Preperitoneal inguinal hernia repair during pelvic surgery.

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Summary.- OBJECTIVES: We report our experience with posterior preperitoneal prosthetic herniorrhaphy for inguinal hernia in patients undergoing concomitant pelvic surgery for both benign and malignant urological pathologies.

METHODS: 116 patients with either unilateral or bilateral inguinal hernia underwent posterior preperitoneal prosthetic herniorrhaphy during a pelvic operation for various urological pathologies. The technique described by Mahorner and Goss was used for unilateral hernia, while the modified Stoppa technique was used for bilateral hernia.

RESULTS: All patients had a complication-free peri- and post-operative course, except for one patient who developed a spontaneously resolving small peri-prosthetic hematoma. In the follow-up of all patients (mean 35.7 months, range 4-72) we did not observe any hernia recurrence.

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CONCLUSIONS: Posterior preperitoneal prosthetic inguinal herniorrhaphy during pelvic surgery for urological pathologies is a relatively simple and safe procedure to perform and a recurrence rate of zero, or very close to zero, is to be expected.

Keywords: Inguinal hernia repair. Pelvic surgery. Prosthesis.

Resumen.- OBJETIVOS: Comunicamos nuestra experiencia con este tipo de corrección herniaria con material protésico concomitante con cirugía pelviana tanto en patologías malignas o benignas urológicas.

MÉTODOS: Hemos tratado 116 pacientes con hernia uni o bilaterales, durante una cirugía pélvica por variada patología urológica. La técnica descrita por Mahorner y Goss se usó para las hernias unilaterales y la de Stoppa para las bilaterales.

RESULTADOS: Todos los pacientes tuvieron un postoperatorio libre de complicaciones, excepto uno que desarrolló un pequeño hematoma periprotésico, que se resolvió espontáneamente. En el seguimiento (media 35.7 meses, rango 4-72 meses) no objetivamos ninguna recidiva herniana.

CONCLUSIONES: Este tipo de corrección herniaria aplicada por nosotros, durante la cirugía pélvica urológica nos parece un procedimiento seguro y fácil de realizar con tasa de recurrencia igual o muy cercana a cero.

Palabras clave: Corrección de hernia inguinal. Cirugía pelviana. Prótesis.
INTRODUCTION

Preperitoneal hernia repair without the use of prosthesis, during surgery of the small pelvis, has been carried out for many years (1, 2) and various Urologists have described their experience in this field (3, 4). Unfortunately, this approach, just as the anterior surgical approach, carries a high incidence of recurrence, which ranges from 2% to 18% (3). We have attempted to increase the success rate of this operation by using prosthetic materials. The idea of using synthetic material for hernia repair dates back to nearly a century. The main problem, when considering the use of synthetic prosthesis, is that of finding the ideal material for this purpose. The use of a prosthetic mesh has found its place in herniorrhaphy only with the advent of new synthetic materials capable of meeting precise conditions (5).

We report our experience and results achieved with the techniques that we use for prosthetic inguinal hernia repair during pelvic surgery.

MATERIALS AND METHODS

From January 1993 to November 2000, 116 patients underwent posterior preperitoneal inguinal hernia repair with insertion of a synthetic mesh prosthesis. The mean age was 68.2 years (range 47-81). All patients were male and had concomitant pelvic surgery for various urological pathologies (Table I). The hernia was unilateral in 97 patients (84%) and bilateral in the remaining 19 (16%). A negative urine culture was mandatory for considering the described hernia repair in all our patients. All patients received prophylactic antibiotic therapy during the 12 hours prior to the operation.

Technique: Patients are positioned supine on the operating table, with pelvic hyperextension and concomitant Trendelenburg. We always perform a median hypogastric skin incision followed by opening of the rectus fascia. The rectus muscles are then retracted, and the posterior aspect of the abdominal muscles homolateral to the side of hernia is exposed. Once the spermatic funicle is identified and isolated from the hernia sac, the latter is then isolated, reduced and, in case of external oblique hernia with a narrow neck, sectioned. Retzius’ and Borgo’s spaces are then prepared by displacing the peritoneum and surrounding fatty tissue cranially, thus enabling mobilization of the funicle and spermatic vessels up to the point where they cross the common iliac artery. Positioning of the prosthetic material is not done until the urological operation has been completed in order to avoid contamination or slipping of the prosthesis during the surgical maneuvers and also to prevent the mesh from possibly obstructing the urological procedure. On completion of the urological operation we return to the reconstructive phase of the hernia repair.

For unilateral hernia we use the technique described by Mahorner and Goss (6); however, when repairing a bilateral hernia we use a modified Stoppa technique - positioning a single bilateral prosthesis. For unilateral hernia, we always use a high-density polypropylene monofilament mesh prosthesis (Prolene), which has the advantage of being better tolerated in case of infection, but unfortunately has the disadvantage of being much stiffer (and therefore more difficult to manipulate) and having a "plastic memory". As always when using prosthetic materials, one has to rigorously observe the following two precautions: to open the package containing the mesh only very shortly before its use; and to wash Douglas’ space and the pelvic peritoneal cavity with a saline solution containing a broad-spectrum antibiotic. These precautions serve to minimize the possibility of infection, abscess formation and contamination of the wound.

Table I: Pelvic surgery concomitant to preperitoneal inguinal hernia repair.

