

Fístula colovesical secundaria a diverticulitis complicada: tratamiento laparoscópico - Reporte de caso

Colovesical fistula secondary to complicated diverticulitis: laparoscopic treatment - A case report

Alfonso León Gómez Pineda ^a, Gonzalo Domínguez Alvarado ^b, Paula Andrea Peña ^c,
María Fernanda Orozco ^d, Luis Ernesto López Gómez ^e.

- a. Medical Student. Universidad Autónoma de Bucaramanga. Semillero de innovación e investigación en cirugía (SIIC). Floridablanca, Santander, Colombia. ORCID: <https://orcid.org/0000-0002-7224-0906>
- b. MD. Specialist in Epidemiology. Professor, Director of the Surgical Research, and Innovation Group. Universidad Autónoma de Bucaramanga. Floridablanca, Santander, Colombia. ORCID: <https://orcid.org/0000-0002-7512-8733>
- c. Medical Student. Universidad Autónoma de Bucaramanga. Semillero de innovación e investigación en cirugía (SIIC). Floridablanca, Santander, Colombia. ORCID: <https://orcid.org/0000-0001-9938-6625>
- d. Medical Student. Universidad Autónoma de Bucaramanga. Semillero de innovación e investigación en cirugía (SIIC). Floridablanca, Santander, Colombia. ORCID: <https://orcid.org/0000-0002-5544-0340>
- e. MD. Specialist in General and Oncological Surgery, Foscal Internacional Clinic. Fellowship in obesity, Gastro Obeso Center of São Paulo. Professor of Surgery Universidad Autónoma de Bucaramanga. Floridablanca, Santander, Colombia. ORCID: <https://orcid.org/0000-0002-3666-2159>

DOI: 10.22517/25395203.24872

ABSTRACT

Introduction: The colovesical fistula is a junction between the urinary bladder and the large intestine. It occurs in 2% of patients with diverticular disease of the colon and generates symptoms such as pneumaturia and fecaluria associated with recurrent urinary tract infections. The patients are diagnosed by imaging studies and their treatment is usually surgical.

Objective: To report the laparoscopic treatment administered to a patient that presented a case of colovesical fistula secondary to severe diverticulitis.

Case report: The case of a 69-year-old male patient with a medical record of diverticular disease, who presented recurrent urinary tract infection, fecaluria, and pneumaturia. The cystoscopy procedure showed no signs of anal fistula, and the abdominopelvic tomography showed signals of inflam-

mations and colovesical fistula associated with complicated diverticulitis. During the laparoscopic procedure, a pericolic abscess was found without evidence of anal fistula. Drainage and suture of the colon and omentum interposition were performed without presenting intestinal resection. The patient had an adequate postoperative recovery and was discharged on the sixth day. The aim of this surgical treatment is focused on the control of medical complications caused by diverticulitis, in this case, colovesical fistula.

Conclusions: This procedure is minimally invasive, and it is associated with a faster functional recovery since it does not present the morbidity of a colon resection or colostomy.

Keywords: Intestinal fistula, diverticulum, abdominal abscess, laparoscopy.

Introduction

The colovesical fistula (CVF) is a pathological communication between the bladder and the large intestine, caused mainly by diverticular disease of the sigmoid colon (80%) which the probability of developing CVF in the presence of diverticular disease ranges from 1-4% of cases (1); followed by colon cancer (15%) and other less frequent causes such as Crohn's disease (5%), radiotherapy complications, bladder cancer and iatrogenic lesions (1,2).

This communication favors the passage of intestinal content towards the bladder and vice versa, that is why there are multiple clinical manifestations such as pneumaturia (71% - 90%) and fecaluria (51% - 76%), which are considered signs pathognomonic of this pathology (3). The presence of fecal matter in the urinary tract provides the environment for the appearance of recurrent urinary tract infections, which is why the presence of irritative urinary symptoms is frequent in these patients (66%); In addition, other manifestations such as abdominal pain (71%), hematuria (30%) and localized peritonitis (14%) (2) may occur. The clinical manifestations of this entity vary from one patient to another, becoming as severe as an urosepsis, more frequent in older adults (3).

