



## Laparoscopic and open incisional hernia repair using polypropylene mesh - A comparative single centre study

Syed Javid Farooq Qadri\*, Muneer Khan, Shadab Nabi Wani, Syed Sajad Nazir, Ajaz Rather

Department of Surgery, Govt Medical College Srinagar, J&K, India

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### ABSTRACT

**Introduction:** Repair of incisional hernias continues to be a challenging surgical procedure for general surgeons. Currently open mesh repair and laparoscopic repair are the two main options available for general surgeon for managing this complication. Laparoscopic repair though offers all the advantages of minimal access surgery but is a costly procedure especially due to the use of costly composite mesh. The present study is aimed to compare the open and laparoscopic repair of incisional hernia and at the same time evaluate the safety and feasibility of using comparatively cheaper polypropylene mesh.

**Methods:** Between December 2005 and December 2009 80 patients underwent incisional hernia repair, 40 open repairs and 40 laparoscopic repair. The results of the two procedures were compared with a mean follow up of 26 months for open repair and 28 months for laparoscopic repair.

**Results:** Obstetrical or gynecological procedure was the most common index surgery leading to incisional hernia and lower midline incision was the most common site of hernia. The mean defect size in open repair group was 55.2 cm<sup>2</sup> and 62.2 cm<sup>2</sup> in laparoscopic repair group. Polypropylene mesh was used in all cases. We had 1(2.5%) major complication of enterotomy and 1(2.5%) conversion in laparoscopic repair group. Postoperative complications were most commonly seen in open repair group 10(25%) and 2(5%) in laparoscopic repair group. Mean hospital stay in open repair group is 4.33 days and 1.53 days in laparoscopic repair group. We had 1(2.5%) recurrence in both groups.

**Conclusion:** Laparoscopic repair of incisional hernia is a much better procedure for curing incisional hernia as compared to open mesh repair and additionally intraperitoneal use of polypropylene mesh was not associated with any significant complication.

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### 1. Introduction

Incisional hernia represents an important element of morbidity after abdominal surgery. 3–20% of patients undergoing a laparotomy will develop a fascial defect in their abdominal scar.<sup>1</sup> Repair of incisional hernia is recommended to avoid complications such as incarceration and strangulation of intestines and improve severe disability due to loss of abdominal wall domain. Lasting surgical repair of these hernias continues to be elusive. 18–41% of ventral hernias recur after initial repair and once repaired, the incidence of a second recurrence can exceed 50 percent.<sup>2</sup> An effective ventral hernia repair should be achieved, with the goals of minimal perioperative morbidity and low recurrence rate.

A variety of surgical techniques have been described in attempts to meet these goals. The use of prosthetic mesh has resulted in

a lower recurrence rate when compared with a primary repair.<sup>3</sup> The disadvantage of herniorrhaphy involving mesh is the need for an extensive surgical dissection and an increased rate of incision site infection. Patients undergoing open repair, usually spend several days in the hospital postoperatively, frequently require abdominal drains, and often need a long recovery period.<sup>4</sup>

With the advent of laparoscopy in minimizing the disadvantages of open surgery the repair of incisional hernia is no exception. The laparoscopic approach to incisional hernias can minimize the disadvantages of open herniorrhaphy without compromising the ability to implement a tension-free, mesh repair. Patients undergoing laparoscopic ventral hernia repairs generally have shorter postoperative stays, require less analgesics, and return to their normal activity level quickly. The rate of recurrence is low.<sup>5</sup>

The main limiting factor of laparoscopic procedure in developing countries like India is the cost which is mainly due to the use of costly composite mesh and disposable tacker. The present study is aimed to compare the laparoscopic and open mesh repair of incisional hernias and additionally evaluate the safety and

\* Corresponding author. Tel.: +91 0194 2456086/09419011913.

E-mail address: drjavid11@gmail.com (S.J.F. Qadri).

feasibility of using low price polypropylene mesh in the management of incisional hernias.

## 2. Material and methods

This study was conducted in the Surgical Discipline of the Govt. Medical College Srinagar, between December 2005 and December 2009. 80 patients underwent incisional hernia repair during this period, open (n=40) and laparoscopic repair (n=40).

The procedures were done as elective surgeries, including only patients with uncomplicated hernias. The patients were initially evaluated in the out patient department (OPD) and then admitted for surgery. Each patient and his/her attendants were fully explained about the nature of both laparoscopic and open repairs in the language which they understood, and written consent was taken from the patient before surgery. Preoperative prophylactic antibiotics (Inj. Cefazolin 1 gm IV at the time of intubation) were given in all cases. Good skin hygiene was maintained. Meticulous part preparation with povidine iodine 10% was done in all cases to ensure asepsis.

## 3. Operative technique

### 3.1. Open repair

All cases were done under general anesthesia. With appropriate skin incision subcutaneous flaps were raised for 3–4 cm around the margins of the defect. After identifying the sac it was carefully separated and reduced. The margins of the sheath were defined for about 3–4 cm from the edge of the defect. Depending on the hernia characteristics polypropylene mesh of appropriate size was placed in an overlay fashion (Fig. 1). Transfascial 2-0 polypropylene suture were used to fix the mesh. Skin margins were freshened and closed. Subcutaneous suction drains were placed in all patients.