<table>
<thead>
<tr>
<th>Urological operation</th>
<th>No. of patients</th>
</tr>
</thead>
<tbody>
<tr>
<td>Open prostatectomy (BPH)</td>
<td>52</td>
</tr>
<tr>
<td>Radical prostatectomy</td>
<td>31</td>
</tr>
<tr>
<td>Radical cystectomy</td>
<td>15</td>
</tr>
<tr>
<td>Ureter reimplantation</td>
<td>13</td>
</tr>
<tr>
<td>Bladder diverticulectomy</td>
<td>3</td>
</tr>
<tr>
<td>Cystolithotomy</td>
<td>2</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>116</strong></td>
</tr>
</tbody>
</table>
The size of the prosthesis should closely match that of the defect to be repaired in order to minimize the amount of heterogeneous material positioned in the body, but large enough to cover the entire hernial defect. After the mesh has been positioned and the spermatic funicle has been lateralized (to obviate having to cut an opening in the prosthesis), the prosthesis is secured by means of separate Prolene 2-0 stitches at its superior and lateral margins to Cooper’s ligament and to the abdominal wall muscles. The medial and inferior margins of the mesh are placed and spread out on the pelvic wall so that they reach the psoas muscle posteriorly; these margins do not need to be secured with stitches because the pressure exerted by the intestine on the prosthesis and the abdominal and pelvic walls is such that they will be kept in place. Once the mesh has been properly positioned and secured to the abdominal wall, having been careful not to fold or twist the material during reconstruction of the parietal peritoneum, rapid fibrosis will ensue.

The same principle as that described above for unilateral hernia is applied for bilateral hernia. Following Stoppa’s description, we use a prosthesis wide enough to cover both hernial defects. This method, even if it implies positioning a large amount of heterogeneous material, has the advantage of ensuring there are minimal possibilities of the prosthesis slipping, thus resulting in a good solid wall and a significantly reduced operating time. We have added some variations to Stoppa’s technique. His original description did not foresee the use of stitches to fix the mesh to the abdominal wall, nor did it foresee that the prosthesis be modelled in shape. However, we prefer to anchor the prosthesis on both sides in the same fashion as described above for the unilateral hernia to avoid any possible kinking or slipping of the mesh (which is quite frequent when positioning such large amounts of material), and also to model it into the shape of butterfly wings in order to reduce the amount of heterogeneous material to a minimum.

RESULTS

The mean follow-up was 35.7 months (range 4-72). We did not observe hernia recurrence in any patient. There were no post-operative complications or infections in all but one patient. This patient underwent unilateral hernia correction during an open prostatectomy procedure. He developed a small peri-prosthetic, post-operative hematoma that resolved spontaneously within the following days and therefore did not require any further intervention or treatment.

DISCUSSION

Posterior preperitoneal hernia repair without the use of a prosthesis was described for the first time by Annandale, whilst in 1951 Riba described hernia repair during benign prostatic tumor surgery (7). Amongst the advantages of this approach in repairing abdominal wall defects are: an excellent visualization of the hernia, easy identification of the funicle, simple isolation and reduction of the hernial sac even if treating large or recurrent hernias, the possibility to recognize and treat misdiagnosed hernias and repair abdominal wall defects whilst respecting the large arteries and veins. Even when considering the above-mentioned advantages, once the results of large series studies were made available and published, it was seen that recurrences still did occur. Thus, not all urologists agree in performing concomitant hernia repair during operations for other urologic or pelvic pathologies and prefer that a surgeon treat the hernia at a later date.

We have attempted to reduce the incidence of hernia recurrences with the use of prosthetic mesh, especially in patients having prognostic factors predisposing or favoring hernia recurrence.

Recently, Walsh described equally excellent results as those which we obtained in patients undergoing concomitant prosthetic herniorrhaphy, by means of a simple preperitoneal herniorrhaphy in patients submitted to either radical prostatectomy or cystectomy (3). However, it has to be pointed out that the follow-up of this study is 11.4 months and is therefore too short for adequate evaluation. Furthermore, the average age of the patients reported in the above-mentioned paper, 55 years, is such that it is to be expected that they have better wound healing capacity and fibroblast activity than older patients. Therefore we believe that even if excellent results are still to be expected in older patients undergoing preperitoneal hernia repair without prosthesis, the results will nonetheless be somewhat less favorable than those obtained by prosthetic herniorrhaphy in patients of the same age group.
We believe that posterior preperitoneal prosthetic inguinal hernia repair in patients undergoing concomitant pelvic surgery is a safe and relatively simple procedure. Like other authors (8), we also believe that preperitoneal prosthetic mesh hernioplasty could offer better results than the nonmesh technique. Furthermore, the use of the prosthesis is simple and rapid. The materials available give minimal inflammatory reactions but stimulate fibroblast activity, thus a laminar layer of fibrous tissue develops that incorporates the prosthesis into the abdominal wall without involvement of the spermatic funicle. Nonetheless, it is evident that their use, just as is the case for all heterogeneous materials, necessitates rigorous observation of the aseptic rules and techniques when being positioned. The reason why it is fundamental to observe these stringent aseptic conditions when applying a prosthesis is that the septic complications are not a consequence of the prosthesis being rejected, but rather are caused by bacterial contamination.

CONCLUSIONS

In our experience the posterior preperitoneal prosthetic herniorrhaphy is a safe, simple and effective technique in repairing inguinal hernia during pelvic surgery.

REFERENCES AND RECOMMENDED READING (*of special interest, **of outstanding interest)