ORIGINAL ARTICLE

Surgical Treatment of Postoperative Incisional Hernias by Intraperitoneal Insertion of Dacron Mesh and an Aponeurotic Graft

A Report on 250 Cases

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Background: The therapeutic problems of giant incisional hernias of the abdominal wall are often difficult to resolve. The technique of repair must make up for the loss of abdominal wall substance and reestablish the interplay of the abdominal musculature. The use of prosthetic materials complies with these 2 imperatives.

Hypothesis: The results of surgical treatment of postoperative incisional hernias by intraperitoneal insertion of Dacron mesh and an aponeurotic graft were evaluated.

Design and Setting: Retrospective study of 250 patients in a university hospital.

Results: Postoperative mortality was 0.8%. Five patients (2%) developed a subcutaneous infection that did not affect the prosthesis. Another 5 patients (2%) developed a deep-seated infection that necessitated removal of the mesh in 3 cases. Eight patients (3.2%) had recurrence of incisional hernia.

Conclusion: This retrospective study shows that giant abdominal wall hernias can be efficiently treated by the intraperitoneal positioning of Dacron mesh and an aponeurotic graft.

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PROBLEMS arising from the surgical management of large incisional hernias are often difficult to resolve. Common associated clinical problems of such patients, who have often undergone several surgical procedures, are obesity and cardiopulmonary diseases. Chronicity of large incisional hernias accounts for the herniated viscera becoming well adapted to fill both the abdomen and the new sac while the hernial neck progressively widens.

The volumetric disproportion between the abdomen and its contents is the major obstacle to the success of usual treatment methods. Plastic surgery that markedly reduces peritoneal volume will actually expose the patient to severe cardiopulmonary complications.[1,2] The surgical repair of incisional hernias should then assist in the replacement of the abdominal wall defects as well as the restoration of the normal physiologic makeup of the abdomen. This study reports on the use of intraperitoneal insertion of Dacron mesh and an aponeurotic graft in the treatment of giant postoperative incisional hernias.

RESULTS

The postoperative mortality rate was 0.8% (n = 2): one patient died on the second postoperative day of Mendelson syndrome and the other patient died 12 days after surgery of massive mesenteric infarction. In 5 patients, superficial wound infections occurred without involvement of the mesh and with prompt recovery before hospital discharge. Deep wound infection occurred in 5 other patients, and removal of the mesh became necessary in 3 cases despite incision, irrigation, and drainage. The mean follow-up time was 8.1 years (range, 2-14 years). Eight patients (3.2%) developed recurrence. Recurrences were related to parietal infection treated by removal of the mesh (n = 2) or by lateral detachment of the mesh (n = 6). Three of these recurrences took place at the beginning of our experience (40 cases). In these cases the mesh had been sutured too closely to the hernial ring.

Five patients underwent reoperation for cholecystitis (n = 3) and for adenocarcinoma of the colon (n = 2). The Dacron mesh was incorporated and its deeper

PATIENTS AND METHODS

Between January 1982 and October 1996, 250 patients (135 men) were operated on for giant postoperative incisional hernia. The mean age was 57 years (age range, 17-80 years). Comorbid conditions of 90% of the patients (n = 225) are summarized in **Table 1**. A high incidence of incisional hernias after midline incisions (80%) was reported (**Table 2**). The average size of the hernia was 20 × 15 cm; the smallest hernia was 15 cm in diameter. The amount of tissue adjacent to the parietal defect is more important than its size and affects the surgical outcome. Forty-eight percent of the patients had already undergone at least 1 previous surgical procedure for incisional hernia recurrence, and several patients had undergone between 2 and 4 operations. In 22 patients (8.8%), extraperitoneal mesh was removed. Additional surgical procedures were performed in 13 patients: 10 cholecystectomies for chronic cholecystitis and 3 small bowel tears that were immediately sutured.

