



Vesicoperineal Fistula: A Rare Rectal Cancer Treatment Complication

Fístula Vesicoperineal: Uma Complicação Rara Após Tratamento de Cancro Rectal

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Abstract

A vesicoperineal fistula is an uncommon entity, described as an aberrant tract between the bladder lumen and the cutaneous surface of the perineum.

We present the case of a 78-year-old male who underwent abdominoperineal resection and chemoradiotherapy for the treatment of non-metastatic, locally advanced rectal cancer.

Five years later, he developed a pelvic floor hernia and underwent perineal mesh repair. A few months postoperatively, he was diagnosed with a vesicoperineal fistula. The patient subsequently underwent fistulectomy with coccygectomy, partial cystectomy, and reconstruction using a gluteal muscle flap and skin graft.

This case represents a late complication of rectal cancer treatment.

Fistulas secondary to radiotherapy are complex and challenging to manage, often associated with concomitant pelvic pathology. Management should be individualized and based on a case-by-case approach.

Keywords: Radiation Injuries/therapy; Urinary Fistula/diagnostic imaging; Urinary Fistula/surgery

Resumo

As fístulas vesicoperineais são entidades raras, caracterizadas por um trajeto anómalo entre o lúmen vesical e a superfície cutânea do períneo. Apresentamos o caso de um homem de 78 anos submetido a ressecção abdominoperineal e quimiorradioterapia para tratamento de um carcinoma retal localmente avançado, não metastático.

Cinco anos após o tratamento, o doente desenvolveu uma hérnia do pavimento pélvico, tendo sido submetido a reparação perineal com colocação de rede. Alguns meses após o procedimento, foi diagnosticada uma fístula vesicoperineal.

Foi então realizada uma fistulectomia com coxigectomia, cistectomia parcial e reconstrução com retalhos glúteo e cutâneo.

Este caso representa uma complicação tardia do tratamento do carcinoma do reto. As fístulas secundárias à radioterapia são

lesões complexas e de difícil resolução, frequentemente associadas a outras afecções pélvicas. A abordagem terapêutica deve ser cuidadosamente individualizada, considerando a extensão da lesão e as condições clínicas do doente.

Palavras-chave: Fístula Urinária/cirurgia; Fístula Urinária/diagnóstico por imagem; Lesões por Radiação/tratamento

Introduction

Vesicoperineal fistula is an uncommon entity¹ described as an aberrant tract between the bladder lumen and the cutaneous surface of the perineum,² resulting in recurrent infections, discomfort, disability and poor quality of life.³ Risk factors include trauma, bladder calculi, surgery and pelvic radiotherapy.^{4,2} The onset of symptoms is widely variable and timely diagnosis and management are often complex.⁵

This is a case of a vesicoperineal fistula presenting several years after abdominoperineal resection with pelvic radiotherapy for rectal cancer and mesh repair of a perineal hernia.

Case Report

We present a case of a 78-year-old male who underwent abdominoperineal resection and chemoradiotherapy for the treatment of non-metastatic locally advanced rectal cancer. Five years later, he complained of bulging and pelvic discomfort, related to a pelvic floor hernia and was submitted to a perineal mesh repair. A few weeks later, he presented with gradually worsening pelvic pain, persistent drainage of clear fluid through a small wound adjacent to the coccyx and repeated urinary tract infections. He underwent cystography (Fig. 1 – A), cystoscopy (Fig. 1 – B) and magnetic resonance that confirmed the diagnosis of vesico-perineal fistula through the coccyx. The urine drainage through the fistula was approximately 500 mL/day and reduced to 100 mL/day with prolonged (4 weeks) bladder catheter placement; however, fistula closure was not verified. The patient was submitted to fistulectomy with coccygectomy, partial cystectomy, excision of mesh adjacent to the bladder and reconstruction with gluteus retail and skin flap (Figs. 2, 3 and 4). There was a partial wound infection and skin dehiscence, which was successfully treated with negative pressure therapy and antibiotics. At 14 months post-op, there was no recurrence of symptoms nor any late complications.

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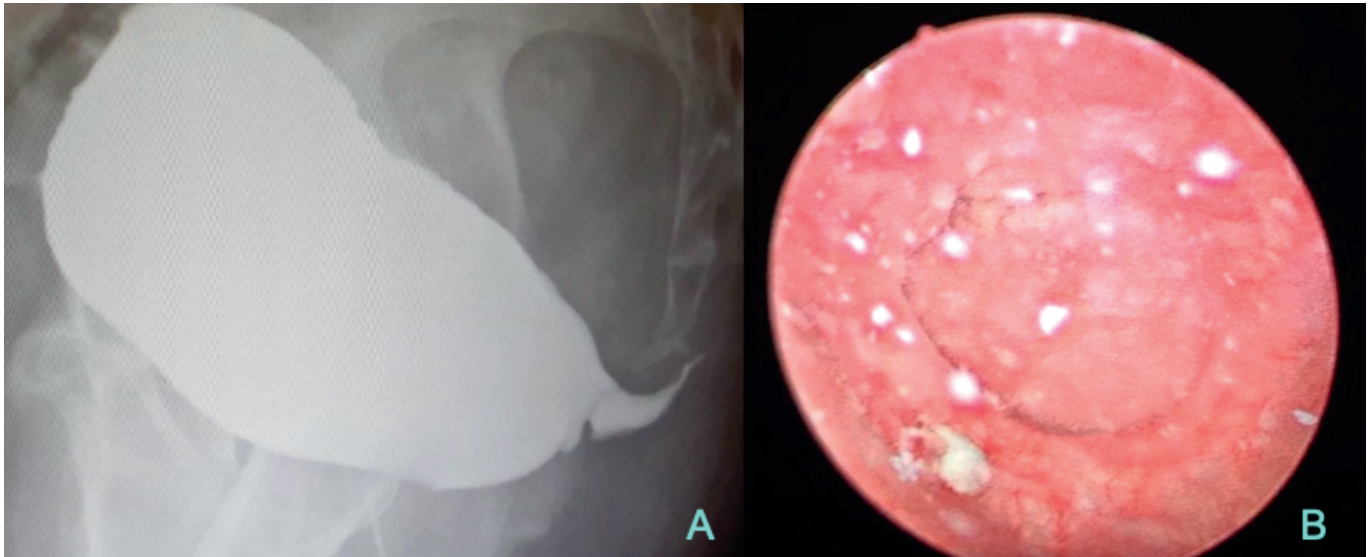


