CASE REPORT

# Laparoscopic repair of vesicovaginal fistula: a case report

## *Correção laparoscópica de fístula vesicovaginal: relato de caso*

Pedro Romanelli de Castro[1], Ricardo Hissashi Nishimoto[1], Raul Guilherme Ângelo Pinheiro[1], Paulo Batista de Oliveira Arantes[1], Aline Monteiro Neder Issa[2], Hugo Monteiro Neder Issa[3]

DOI: 10.5935/2238-3182.20130081

ABSTRACT

Despite being an uncommon complication, vesicovaginal fistulas have significant impact on patient quality of life. Minimally invasive approaches have gained more space in the treatment of genitourinary diseases. There are few reports on laparoscopic approaches for correction of vesicovaginal fistulas. This is a case report of a post-hysterectomy fistula treated exclusively through laparoscopy with excellent results. The advantages of the laparoscopic approach, as well as some technical details, are discussed.

**Key words:** Female Urogenital Diseases; Vesicovaginal Fistula; Laparoscopy.

RESUMO

*Apesar de constituírem complicação incomum, as fístulas vesicovaginais apresentam expressivo impacto na qualidade de vida dos pacientes. As abordagens minimamente invasivas têm ganhado mais espaço no tratamento de doenças geniturinárias. Ainda são poucos os relatos do acesso laparoscópico para correção das fístulas vesicovaginais. Relata-se aqui um caso de fístula pós-histerectomia tratada totalmente de forma laparoscópica com ótimo resultado. As vantagens do acesso laparoscópico, assim como alguns detalhes técnicos, são discutidos.*

***Palavras-chave:*** *Doenças Urogenitais Femininas; Fístula Vesicovaginal; Laparoscopia.*

[1] Urologist. Member of the Brazilian Urology Society. Hospital Alberto Cavalcanti. Belo Horizonte, MG – Brazil.
[2] General practitioner. Hospital Alberto Cavalcanti. Belo Horizonte, MG – Brazil.
[3] Resident physician in general surgery. Hospital Alberto Cavalcanti. Belo Horizonte, MG – Brazil.

## INTRODUCTION

Vesicovaginal fistulas (VVF) are rare.[1] In current urological practice, almost 90% of cases are secondary to inadvertent bladder injury during surgery[2], with gynecological procedures ranking as the main cause. Hysterectomies (both abdominal and transvaginal) make up approximately 75% of the cases.[2-4]

The reported index of iatrogenic VVF after gastrointestinal and urological pelvic surgery is of 0.5 -2%[5]. Other less common causes of VVF include pelvic malignancy, gynecological or obstetric trauma, obstetric infections (including tuberculosis), pelvic irradiation, vigorous coitus, and erosion by foreign bodies. The risk of VVF can be increased by concomitant anemia, malnutrition or chronic use of steroids.[6-9]

Congenital FVV is rare and generally associated with other abnormalities of the urinary tract, resulting from an inadequate fusion of the müllerian duct with the urogenital sinus.[10-12]

Several techniques have been described in the treatment of these fistulas. Conservative treatments should be attempted, with initial measures including bladder

*Submitted:* 11/05/2011
*Approved:* 05/17/2013

*Institution:*
Hospital Alberto Cavalcanti of the Fundação Hospitalar de Minas Gerais – FHEMIG
Belo Horizonte, MG – Brazil

*Corresponding Author:*
Dr. Pedro Romanelli de Castro
E-mail: pedroromanelli@yahoo.com.br

drainage with indwelling catheter for a few weeks and antibiotic therapy. Nevertheless, the success rate of conservative treatments is low, ranging from 7 to 12.5%.[13-15] When the diameter of the fistula is large or when initial conservative measures fail, corrective surgery is indicated.[15-17] Success rates of surgical correction of VVF vary from 75 to 97%.[13]

The surgical techniques used in the surgical treatment of VVFs depend on the etiology, location, and on the surgeon's experience.[18] Most VVFs result from hysterectomies (infratrigonal fistula), causing the initial repair to be generally attempted through the vagina, which proves satisfactory in most cases. In some situations, as in posterior and supratrigonal fistulas, vaginal narrowing or in cases of vagina fibrosa tendinis, when the fistula is close to the ureters or when there are multiple fistulas, other forms of access are required for proper exposure. In these cases, the transabdominal route via laparotomy is used.[17]

Videolaparoscopic repair of FVV has been reported as an attempt to minimize the trauma caused by laparotomy.[15,19]

This article describes the initial experience of performing a videolaparoscopic repair of a vesicovaginal fistula.

## CASE REPORT

A 44-year-old patient with continuous urinary incontinence starting after a total abdominal hysterectomy performed five years previously due to uterine fibroids. Cystography showed contrast extravasation into the vagina (Figure 1).

