MANAGEMENT OF RECURRENT AND PERIVASCULAR FEMORAL HERNIAS BY GIANT PROSTHETIC REINFORCEMENT OF THE VISCERAL SAC

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BACKGROUND: Classical hernioplasties have been used to manage primary femoral hernias for over a century. In women, infrainguinal repair of the parietal defect is simple and successful. In men, femoral hernias are frequently associated with inguinal hernias and, therefore, a Cooper's ligament repair is indicated. For recurrent femoral hernias, however, the classical hernioplasties are often inadequate just as they are for the repair of recurrent inguinal hernias and a prosthetic repair is indicated.

Giant prosthetic reinforcement of the visceral sac (GPRVS) is the descriptive name of a peritoneal groin hernioplasty with a large piece of Mersilene™. The repair focuses on retaining the peritoneum rather than repairing the parietal defect and is efficient, anatomic, sutureless, and tension-free. It is the only repair that reliably eliminates all hernias of the groin, including perivascular femoral hernias.

STUDY DESIGN: In this study, GPRVS by way of an abdominal incision was used to treat recurrent and perivascular femoral hernias. Also included are a description of and experiences with a new technique of unilateral GPRVS performed through an infrainguinal approach.

RESULTS: The data reveal no recurrences in 69 problem femoral hernias of which 15 were primary (two perivascular) and 54 recurrent (four perivascular).

CONCLUSIONS: Giant prosthetic reinforcement of the visceral sac performed transabdominally or by way of the newly described infrainguinal method is a useful and reliable method to treat primary, recurrent and perivascular femoral hernias. J. Am. Coll. Surg., 1996, 182: 417-422.

Giant Prosthetic Reinforcement of the Visceral Sac (GPRVS) is the descriptive phrase used to denote Stoppa's tension-free propertitoneal hernioplasty with a large unsecured piece of Mersilene™ (Ethicon, Somerville, NJ) mesh. The mesh substitutes for the transversalis fascia and eliminates hernias of the groin by retaining the peritoneum rather than by repairing the parietal defect. When correctly performed, GPRVS should prevent all hernias of the groin. The purpose of this study is to demonstrate the effectiveness of GPRVS in the repair of femoral hernias, both primary and recurrent, and to describe a new GPRVS technique to manage perivascular femoral hernias by an infrainguinal approach.

METHODS

Bilateral and unilateral GPRVS procedures were performed as described by Stoppa and Warlaumont (1) and Wantz (2-4) (Fig. 1). The mesh in all repairs, except one that used Marlex™ (Bard Cardiovascular Division, Billerica, MA), was Mersilene™. Bilateral GPRVS was done through either a midline or Pfannenstiel incision in 18 patients. Unilateral GPRVS was done through a lower quadrant transverse incision in 49 patients. In six patients, a new method of performing GPRVS using an infrainguinal approach was used. Infrainguinal GPRVS is performed as follows: an anterior groin incision is made and retracted inferiorly to expose the femoral sheath (Fig. 2). The femoral hernia sac is dissected from adjacent tissues and from the edge of the parietal defect. The sac may be ligated and amputated or merely inverted if empty (Fig. 3). The peritoneal space is entered through the parietal defect and cleaved by gentle blunt finger dissection in all directions. The dissection, however, is limited on the anterior surface of the iliac vessels by the origin of the inferior epigastric vessels. A square of Mersilene™ mesh approximately 8×8 cm is arranged so that the stretch is transverse. It is placed in the properitoneal space and secured to the anterior abdominal wall 3 cm above the inguinal ligament with three sutures. A demitassee spoon is a useful instrument to retain and protect the peritoneum during suturing. Reerverdin's needles facilitate the placement of the sutures (Fig. 4). These sutures, which need not be permanent,
is implanted with two long clamps that grasp the far edge of the mesh at the corners. The clamps push the mesh in place, medially deep in Retzius’ space and laterally up into the iliac fossa (Fig. 5). The inferior epigastric vessels prevent deep implantation of the middle portion of the mesh. Injury of the inferior epigastric vessels does not occur because the Merseline™ is elastic and pliant and can bunch up around them. Closure of the parietal defect is not necessary (Fig. 6).

RESULTS

There were 69 patients studied. Fifty-four patients (46 male, eight female) had femoral hernias and 15 (ten male, five female) had primary femoral hernias. Of the recurrent femoral hernias, 44 occurred after previous inguinal herniorrhaphy and ten after previous femoral herniorrhaphy. Four of the recurrent femoral hernias and two of the primary femoral hernias were perivascular. Sixteen patients underwent bilateral transabdominal GPRVS repair (15 male, one female) and 47 patients underwent unilateral transabdominal GPRVS repair (37 male, ten female) for femoral hernias. Six patients underwent infrainguinal repair of perivascular femoral hernias (four male, two female). Forty-two femoral hernias occurred on the right side, 18 occurred on the left, and nine were bilateral. Three primary femoral hernias were repaired by bilateral GPRVS and ten by unilateral GPRVS. Thirteen
Fig. 3. The femoral hernia sac should be ligated and amputated. The synthetic prosthesis should not be permitted to contact the abdominal viscera. Cleavage of the peritoneal space is easily accomplished by gentle blunt finger dissection.