The diagnosis of CVF is generally made by the clinical chart of the patient, but verification through imaging tests is important to confirm it, locate the area where the fistula is located, and rule out the presence of other possible complications (4). There are multiple imaging studies that allow the identification of CVFs, among these the gold standard is computed tomography (CT) with double contrast, since it has a high sensitivity (> 90%) to

identify the lesion and allows the visualization of adjacent structures (4,5). The treatment of CVF is mainly surgical, generally by laparotomy the correction of the fistula and resection of the compromised intestinal segment is performed (5).

The objective of this case report is to present the clinical history and the atypical evolution of a colovesical fistula secondary to complicated diverticulitis grade IIb, managed by laparoscopic technique, without resection of the affected intestinal segment.

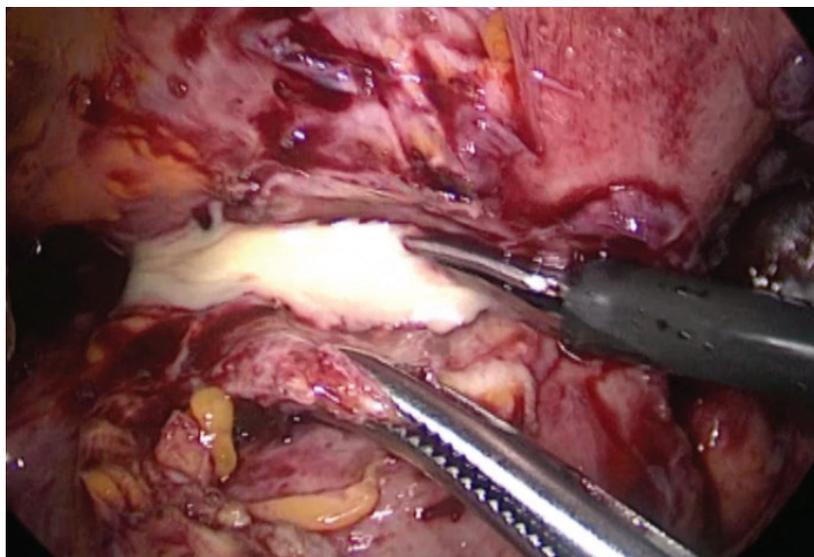
Case report

69-year-old male patient with a clinical history of diverticular disease, arterial hypertension (AH) and benign prostatic hyperplasia (BPH). Admission to the emergency department due to a one-week clinical chart characterized by pain in the hypogastrium associated with dysuria, pollakiuria, tenesmus vesical, and non-quantified fever. At the admission physical examination, a bladder balloon was founded despite positive urination, admission paraclinics with altered renal function, albuminuria, hematuria, bacteriuria, and positive urine culture for multi sensitive *Escherichia coli* (E. Coli) and initial diagnostic impression of a complicated urinary tract infection, for which a bladder catheterization was performed and started antibiotic therapy.

During in-hospital management he presented an episode of fecaluria and pneumaturia, suggestive of CVF, a transurethral cystoscopy was performed in which no fistulous tracts were evident. At the lack of aetiology, a double contrast abdominopelvic Computed Tomography (CT) was performed, inflammatory findings with air inside evidenced the presence of a colovesical fistula associated with complicated diverticular disease (Figure 1). The patient was assessed by general surgery who considered the clinical chart and imaging findings that he required surgical treatment with closure of the fistulous orifice.



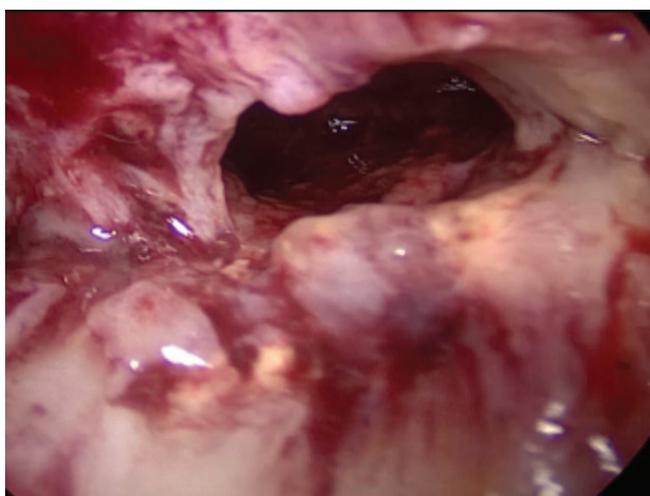
▲ Figure 1. Abdominopelvic computed tomography: sagittal cut where diverticulum is evidenced at the colonic level, good pericolic abscess (White arrow), with air bubble inside it (Yellow arrow).



