

MESH VERSUS SUTURE REPAIR FOR PRIMARY MIDLINE INCISIONAL HERNIA- EXPERIENCE AT ROYAL MEDICAL SERVICES HOSPITALS

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ABSTRACT

Objective: The purpose of this study was to compare two modalities of treating primary midline incisional hernias taking into consideration recurrence, complications and patient satisfaction.

Methods: A retrospective study of 64 patients who underwent repair for midline incisional hernia was conducted at King Hussein Medical Center, Queen Alia Military Hospital and Prince Ali Hospital between 2001-2004. Follow up after surgery was reported up to two years.

Results: Among the 64 patients in total, 33 patients underwent suture repair and 31 underwent mesh repair. Mean follow up was 22 months. The recurrence rate was 42.4% (14 out of 33) in those who underwent suture repair and 19.3% (6 out of 31) in those who underwent mesh repair.

Conclusion: Mesh repair as a modality of treating primary midline incisional hernia is superior to suture repair regarding recurrence rate, complications and patient satisfaction.

Key words: Hernia, Incisional, Mesh, Repair, Suture, Recurrence

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Introduction

Incisional hernia is a frequent complication of abdominal surgery.⁽¹⁻⁴⁾ In prospective studies with sufficient follow-up, primary incisional hernia occurred in 11 to 20 percent of patients who had undergone laparotomy. Such hernias can cause serious morbidity, such as incarceration (in six to 15 percent of cases) and strangulation (in two percent). If the hernia is not reduced promptly, small bowel that is strangulated in the hernia may become ischemic and necrotic and perforation may ultimately occur.⁽¹⁾

In the United States, four to five million laparotomies are performed annually, which means that at least 400,000 to 500,000 incisional hernias can be expected to develop each year. Incisional hernia repair is performed approximately 200,000 times per year.⁽²⁾ When morbidity is added to the

vast numbers and the tremendous costs associated with incisional hernia repair, it becomes clear that the efficacy of incisional hernia repair is of major importance.⁽²⁾

Several studies were conducted in different places around the world most of which recommended using mesh in repairing incisional hernia,⁽¹⁻⁹⁾ but similar studies done in the Arab world or in Jordan were not found.

The use of a prosthetic mesh to repair incisional hernias is well established.⁽¹⁻⁶⁾ Long-term follow-up of incisional hernia repair illustrates that mesh repair is superior to suture repair. Mesh repair results in significantly lower recurrence rates, less discomfort and it is not, in general, associated with an increased incidence of complications.⁽²⁾

These data among others led us to focus on this annoying problem in our study which aimed at

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evaluating the superiority of mesh repair over suture repair for primary midline incisional hernia.

Methods

This is a retrospective study on 64 patients who were treated for primary incisional hernias after midline laparotomy incisions between the years 2001-2004 at King Hussein Medical Center, Queen Alia Military Hospital and Prince Ali hospital.

All patients were operated upon under general endotracheal anesthesia. All patients were given a prophylactic dose of antibiotic of the cephalosporin group on induction of anesthesia.

The type of repair was either continuous suture technique using prolene 1 or mesh repair using prolene 0 whereby the mesh is fixed to the edges of rectus sheath as a preperitoneal onlay approach. Two suction drains were put in place which were removed when output was less than 50mls over 24 hours.

Follow up data was retrieved from medical records for up to two years, mean was 22 months and last follow up by telephone was in 2005.

Most of the patients in group I were operated upon by junior surgeons while on the other hand all the patients in group II were operated by senior surgeons. The total number of junior surgeons was 14 while the total number of senior surgeons was six. We could not include the total time of surgery because it was not documented in the operative notes.

In group I, eight patients were diabetics, nine were obese, two were asthmatic and one of the patients was on prednisolone therapy for rheumatoid arthritis while in group II only three patients were obese and one was diabetic.

During follow up in the clinic patients were asked about pain, discharge from the wound and if satisfied or not. The examination included check for recurrence by physical examination or ultrasonography if suspicion for recurrence was present.

Eight patients were excluded from this study. Exclusion criteria included all patients with previous incisional hernia repair, other than midline incisional hernia, patients with renal failure and those with infected wounds.

We classified incisional hernias according to the Zollinger classification system for ventral abdominal wall hernias which classified incisional hernia into midline, paramedian, transverse and special operative site according to site and into <5

centimeters, 5-10 centimeters and >10 centimeters according to size of the hernia.⁽⁸⁾

Results

Among the 64 patients included in this study 33 patients underwent suture repair (group I) and 31 patients underwent mesh repair (group II). We divided them into two groups according to the type of repair. Mean age was 50.5 years; male to female ratio was 25:39

Original operation was bowel related in 23 patients, gynecological in 18, exploratory laparotomy in 14 and for other reasons in nine patients. Mean follow up time was 22 months. The last follow up was on telephone in 2005. We focused in our study on three main factors.

The recurrence rate in group I who underwent suture repair was 14 out of 33 (42.4%) while in group II who underwent mesh repair, the recurrence rate was six out of 31 (19.3%) which was detected during the regular postoperative follow up in the clinic by asking the patient if he/she felt any bulge or discomfort, by physical examination and if in doubt by ultrasonographic study.

The post operative complications are shown in Table I. Seroma formation was the commonest problem with one patient requiring excision of seroma cavity three months later after several trials of aspiration failed while the others who developed serous fluid collection were successfully managed by aspiration. One patient, who underwent suture repair, required reopening of the wound and evacuation of a hematoma.

