Laparoscopic approach for vesicovaginal fistula

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ABSTRACT

Introduction: Vesicovaginal fistula is frequently a result of hysterectomy. The majority of cases are repaired satisfactorily via the vagina; however, when fistula is very high or repair cannot be made through the vagina, laparoscopy becomes an option. The laparoscopic technique used in 3 such cases is described.

Materials and methods: Ten vesicovaginal fistula surgeries were carried out within the time frame of January 2003 to February 2008. Seven of the procedures employed vaginal approach and 3 were laparoscopic. Surgical approach was determined in accordance with excretory urography, cystoscopy and colposcopy results.

Results: Mean surgery duration was 176 minutes. There were no conversions to open surgery. Mean age was 45 years. Mean hospital stay was 2 days. Bladder catheter was in place for 15 days. Minimum follow-up was 12 months and there was no vesicovaginal fistula recurrence.

Conclusions: When there is high fistula or when vaginal access is difficult, laparoscopy is a good alternative and the more invasive open surgery is avoided.

Key words: fistula, vesicovaginal, laparoscopy, repair, Mexico.

RESUMEN

Introducción: Las fistulas vésico-vaginales (V-V) se producen frecuentemente posteriores a hysterectomías. La mayoría se reparan en forma satisfactoria por vía vaginal, sin embargo, cuando la fistula es muy alta o existe la imposibilidad de utilizar la vagina como vía de reparación, la técnica laparoscópica es una opción. Nosotros describimos la aplicación de esta técnica en tres casos.

Material y métodos: De enero de 2003 a febrero de 2008, realizamos 10 cirugías de fistula V-V, siete por vía vaginal y tres por abordaje laparoscópico. La vía de abordaje de la fistula se realizaba de acuerdo a los resultados de la urografía excretora, cistoscopia y colposcopia.

Resultados: El tiempo quirúrgico promedio fue de 176 minutos (150 a 210 min). No hubo conversiones a cirugía abierta. El promedio de edad fue de 45 años (40 a 50); el tiempo promedio de hospitalización fue de dos días; el tiempo de permanencia de la sonda vesical fue de 15 días; el tiempo mínimo de seguimiento fue de 12 meses y no hubo recidiva de la fistula V-V.

Conclusión: En los casos donde exista una fistula V-V alta o de dificil acceso por vagina, la técnica laparoscópica es una alternativa apropiada para solucionar estos casos y evitar la cirugía abierta.

Palabras clave: Fistula, vésico-vaginal, laparoscopia, reparación, México.
INTRODUCTION

Ninety percent of vesicovaginal fistulas (VVF) are produced after hysterectomy with a 1/1,800 frequency. In some cases conservative treatment based on bladder drainage, antibiotics, vaginal estrogens, etc., can be successful (7-12.5%). When conservative management fails transvaginal surgery, open transabdominal surgery, laparoscopy or robot-assisted surgery are options. With these techniques success rates can be as high as 97% but there is a 10% recurrence rate.

Choosing the technique will depend on the experience of the surgeon and the location and size of the fistula. The majority of urinary fistulas can be repaired vaginally. When vaginal approach is not adequate and the abdominal approach is chosen, the laparoscopic or robot-assisted techniques are options with the advantage of being minimally invasive. According to Lee et al. indications for abdominal surgery are: 1) inadequate exposure either because the fistula is too high or the vagina is narrow and lacks elasticity, 2) the fistula is very close to the ureteral meatuses 3) there is associated pelvic pathology, and 4) there are multiple fistulous tracts.

The objective of this article is to demonstrate the laparoscopic technique used in treating VVF.

MATERIALS AND METHODS

Within the time frame of January 2003 to February 2008, ten procedures for VVF repair were carried out in two private hospitals in the city of Aguascalientes. Three of the procedures were laparoscopic and the remaining 7 were vaginal surgeries. Laparoscopy was employed because in 2 of the cases the vagina was narrow and in 1 case the fistulous tract was very high.

The 3 patients were referred to out-patient consultation with a history of previous hysterectomy. One of them had had a failed attempt at repair with laparotomy. Patients were evaluated by means of excretory urography (to rule out upper urinary tract involvement), cystoscopy and colposcopy to localize VVF and determine surgical approach.

Under epidural block and general anesthesia the patient was placed in the lithotomy position. Coaxial catheters were placed in each of the ureters by means of cystoscopy and another catheter of a different color was placed at the fistulous tract entering through the urethra and exiting through the vagina. A gauze was placed in the fundus of the vagina along with 2 Foley catheters, one in the bladder and the other in the vagina. The purpose of the vaginal catheter was to obstruct and prevent the escape of CO2 upon incising the vagina during laparoscopic dissection.

After asepsis and antisepsis a Veress needle was inserted above the umbilicus to insufflate CO2 into the intraperitoneal cavity until reaching a pressure of 12 mm Hg. A 10 mm trocar was introduced 2 cm above the umbilicus and then one 10 mm trocar and three 5 mm trocars were placed in the shape of a concave fan as used in radical prostatectomy.