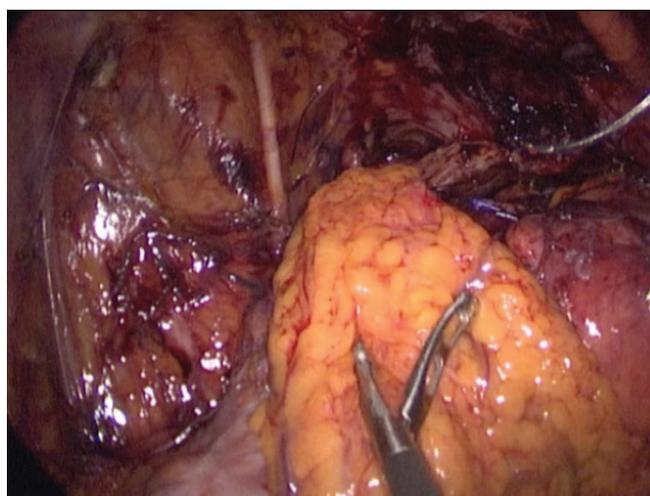
▲ Figure 2. Intraoperative picture: Drainage of pericolic abscess between the sigmoid colon and bladder.

The laparoscopic procedure was performed under general anesthesia. Presence of inflammatory changes with phlegmon-like of the sigmoid colon towards the pelvis. By meticulous dissection, it is possible to separate the antimesenteric border of the sigmoid colon from the posterior aspect of the bladder, identifying in this place a purulent collection between the bladder and the colon (Figure 2).

The abscess is drained, establishing the post-operative diagnosis of a pericolic abscess with colovesical fistula (Figure 3).



▲ Figure 3. Intraoperative picture: Abscess cavity after drainage.



▲ Figure 4. Intraoperative picture: Interposition with omentum suture patch between the sigmoid colon and the bladder

Closure of the sigmoid defect was performed, without sigmoidectomy. Interposition of the omentum between the bladder and the anterior aspect of the rectum, fixing it with silk stitches to the perirectal tissue (Figure 4).

Drain is left in the pelvic fossa. (Figure 5) Permanent bladder catheter.



▲ Figure 5. Intraoperative picture: Placement of drain in abdominopelvic cavity.

Satisfactory evolution post-operative. Clear and scarce drainage. Tube diuresis in adequate quantity and appearance. He was discharged with no symptoms six days after the procedure. 24-month follow-up and the patient remains asymptomatic, he denies new episodes of urinary infection.

Discussion

CVF is an abnormal communication between the intestine and the bladder which in 80% of cases is secondary to complicated diverticulitis, being more frequent in elderly patients, with a 3:1 ratio in men (6), which agrees with our patient.

In this case, we present a patient with a clinical history of diverticular disease that presents the usual symptoms of CVF, due to pneumaturia and fecaluria associated with irritative urinary symptoms. These symptoms are considered pathognomonic of this complication and are experienced by more than 75% of patients with CVF, so it is possible to make a clinical diagnosis (7-9).

In the presence of pathognomonic symptoms that suggest the diagnosis of CVF, it is necessary to use additional diagnostic tests to confirm the existence of the fistula, clarify the etiology, observe adjacent structures, and determine the therapeutic strategy (9). Among the most widely used studies

is the CT with oral and intravenous contrast as a first-line examination, it has a sensitivity of 92% to 100%, the findings described in the literature are the presence of air in the bladder, thickening of the bladder and intestinal wall, presence of colonic diverticula and the presence of a paravesical mass of soft tissue with air inside it (4,8,9).