Fig. 4. The mesh is secured to the anterior abdominal wall with three sutures. A demitasse spoon is useful for retraction and a Reverdin's suture needle facilitates placement of the sutures. These sutures ensure the position of the mesh during manipulation required to implant the distal portion.

Recurrent femoral hernias were repaired by bilateral transabdominal GPRVS and 37 by unilateral transabdominal GPRVS (Tables I and II). There have been no recurrences after any GPRVS repair whether for primary or recurrent femoral hernias. Similarly, no recurrences have been noted after the infrainguinal repair of six perivascular femoral hernias.
DISCUSSION

Classical hernioplasties have been used to manage primary femoral hernias for over a century. In women, infrainguinal repair of the parietal defect is simple and successful. In men, femoral hernias are frequently associated with inguinal hernias and, therefore, a Cooper's ligament repair is indicated. For recurrent femoral hernias, however, the classical hernioplasties are often inadequate just as they are for the repair of recurrent inguinal hernias.

Recurrent femoral hernias fall into two categories: those that occur after a primary femoral hernia repair and those that occur after an inguinal hernia repair. Recurrent femoral hernias after primary femoral repair are difficult to treat because the parietal defect is sclerotic and repair without tension is impossible. According to Ben-

<table>
<thead>
<tr>
<th>TABLE I.—FEMORAL HERNIAS IN MEN</th>
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<tr>
<td><strong>Type of GPRVS repair</strong></td>
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<tr>
<td>---------------------------------</td>
</tr>
<tr>
<td>Bilateral transabdominal</td>
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<tr>
<td>Unilateral transabdominal</td>
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<tr>
<td>Infrainguinal</td>
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GPRVS, Giant prosthetic reinforcement of the visceral sac, and No. of pts., number of patients.

TABLE II.—FEMORAL HERNIAS IN WOMEN

<table>
<thead>
<tr>
<th><strong>Type of GPRVS repair</strong></th>
<th><strong>No. of pts.</strong></th>
<th><strong>Number of previous repairs</strong></th>
<th><strong>Recurrence</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Bilateral transabdominal</td>
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<td>0 1 2 3 4 5</td>
<td>0</td>
</tr>
<tr>
<td>Unilateral transabdominal</td>
<td>10</td>
<td>1 2 6 0 1 1</td>
<td>0</td>
</tr>
<tr>
<td>Infrainguinal</td>
<td>2</td>
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david, the recurrence rate after nonprosthetic repairs of primary femoral hernias is 6.1 percent and that after recurrent femoral hernias is 22 percent (5). Femoral hernias after inguinal hernioplasties may be coincidental or they may be perivascular and causally related from tension and surgical trauma to the iliopubic tract (femoral sheath). Perivascular femoral hernias are impossible to repair by classical techniques because the femoral vessels may be a part of the parietal defect. For these reasons, synthetic prostheses are helpful for the repair of all recurrent femoral hernias.

Giant prosthetic reinforcement of the visceral sac by an abdominal incision is ideal for the repair of femoral hernias that are not amenable to the classical repairs and when groin dissection is undesirable. It is the only repair that reliably eliminates all types of perivascular femoral hernias. Occasionally perivascular femoral hernias are not recognized until operation. When these cases do not also require the repair of an inguinal hernia, repair of the perivascular femoral hernia can still be accomplished even if the patient has received only local anesthesia by infrainguinal GPRVS as newly described above. The excellent results of our experience with GPRVS to manage recurrent femoral hernias are convincing.

For GPRVS to be successful, the synthetic prosthesis must become integrated rapidly and must be supple and flexible enough to conform to the complex curves of the pelvis. Mersilene™ is the only mesh currently available with these characteristics. Gore-Tex™ (W. L. Gore and Associates, Flagstaff, AZ) and the polypropylene meshes are not suitable substitutes. Gore-Tex™, although conforming, must be fixed because integration is very slow. Polypropylene meshes are semirigid and do not conform. Furthermore, unsecured pieces of the material in the loose tissues of the properitoneal space regularly deform from the contracture of investing scar tissue.

Infrainguinal GPRVS™ resembles Bendavid's polypropylene "umbrella" mesh for the infrainguinal repair of recurrent femoral hernias (6). However, there is an important difference; the success of GPRVS is independent of permanent suture fixation, while the success of the polypropylene "umbrella" mesh technique depends on circumferential fixation with permanent interrupted sutures. The polypropylene "umbrella" mesh repair, therefore, is not useful for the repair of the perivascular femoral hernias when the femoral vessels are the only posterior structure to which the mesh can be attached.
REFERENCES