Patient satisfaction, stated as simple yes or no answer, showed that all the patients who underwent mesh repair were satisfied while in the other group who underwent suture repair 19 patient were not satisfied at all and they complained of frequent pain and vague discomfort especially if they bend down.

Three patients who underwent suture repair asked to be re-explored and to put a mesh instead because they had contact with other patients who underwent mesh repair and were pleased with their results.

Post operative analgesia requirements, according to subjective size of hernia showed linear relationship with the size of hernia repaired in both groups but still it was less in group II (Table II).

The average length of hospital stay in group I was 3.75 days with a minimum of one day and maximum of 10 days and in group II it was 4.29 days with a minimum of two days and a maximum of nine days.

Table I. Complications

Complication	Group I	Group II
Seroma	4	2
Wound hematoma	2	1
Superficial infection	4	2
Deep vein thrombosis	1	0

Table II. Analgesia requirement (Pethidine according to body weight per dose)

Size of hernia	Group I	Group II
Small(<5cm)	One dose	One dose
Medium(5-10cm)	4 doses	3 doses
Large(>10cm)	6 doses	4 doses

Discussion

Several methods have been described for repair of defects in the abdominal wall.⁽¹⁻⁷⁾ Incisional hernias have traditionally been treated with primary closure until the introduction of prosthetic mesh hernia repair.⁽⁴⁾

The techniques used for repairing incisional hernias have generally developed in a practical, experiential way. Several authors have reported favorable results with mesh repair.⁽¹⁻⁸⁾ Langer and Christiansen⁽³⁾ compared their results using primary repair with historical data using a mesh and suggested that the use of mesh gave a better repair with less recurrence.⁽³⁾ Liakakos *et al.*⁽³⁾ carried out a prospective comparison of primary closure against the use of mesh and showed that the recurrence rate was less with mesh at a mean of 7.6 years of follow-up.⁽³⁾

In techniques for the repair of incisional hernias in which sutures are used, the edges of the defect are brought together, which may lead to excessive tension and subsequent wound dehiscence or incisional herniation as a result of tissue ischemia and the cutting of sutures through the tissues.⁽¹⁾ With prosthetic mesh, defects of any size can be repaired without tension. In addition, polypropylene mesh, by inducing an inflammatory response, sets up a scaffolding that, in turn, induces the synthesis of collagen.⁽¹⁾

In a long-term follow-up of a randomized controlled trial of suture versus mesh repair of incisional hernia done by Burger *et al.* concluded that mesh repair results in a lower recurrence rate and less abdominal pain and does not result in more complications than suture repair.⁽²⁾ They recommended that suture repair of incisional hernia should be abandoned.⁽²⁾ In addition many surgeons recommended the extra peritoneal onlay tension-free incisional hernia repair using polyester mesh as an

easy and safe procedure with no major morbidity or recurrence rate.⁽⁶⁾

In our study we found that mesh repair for primary midline incisional hernia as an onlay technique is superior to suture repair in terms of recurrence, complications, requirement for postoperative analgesia and patient satisfaction. Comparing our data with others showed comparable data regarding the superiority of mesh in general,⁽¹⁻¹¹⁾ but the higher complication rate in group I might be due to the fact that the patients in group I were operated upon by junior surgeons and a larger number of patients had predisposing factors for recurrence such as diabetes and obesity. The fact that the need for analgesia was somehow less than that in some studies might be due to the relatively large number of diabetic patients included in the sample, especially in group I. The techniques still need more evaluation because of the lack of randomized controlled trials.

Between March 1992 and February 1998, a multicenter trial was performed by Roland *et al.* in which they randomly assigned to suture repair or mesh repair 200 patients who were scheduled to undergo repair of a primary hernia or a first recurrence of hernia at the site of a vertical midline incision of the abdomen of less than six centimeters in length or width. The patients were followed up by physical examination at one, six, 12, 18, 24, and 36 months. Recurrence rates and potential risk factors for recurrent incisional hernia were analyzed with the use of life-table methods. Among the 154 patients with primary hernias and the 27 patients with first-time recurrent hernias who were eligible for the study, 56 had recurrences during the follow-up period. The three-year cumulative rates of recurrence among patients who had suture repair and those who had mesh repair were 43 percent and 24 percent, respectively, with repair of a primary hernia. They concluded that among patients with midline abdominal incisional hernias, mesh repair is superior to suture repair with regard to the recurrence of hernia, regardless of the size of the hernia.⁽¹⁾

In 2001, Korenkov *et al.* published the results of a randomized controlled trial of incisional hernia repair. Korenkov *et al.* concluded that suture repair of incisional hernia was safe and did not result in higher recurrence rates. However, the trial was discontinued due to the severity of mesh infections.⁽²⁾

As a retrospective study we found that the majority of our general surgeons used the continuous suture

technique as was documented in the operative notes upon which our study was based. We do believe, as others do, that long term follow-up is mandatory in any study dealing with recurrence of incisional hernia repair, and in addition other factors should be taken into consideration as the experience of the surgeon, the predisposing factors for recurrence or impaired wound healing.

In conclusion, our study might support that mesh repair for primary midline incisional hernia is superior to suture repair but the technique still needs more evaluation because of the scarcity of randomized controlled trials.

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