Magnetic resonance imaging (MRI) has a sensitivity of 100%, it can detail the morphology of the fistula and its anatomical location (10); However, it is not performed routinely in our environment since it is an expensive and not very accessible study. The most widely used endoscopic examination is cystoscopy, a useful tool to detect bladder alterations, but its sensitivity in this case is only 35% to 60%, in which it can be directly visualized the orifice of the fistula or suggestive findings such as the edema, erythema or ulceration of the bladder wall. (4, 8,10). For this case, cystoscopy was used in the first instance, in which no suggestive findings of CVF were found, but, due to the patient's symptoms, it was decided to perform a tomography where the fistulous tract was found.

The management of CVF is divided into conservative and surgical. Conservative treatment consists of intestinal rest with total parenteral nutrition, antibiotic therapy, steroids, and drainage of the urethral catheter. This approach is considered feasible in patients with a short life expectancy, poor general condition, or who are not suitable for major surgery; However, it has been associated with a higher risk of sepsis, that is why the indication in general population is to carry out surgical management (6,8).

Regarding surgical treatment, it consists of resection and anastomosis of the affected intestinal segment and closure of the bladder (5,9,11). Traditionally it has been carried out through Laparotomy; Nevertheless, a new approach in this management is laparoscopic surgery with which greater benefits have been found. Gilshtein et al, showed a lower morbidity rate with laparoscopic surgery (11.8%) versus laparotomy (50%), being this result statistically significant (p:0.027); In addition, a seven-fold higher odds ratio (OR) of presenting complications in the surgical wound was found for the laparotomy group (p: 0.023) (12). Likewise, a shorter hospital stay has been



This approach is considered feasible in patients with a short life expectancy, poor general condition, or who are not suitable for major surgery...»

«It is important to highlight that there is a probability of conversion to open surgery when undergoing laparoscopy in 5-40% of cases...»



found in patients with diverticular disease undergoing laparoscopy compared to patients undergoing open surgery (SMD: -7.65, 95% CI (-10.96, -4.32), p: 0.000) (13,14).

It is important to highlight that there is a probability of conversion to open surgery when undergoing laparoscopy in 5-40% of cases, especially in patients with certain specific conditions, such as the location of the fistula in the posterior wall of the bladder, a history of previous abdominal operations and difficulty in seeing the CVF in the pelvis (14,15).

Considering that this patient did not have any comorbidity or risk factors for conversion to open surgery, it was decided to perform a minimally invasive procedure. During the surgical procedure, the fistulous orifice was not evidenced, which does not rule out the diagnosis of CVF, on the contrary it is an example of adequate preoperative management, which allowed natural epithelialization and closure of it, leaving therefore the pericolic abscess that did not have natural exit route, for which its drainage was essential. In the same way, due to intraoperative findings closure of the sigmoid defect is performed, without sigmoidectomy, with the interposition of the omentum between the bladder and the anterior face of the rectum, offering a preserving management of the organ, thus avoiding prolongation of the operative time and higher related morbidities with it.

There is currently no significant evidence to suggest a gold standard for the management of CVF. Therefore, it is important to individualize the patient to choose the best therapy (16). To define safety and efficacy, multicenter studies with the highest level of evidence should be carried out, which allows evaluating the variables that can predict a better or worse outcome and considering a safe, effective, and reproducible process.

Conclusion

CVF is a complication that occurs in 2% of patients with colon diverticular disease, especially in elderly people. The clinical history of this pathology is characteristic, and it can be confirmed with images. Regarding to treatment, taking into account the limited number of studies, the laparoscopic approach can be considered first line in patients with low risk of conversion to open surgery, since it is associated with a faster functional recovery and

a lower rate complications. In this case, it was decided not to carry out the sigmoidectomy, offering a preserving management of the organ, thus avoiding prolongation of the operative time and greater morbidities related to it. The maneuver of interposition of the omentum between the bladder and the colon, suturing it as a patch, offers security of the isolation of these two viscera.