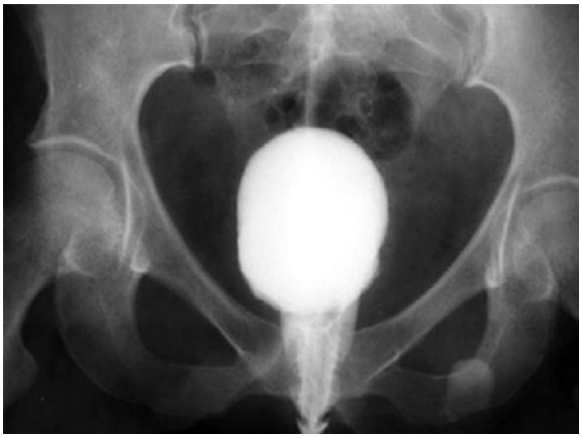

**Figure 1** - Preoperative cystography.

After cystoscopy, which confirmed the fistula in supratrigonal position, the patient underwent fistula repair by the laparoscopic approach, following the same principles of the transabdominal route (laparotomy) described by O'Coner.[15] There were no peri or postoperative complications. The surgery lasted 180 minutes and bleeding was estimated at 200 mL. The drain was removed on the second day after surgery and hospital discharge occurred 24 hours later. A control cystography was done on the10$^{th}$ postoperative day. There was no contrast leakage. The indwelling catheter was removed after the cystography was performed.

The surgical technique used consisted of:

- cystoscopy and catheterization of the ureters and fistula: the patient was submitted to general anesthesia and placed in the lithotomy position. Cystoscopy was performed so that both ureters could be cannulated. This allowed a better identification of the ureteral meatus and protected the ureters during fistula excision and closure. The fistulous tract was also catheterized in order to facilitated the identification of the fistula during its excision;
- patient position and access: after the indwelling bladder catheterization, the patient was placed in the supine position with her arms close to the body in the Trendelenburg position. Four trocars were positioned, two 10 mm and two 5 mm. The optical trocar (10 mm) was placed in the umbilical scar, after the pneumoperitoneum was prepared. Two trocars, one of 10 mm and another of 5 mm respectively, were positioned in the right and left pararectal regions, between the anterior superior iliac spine and the umbilical scar; another 5 mm trocar was placed 2 cm medially to the right anterosuperior iliac spine;
- longitudinal opening of the bladder: the posterior wall of the bladder was opened in longitudinally and the cuff of the indwelling catheter, the ureteral meatus and the fistulous orifice were identified (Figure 2). The gallbladder incision was enlarged caudally to the fistulous orifice so as to include it. Repair points were applied onto the edges of the open gallbladder to improve the exposure;
- dissection and excision of the fistulous tract: after the fistulotomy, a dissection was performed between the posterior gallbladder and vaginal walls (Figure 3). Fibrotic tissue located at the edges of the fistulous orifice, both in the vagina and in the gallbladder, was excised, with viable and well-irrigated tissue margins;

**Figure 2** - Location of supratrigonal fistula.

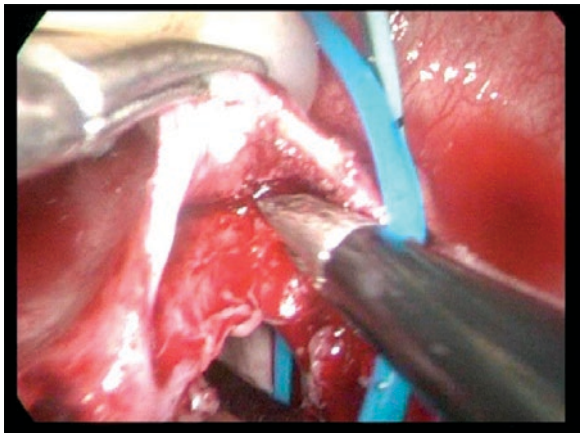

**Figure 3** - Separation of the gallbladder wall from the vaginal wall.

- closure of the bladder and vaginal wall with interposition of an omentum flap: the closing of the bladder was done by suturing in the longitudinal direction with continuous stitches using absorbable suture (Vicryl™). The closing of the vaginal wall was done in the cross-sectional direction in order to avoid the overlapping of the suture threads. Continuous stitches with absorbable suture (Vicryl™) were used; an anchor was placed in the anterior vaginal wall, distal to the site of the vagina closing. This point is used to anchor an omentum flap (Figure 4). The omentum flap (from a tissue considered "healthy") must be placed between the suture threads in the bladder (longitudinal) and the vagina (transverse) so it can decrease the likelihood of fistula recurrence;
- bladder test: after the suture, the bladder was instilled with approximately 100 mL of 0.9% NaCl through the indwelling probe to check that there was no leakage through the bladder suture thread;