After removing the adherences from the previous surgery the bladder was inflated with water and an incision was made as low as possible, close to the vaginal vault, so that it reached the fistulous tract identified with the different-colored catheter. The bladder was carefully separated from the vagina and the vagina was closed with 2-0 monocryl running suture. The omentum or parietal peritoneum was then interposed between the bladder and the vagina and the bladder was closed with 2-0 monocryl running suture. A closed drain was left in the innermost part of the sac and the skin at the edges of the trocar entrances was closed. The aponeurosis was closed only at the 10 mm trocar entrances. Foley catheter and intravaginal gauze were removed at the end of the procedure. Urethral catheters were removed if they were not near fistula repair, in which case they were removed together with the transurethral Foley catheter two weeks after the procedure.

Care of the Foley catheter is vitally important. The closed drain was removed when its output was less than 100 mL, which is usually the case on postoperative day 2 or 3. It was recommended to refrain from sexual activity for two months following the procedure.

RESULTS

Three patients with a history of previous hysterectomy (100%) underwent transperitoneal laparoscopic vesicovaginal fistula (VVF) repair. Mean age was 45 years (40-50 year range). One of the patients had had a failed attempt at VVF repair through abdominal approach (33%), two cases were supratrigonal (66%) and one was intertrigonal (33%). Mean surgical duration was 176 minutes (150-210 min range). Mean hospital stay was 2 days (1-3 day range). Urethral catheter was left in place in all 3 cases for 2 weeks without cystostomy. There was a complication: in the patient with the failed repair attempt when adherences were removed, the rectum was perforated. The injury was closed in 2 layers with 2-0 vicryl with no contamination. An omental appendix patch and washing were sufficient to avoid consequences and the procedure was continued without further complications. Postoperative progression was good. There were no conversions to open surgery and no recurrences. Minimum follow-up was 12 months (Table 1).
Table 1. Posthysterectomy vesicovaginal fistula; transperitoneal laparoscopic repair of 3 cases; January 2003 to February 2008

<table>
<thead>
<tr>
<th>Age</th>
<th>40 years</th>
<th>50 years</th>
<th>45 years</th>
</tr>
</thead>
<tbody>
<tr>
<td>VVF localization</td>
<td>Supratrigonal</td>
<td>Intertrigonal</td>
<td>Supratrigonal</td>
</tr>
<tr>
<td>Previous transabdominal repair</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Surgery duration (176)</td>
<td>210 min</td>
<td>168 min</td>
<td>150 min</td>
</tr>
<tr>
<td>Hospital stay</td>
<td>1 day</td>
<td>3 days</td>
<td>2 days</td>
</tr>
<tr>
<td>Urethral catheter duration</td>
<td>2 weeks</td>
<td>2 weeks</td>
<td>2 weeks</td>
</tr>
<tr>
<td>Complications</td>
<td>No</td>
<td>Rectal injury intraoperative repair</td>
<td>No</td>
</tr>
<tr>
<td>Recurrence, conversions or repeat interventions</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Follow-up</td>
<td>60 months</td>
<td>38 months</td>
<td>12 months</td>
</tr>
</tbody>
</table>

DISCUSSION AND CONCLUSIONS

Vesicovaginal fistula (VVF) can be a consequence of pelvic surgery, the most frequent of which is hysterectomy, as was the case with the patients presented here. The most adequate moment for operating on vesicovaginal fistula is open to debate. On the one hand it is recommendable to wait at least 2 months after the surgery that caused the injury so that the inflammatory process disappears and successful reconstructive surgery can be performed. On the other hand, studies have shown that there is no difference in early or late operation and early intervention can prevent the urinary incontinence which causes important emotional problems in many women.3 Fistula characteristics and preference and experience of the surgeon are factors involved in choosing the surgical technique, whether it is vaginal or abdominal or a combination of both. The vaginal approach is usually selected by urogynecologic surgeons. However there are urologists who prefer the abdominal approach even though it is more invasive. The vaginal approach has been shown to be the best option in the majority of cases.6 However, in cases requiring the abdominal approach, laparoscopy is an excellent option that offers the advantages of better vision, less bleeding, shorter hospital stay and faster recuperation. Identical results have been reported in cases of robot-assisted surgery.11,12

Laparoscopy enables the surgeon to reach small areas with excellent visualization increasing the safety of the dissection planes, providing better evaluation of the tissue and its vitality for satisfactory reconstruction. Sutures are able to be placed in areas that can be a real challenge in open surgery. Laparoscopy is an effective alternative to open surgery when the following basic principles of VVF repair are observed: clear exposure of the fistulous tract, extirpation of scarred and fibrous tissue, tension-free suture and healthy margins in the vagina as well as the bladder, peritoneal or omental interposition and adequate drainage.11

Based on the four cases presented here the authors conclude that laparoscopic technique can be the best option when the vaginal approach is ruled out. However, in order to successfully perform this technique it is necessary to have laparoscopic experience in pelvic surgery along with skill in making intracorporeal knots.

BIBLIOGRAPHY