### 3.2. Laparoscopic repair

All cases were done under general anesthesia and after safe pneumoperitoneum using closed technique 10 mm laparoscopic port for 30° telescope was introduced away from the margin of the defect. Two additional 5 mm ports were placed as deemed appropriate. Omental and bowel adhesions were dissected. The defect (Fig. 2) was identified and additional defects carefully looked for. A polypropylene mesh (Fig. 3) of appropriate size was used to overlap all the defects, on the peritoneal surface, with a margin of at

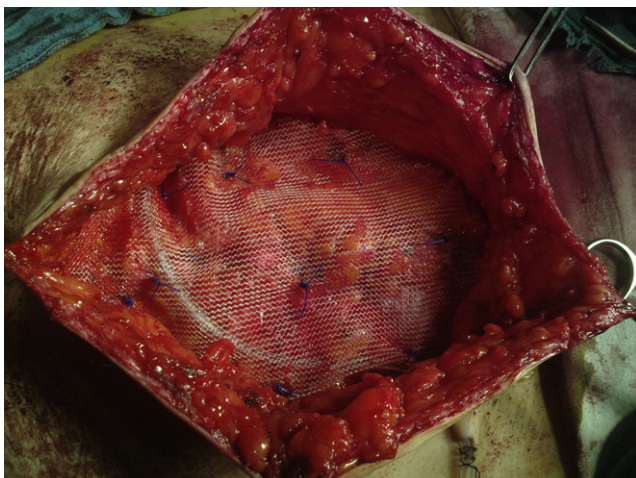


Fig. 1.

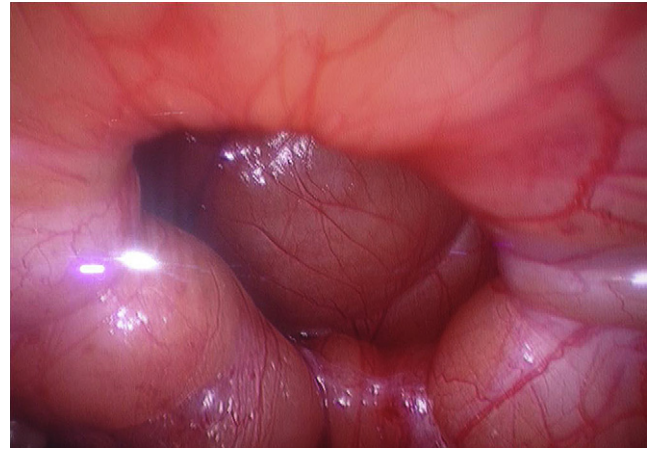


Fig. 2.

least 3–4 cm. Mesh fixation was done with transfascial polypropylene 1-0 sutures (Fig. 4) and with 5 mm tacks (Protack 5 mm, Autosuture). The tacks were placed at all four corners of the mesh and then at 2 cm distance along the peripheral margin. At the end of procedure pneumoperitoneum was decompressed and ports closed. A ball of gauze was placed over the region of hernia and pressure dressing applied and maintained for about 15 days. Foley's catheter was removed on table at the end of procedure.

### 3.3. Postoperative care

For the immediate postoperative pain relief injectable diclofenac sodium 50 mg intramuscular was used. Later oral diclofenac 50 mg tab was used. Patients were made ambulatory on the next day in case of open repair and on the same day of operation, at evening, in case of laparoscopic repair. Orals were usually started on the 1st postoperative day in laparoscopic repair group and on 1–3 day in open repair group. After discharge from hospital patients were called for follow up at 1 week, 4 weeks, 12 weeks, and 6 monthly thereafter.

## 4. Results

This study included patients only having incisional hernias no case of primary ventral hernia was included. The overall results of our study are shown in Table 1.

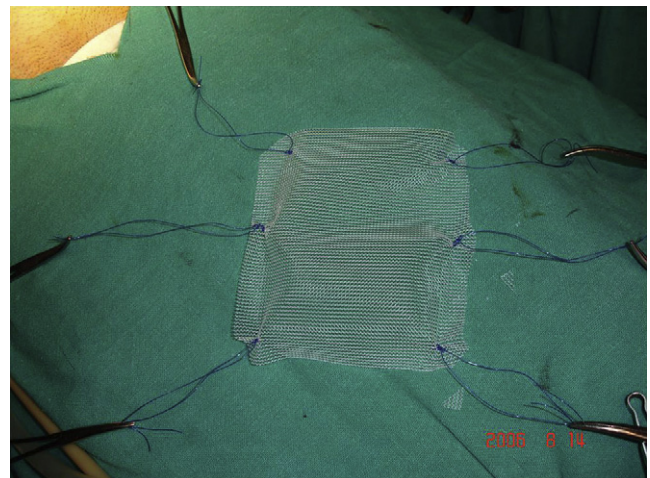


Fig. 3.

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