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Open retrofascial incisional hernia repair is a safe and effective operation

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Abstract

BACKGROUND: Incisional hernias occur in about ten percent of patient after elective abdominal operations. Although over 100,000 are performed annually in this country, the best method of repair remains controversial. We report the outcomes after a standardized approach by one surgeon.

METHODS: The operation consisted of placement of polypropylene mesh beneath the fascia with fascial closure. A prospective database was maintained for the time period January, 1995, to June, 2014. All patients were followed for a minimum of six months postoperatively.

RESULTS: There were 538 patients with a mean body mass index of 36.2 kg/m^2 and a mean defect size of 134.5 cm^2. There were 292 primary hernias with a recurrence rate of 2.7% and 246 recurrent hernias with a recurrence rate of 4.1% (P = .47). There was one death (.2%). Forty-three patients (8.0%) developed a wound complication, of which 17 (3.2%) were infections and the rest seromas. Only two patients required removal of the mesh. There were six patients admitted for postoperative small bowel obstruction, but only one in the immediate postoperative period. There were two enterocutaneous fistulas, both of which resolved nonoperatively. Five patients developed nonfatal pulmonary emboli. Mean length of stay decreased from an average of 4.0 days for the first 100 patients to 2.8 days for the subsequent patients.

CONCLUSIONS: Retrofascial mesh repair for ventral incisional hernias has both low complication and recurrence rate. It should be considered the gold standard for such repairs.

Incisional hernia remains a common surgical problem with over 100,000 being performed in the United States every year. There is no consensus, however, on how to fix these hernias and recurrence rates have been reported as being as high as 54%.[1] Although most agree that use of mesh reduces recurrence rates, placement techniques and type of mesh are controversial. Retromuscular, onlay, and subfacial approaches have all been described as has biologic mesh use.[2–5]

Presented here is a simplified method of mesh placement. This is a slight modification of a previously reported technique.

Methods

A prospective database was maintained on patient demographics operated on by a single surgeon during the period January 1995 to June 2014. This study was approved

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by the Institutional Review Board. Only patients with fascial defects greater than 2 cm were included. The only other exclusion criteria were class II or greater wounds or if the patient requested laparoscopic repair.

This technique has been previously described[6] but has undergone some modification to simplify the procedure. Briefly, the previous incision is opened, and the sac is removed. Wide flaps are raised circumferentially in the subcutaneous tissue above the fascia. Any previously placed mesh is usually removed. Adhesions to the posterior abdominal wall are sharply taken down. Ventrio Hernia Patch (Bard) is placed deep to the fascia with a minimum 5 cm overlap in all directions. The mesh is then sutured in place with absorbable sutures. The sutures are placed so that when all are tied, the fascia is brought together under no tension. Care is taken to assure that there is no bowel between the mesh and the fascia. The fascia is then approximated with absorbable sutures. Suction drains are placed in the subcutanous space and brought out through separate stab wounds. The skin is closed with absorbable subcuticular suture. Standard postoperative care, especially early mobilization and pain management, was performed.

All patients were followed for a minimum of 6 months postoperatively.

Results

There were 538 patients (374 females and 164 males) during the course of the study. They ranged in age from 19 to 93 years, and their average weight was 104.5 kg. Mean postoperative length of stay was 4.0 days for the first 100 patients and 2.8 days subsequently. Further demographics are summarized in Table 1. All patients had class 1 wounds.

There was 1 postoperative death and 2 patients developed enterocutaneous fistulae. Both of the fistulae resolved without reoperation in less than a week. Neither required mesh removal or developed a recurrence. Wound seromas or infections were the most common complication, occurring in 43 (80%) of patients (26 were seromas, and 17 (3.2%) were culture proven infections.) Two patients required removal of mesh because of infection. Other complications are summarized in Table 2. Of the 6 patients with small bowel obstruction, only one occurred in the immediate postoperative period. Three patients required operation for release of their obstruction. The 18 recurrences were in 16 patients.

Overall, there was a 3.3% recurrence rate. There were 8 recurrences (2.7%) in the patients undergoing initial repair of their incisional hernia as opposed to 10 recurrences (4.1%) in patients undergoing a recurrent repair ($P = .47$ by Fisher's exact test).

Table 1 Patient demographics

Characteristic	
Age	58.0 ± 3.2 years
Average body mass index	36.2 kg/m^2
Size of defect	134.5 cm^2
Primary	292 (54.3%)
Recurrent	246 (45.7%)
Hypertension	204 (38%)
Diabetes mellitus	160 (30%)
Tobacco use (current)	135 (25%)
Heart disease	43 (8%)

Table 2 Postoperative complications

Complication	Number (%)
Death	1 (.2)
Wound	43 (8.0)
Pulmonary embolus	5 (.9)
Recurrence	18 (3.3)
Small bowel obstruction	6 (1.1)

Comments

Incisional hernias can occur in up to 10%[7] of patients undergoing a laparotomy and thus are a source of significant morbidity. Recent authors have tried to find predictive factors for this problem[8] and have discussed how to prevent it[9] but that is not the purpose of this article.

The use of synthetic mesh was first popularized by Rives and Stoppa, starting with repairs of inguinal hernias and later extended to incisional hernias.[10,11] They and others[2] place the mesh in the retromuscular position, anterior to the posterior sheath. This approach, as with the one described here, is intended to isolate the mesh from any potential wound problems which remain quite high.

The problems with the retromuscular approach is that it can be technically challenging at times, especially in patients undergoing repair after multiple prior attempts. The method described here initially attempted to keep the mesh between the posterior fascia and the peritoneum. This technique became increasingly difficult as the hernias and patients got larger and the number of recurrent hernias increased. Reluctance to place permanent mesh in the peritoneal cavity in the first place was because of concern for increased risk for postoperative bowel obstruction. As laparoscopic repairs with nonadherent permanent mesh[12] seemed to show no incidence of bowel obstruction, a modification of this was undertaken.

Initially, polypropylene mesh covered with an absorbable mesh was used. Now Ventrio , which comes precoated, is used exclusively. This has contributed to a very low rate of both postoperative bowel obstruction and recurrences. The latter is attributed to the ease with which the mesh can be placed once adhesions are lysed. This intraperitoneal location has led to excellent resistance to infections with only 2 patients (out of the 43 with wound problems) needing mesh removal.

Although the largest single surgeon series in the literature, there are several limitations to this study.