The procedure used for the repair of incisional hernia is described herein. After excision of the scar, the herniated sac is exposed and the adjacent anterior fascia is cleared of subcutaneous tissue up to 10 to 15 cm from the ring of the hernial sac. The sac is then excised and intestinal adhesions dissected free to facilitate the placement of the mesh at least 10 cm from the edge of the hernial neck. The mesh is secured to the musculofascial wall by through-and-through nonabsorbable sutures[3] (**Figure 1**). Stitches are spaced about 3 to 4 cm apart. According to the technique described by Welti and Eudel,[4] the next step involves the isolation of the mesh from subcutaneous tissue and skin, along with reinforcing the parietal repair. The anterior lamina of the rectus sheath is incised longitudinally 4 cm back from its medial edge bilaterally. Both aponeurotic flaps are then reflected inward and sutured by interrupted absorbable stitches (**Figure 2**). Subcutaneous tissue and skin are closed over 4 drains. Antibiotics are given as a prophylactic measure up to the sixth postoperative day.

Table 1. Associated Clinical Problems of Study Patients

Feature	No. (%)
Obesity	102 (41)
Arterial hypertension	80 (32)
Heavy smoking	80 (32)
Chronic respiratory failure	70 (28)
Alcoholism	37 (15)
Diabetes mellitus	30 (12)
Phlebothrombosis	20 (8)

Table 2. Types of Incisional Hernias

	No. (%)
Xyphoumbilical midline	77 (31.0)
Infraumbilical midline	39 (15.5)
Xyphopubic midline	84 (33.5)
Right upper transrectal	30 (12.0)
MacBurney	6 (2.5)
Infraumbilical transverse	7 (3.0)
Lobotomy	4 (1.5)
Left upper transrectal	3 (1.0)
Total	**250** (100)

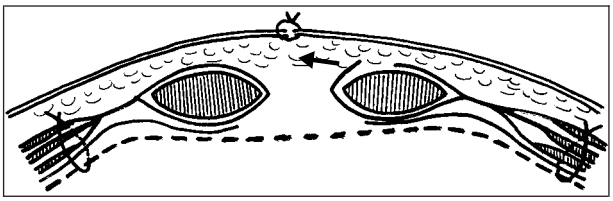

Figure 1. *Dacron mesh in intraperitoneal position.*

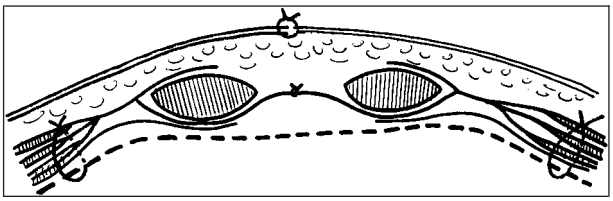

Figure 2. *Coverage of the prosthesis with a myoaponeurotic flap according to Welti and Eudel.[4]*

wall covered by a "neo" peritoneum; intestinal adhesions were dissected easily.

COMMENT

Surgery for giant incisional hernias has undergone drastic changes in the last 20 years, and such patients can be treated with a high rate of success. To guarantee good results, special consideration should be given to the abdominal wall defect and the physiologic changes after chronic incisional hernias as well as the use of prosthetic material. The Dacron mesh seems to be the material that has the most advantages (moderate inflammatory reaction and marked fibroblastic response). It was associated with good elasticity, adequate strength, satisfactory tissue acceptance, and minimal risk of infection.[5-7]

The second problem one faces during an incisional herniorrhaphy is the site of implantation of the prosthesis. Generally, this site is prefascial, retromuscular,[8-10] preperitoneal, or premuscular,[11] which often requires wide undermining. Following on the reports of Bourgeon et al[12] and our own experimental study,[5] we have chosen the intraperitoneal approach. This simple technique does not require dissection of the intermediate layers, which definitively lowers the incidence of postoperative wound infection. Some authors emphasize the risk of postoperative intestinal occlusion and bowel fistula in intraperitoneal positioning of the mesh.[13,14] These adhesions can be avoided by the interposition of the greater omen-

tum whenever possible. No obstructive complications were reported in the present series. A recent experimental study[15] has suggested the placement of absorbable mesh between nonabsorbable mesh and bowel to reduce intraperitoneal adhesions. Migration of the intraperitoneal prosthesis has been reported[8] and seems to be related to an inadequate peripheral attachment of the mesh. This complication was not observed in our series.

More than 90% of our patients who underwent surgical treatment returned to normal activities. The intraperitoneal implantation of Dacron mesh and an aponeurotic graft is a safe and reliable procedure for the treatment of giant incisional hernias with an acceptably low incidence of reherniation and complications.

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