References

1. Szymanska A, Szopinski T, Bukowczan J. Fistulas enterovesicales: etiología, imagenología y manejo. *Gastroenterol Res Pract*. 2013; 2013: 617967. doi: 10.1155 / 2013/617967.
2. Garcea, G., Majid, I., Sutton, C. D., Pattenden, C. J., & Thomas, W. M. (2006). Diagnosis and management of colovesical fistulae; six-year experience of 90 consecutive cases. *Colorectal Disease*, 8(4), 347–352. <https://doi.org/10.1111/j.1463-1318.2005.00928.x>
3. Castilla O, Rodriguez A., Campaña G. Fistula colovesical secundaria a enfermedad diverticular: cirugía laparoscópica electiva. *Rev Chil Cir* . 2012. (64) 278-281. doi: 10.4067/S0718-40262012000300010.
4. Zagoria R.,Dyer R.,Brady C. *The Lower Urinary Tract. Genitourinary Imaging: The Requisites*. Philadelphia: Elsevier; 2004.
5. Biffoni M., Urciuoli P., Grimaldi G., Eberspacher C. Colovesical fistula complicating diverticular disease: diagnosis and surgical management in elderly. *Minerva Chir*. 2019 Apr; 74(2): 187-188. doi: 10.23736/S0026-4733.18.07723-4.
6. Cochetti G, Del Zingaro M, Boni A, Cocca D, Panciarola M, Tiezzi A, Gaudio G, Balzarini F, Ursi P, Mearini E. Colovesical fistula: review on conservative management, surgical techniques and minimally invasive approaches. *G Chir*. 2018 Jul-Aug;39(4):195-207. PMID: 30039786.
7. Leicht W., Thomas C., Thüroff J., Roos F.. Colovesical fistula caused by diverticulitis of the sigmoid colon: diagnosis and treatment. *Urologe A*. 2012 Jul;51 (7):971-4. doi: 10.1007/s00120-012-2910-x.
8. Harcharan G. Diagnosis and surgical management of uroenteric fistula. *Surg Clin N Am* 96 (2016) 583–592. <http://dx.doi.org/10.1016/j.suc.2016.02.012>
9. Melchior S., CudovicD., Jones J., Thomas C. Diagnosis and surgical management of colovesical fistulas due to sigmoid diverticulitis. *J Urol*. 2009 Sep;182(3):978-82. doi: 10.1016/j.juro.2009.05.022.
10. Tang YZ, Booth TC, Swallow D, et al. Imaging features of colovesical fistulae on MRI. *The British journal of radiology*. 2012; 85(1018):1371-1375. doi:10.1259/bjr/55871151
11. Tomizawa K, Hanaoka Y, Moriyama J1, Matoba S1. Laparoscopic surgery for colovesical fistula associated with sigmoid colon diverticulitis: a review of 39 cases. 2019; 3 (1): 36–42. doi: 10.23922 / jarc.2018-008
12. Gilshtein, H., Yellinek, S., Maenza, J., & Wexner, S. D. (2020). Surgical management of colovesical fistulas. *Techniques in Coloproctology*, 24(8), 851–854. <https://doi.org/10.1007/s10151-020-02247-0>
13. Siddiqui, M. R. S., Sajid, M. S., Khatri, K., Cheek, E., & Baig, M. K. Elective open versus laparoscopic sigmoid colectomy for diverticular disease: A Meta-analysis with the sigma trial. *World Journal of Surgery*. 2010; 34(12), 2883–2901. <https://doi.org/10.1007/s00268-010-0762-3>
14. Marney L., Hong Y. Laparoscopic Management of Diverticular Colovesical Fistula: Experience in 15 Cases and Review of the Literature. *Int Surg*. 2013 Apr-Jun; 98(2): 101–109. doi: 10.9738/INTSURG-D-13-00024.1
15. Kitaguchi D., Enomoto T., Ohara Y. Laparoscopic surgery for diverticular colovesical fistula: single-center experience of 11 cases. *BMC Res Notes*. 2020. Mar 24;13(1):177. doi: 10.1186/s13104-020-05022-4.
16. Badic, B., Leroux, G., Thereaux, J., Joumond, A. Colovesical Fistula Complicating Diverticular Disease. *Surgical Laparoscopy, Endoscopy & Percutaneous Techniques*. 2017 April 27(2), 94–97. doi:10.1097/sle.0000000000000375.