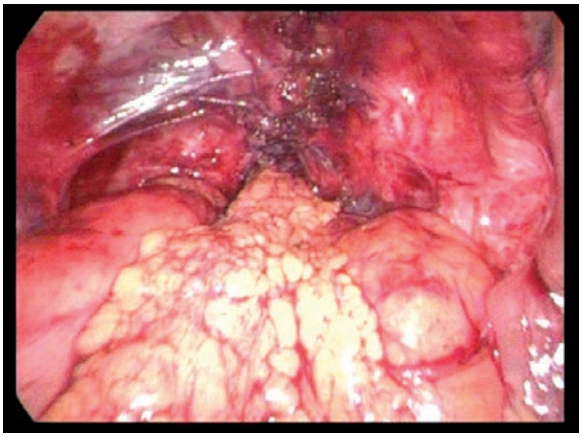

**Figure 4** - Omental interposition.

- drain placement and stoma closure: a portovac drain was positioned in the pelvis to collect any eventual extravasation of urine in the pelvis. In the stomas where the 10 mm trocars were positioned, the aponeurosis is closed with absorbable suture stitches (Vicryl™).

## DISCUSSION

Several successful VVF repair techniques are described by vaginal and abdominal routes or even with combined procedures. The choice of repair technique depends on where the fistula is located and, mainly, on the surgeon's experience and preference.

Laparoscopy is a surgical access alternative to laparotomy for several gynecologic and urologic procedures, with the well-established advantage of being a minimally invasive procedure, with image magnification during the procedure, better control of bleeding, decreased pain, shorter post-operative hospital stay, and early return to work.

It is important to note that the laparoscopic technique follows the same basic repair principles of the abdominal route, i.e. good exposure of the fistula and neighboring tissues, excision of the whole fibrotic tissue, closure without tension with viable and vascularized tissues, suture with absorbable materials, "healthy" tissue interposition between the suture threads, and postoperative bladder drainage.

The laparoscopic repair technique granted access to the entire length of the fistulous tract after the posterior wall of the bladder was opened. In addition to direct access to the fistula, the magnified images available through laparoscopy allowed for efficient dissection of the non-viable perifistulous tissues and

complete excision of the fistula, without need for more incisions or additional dissection of the vesicovaginal space.

## CONCLUSION

Laparoscopic correction of VVF can reproduce the open technique with the advantage of being minimally invasive, making it an alternative treatment.

## REFERENCES


1. Smith GL, Williams G. vesicovaginal fistula. BJU Int, 1999; 83:564-70.
2. Tancer ML. Observations on prevention and management of vesicovaginal fistula after total hysterectomy. Surg Gynecol Obstet. 1992; 175:501-6.
3. Goodwin WE, Scardino PT. Vesicovaginal and ureterovaginal fistulas: a summary of 25 years of experience. J Urol 1980; 123:370-4.
4. Lee L, Symmonds RE, Williams TJ. Current status of genitourinary fistula. Obstet Gynecol. 1988; 72:313-9.
5. Mattingly RF. Acute operative injury to the urinary tract. Clin Obstet Gynecol. 1978;5:123-49.
6. Leach GE, Trockman BA. Surgery for vesicovaginal and uretherovaginal fistula and urethral diverticulum. In: Campbell's Urology. 7th ed. Philadelphia: WB Saunders; 1998. p.1135-53.
7. Ba-Thike K, Aye T, Oo N. Tuberculous vesicovaginal fistula. Int J Gynecol Obstet. 1992; 37:127-30.
8. Goldstein I, Wise GJ, Tancer ML. A vesicovaginal fistula and intravesical foreign body: a rare case of the neglected pessaty. Am J Obstet Gynecol. 1990; 163:589-91.
9. Sharma SK, Madhusudnan P, Kumar A. Vesicovaginal fistula in childhood. Urology. 1980; 1:36-9.
10. Persky L, Forsythe W, Herman G. Vesicovaginal fistula in childhood. Urology. 1980; 1:36-9.
11. Rousseau T, Sapin E, Helardot PG. Congenital vesicovaginal fistula. Br J Urol. 1996; 77:760-1.
12. Suarez GM, Burden JJ. Isolated congenital vesicovaginal fistula. J Urol. 1983; 129: 368-70.
13. Sotelo R, Mariano M, Garcia-Segui A. Laparoscopic Repair of vesicovaginal fistula. J Urol. 2005; 173:1615-8.
14. Hilton P. Vesicovaginal fistula: new perspectives. Curr Opin Obstet Gynecol. 2001; 13:513.
15. O'Conor VJ Jr. Review of experience with vesicovaginal fistula repair. J Urol. 1980 Mar; 123(3):367-9.
16. Ou CS, Huang UC, Tsuang M, Rowbotham R. Laparoscopic repair of vesicovaginal fistula. J Laparoendosc Adv Surg Tech A. 2004 Feb; 14(1):17-21.
17. Shlomo R. Editorial comment: early vesus late repair of vesicovaginal fistulas. J Urol 1995; 153:1112.
18. Miller EA, Webster GD. Current management of vesicovaginal fistula. Curr Opin Urol. 2001 Jul;11(4):417-21.
19. Lee RA, Symmonds RE, Williams TJ. Current status of genitourinary fistula. Obstet Gynecol. 1988 Sep;72(3 Pt 1):313-9.