mean operating time was slightly longer in the open group, a difference that was not statistically different (mean (sd) time (minutes) open and laparoscopic group respectively: 99.5(83.46) versus 78.18 (31.28), $p=0.67$). 15 (22.4%) patients in the laparoscopic group went home on the day of their surgery compared with 3 (16.7%) in the open group.

The in-hospital complications and complications at 3 months follow up are shown in Table 2 and were similar in both groups.

Table 2 Complication rates during in-hospital stay and at 3 months follow up.

	Open	LIHR
Wound Infection	1/18(6%)	4/67(6%)
Haemo-Seroma	3/18(17%)	7/67(10%)
Persistent Bulge	0	3/67(4%)
Chronic Pain	1/18(6%)	5/67(7%)
Enterotomy rate	0	0

Table 1 Comparison of operating time and in hospital stay of open versus LIHR.

	Open	LIHR	p value
Numbers	18	67	
Median (range) age (years)	69(29-76)	60(28-89)	p=0.9528
Male : Female ratio	8:10	35:32	
Mean (sd) operating time (minutes)	78.18 (31.28)	99.5(83.46)	p= 0.6688
Mean (sd) in-hospital stay (days)	5.1(3.8)	1.6(1.4)	p=0.001

Discussion

Two recent meta analysis have shown that that LIHR is associated with a shorter in-hospital stay compared to open surgery (4; 6). This is consistent with the findings of this audit where the mean in-hospital stay was on average 2.4 days longer with the open technique (p=0.001). This difference was not due to prolonged duration of surgery or immediate and early complications of surgery with these outcomes similar in both groups. This difference almost certainly relates to post operative pain secondary to dissection of the abdominal wall layers that are required with open pre peritoneal mesh incisional hernia repair. The laparoscopic approach allows for a full assessment of the abdominal wall, involves minimal dissection and allows for the intra-peritoneal placement of mesh. Although there is no data to date that has shown better recurrence rates with LIHR with this procedure only being described in 1993, studies with sufficient follow up intervals have yet to be performed. LIHR is associated with lower rates of wound infection with comparable other complication rates including inadvertent enterotomy [4, 6]. Concern about intra-abdominal adhesion formation also seems unwarranted. Minimal bowel handling, decreased peritoneal ischemia and lower exposure to other foreign bodies including glove powder and gauze fibres are all reasons why adhesion formation might actually be less than open techniques [7]. In fact with improvements in mesh technology, over 90% of repairs are adhesion free over one year after surgery [8]. Thus the available evidence points to LIHR to be the treatment of choice for all routine incisional hernia repairs, a choice that should be conferred to patients during the consenting process. This study has shown that not only is LIHR feasible and associated with similar complications to open surgery, but that it also has the advantage of considerably shorter in-hospital stay benefiting both patient and health service providers.

Conclusion

LIHR has several theoretical technical advantages over open surgery. It is also associated with reduced in-hospital stay with similar operative time. It is a relatively easy technique and should be increasingly offered as the treatment of choice for all un-complicated incisional hernias.

References

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