Figure 1 – Pre-operative cystography (A) and cystoscopy (B), revealing the fistulous tract.



Figure 2 – Positioning and surgical demarcations.

Discussion

This case represents a late and rare⁵ complication of rectal cancer treatment. Particularly associated with a perineal hernia mesh repair, several years after an abdominoperineal resection for locally advanced rectal cancer, with post-operative chemoradiotherapy.

Urinary fistulas are mostly related to obstetric trauma, especially in developing countries.⁶ Less frequently, genito-urinary and rectovaginal fistulas may result from sexual violence, malignant disease, radiation therapy, or surgical injury (most often to the bladder during hysterectomy or cesarean section).⁶ Surgical injury, malignant disease and radiation therapy are the predominant causes of the condition in industrialized countries.⁶

Vesicocutaneous fistulas (VCF) are often related to extensive trauma^{1,2} with pelvic bone fracture³ possibly with unrecognized bladder rupture,⁴ after bladder repair⁴ or a suprapubic cystostomy tract that fails to close,⁴ radical pelvic surgery,^{1,2-4,6} irradiation of pelvic malignancies,^{1-3,5} hip arthroplasty,³ bladder calculi,^{2,4} in-

flammatory processes, such as diverticulitis¹ and pelvic malignancies.¹

In cases of surgical injury, the damage to normal tissue is typically localized, while radiation and obstructed labor can cause more extensive damage through ischemia and scarring.⁶

Fistula formation after pelvic radiotherapy is caused by microvascular injury leading to stromal fibrosis, which then results in mucosal erosion, ulceration and eventually perforation, allowing a fistula to form.⁵ Specially with an association of pelvic malignancy and surgery, healing is significantly impaired, which increases the risk of fistula formation.¹

The onset of symptoms can occur anywhere from immediately after the injury/treatment to decades later.^{2,5}

Clinical presentation of VCF is variable, and may include discharge/urinary incontinence, disuria, skin lesions,^{1,6} resulting in a great deal of inconvenience, discomfort and physical disability³ and contributing to patients isolation from social gatherings, depression¹ and poor quality of life.

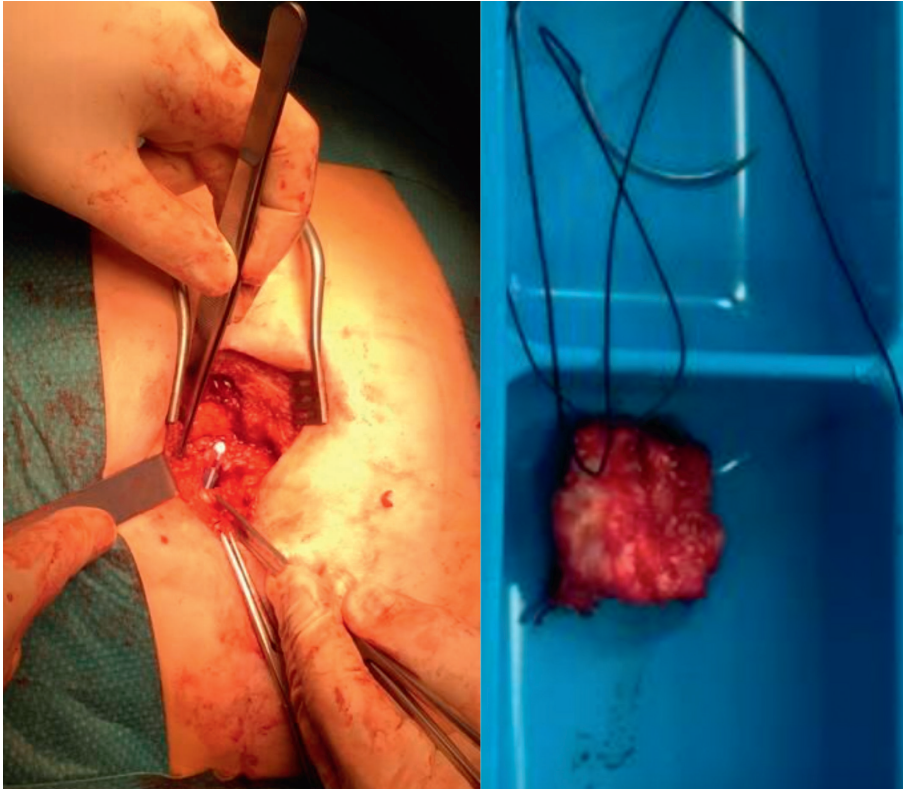


Figure 3 – Fistulectomy (bladder catheter visible through the fistula) and surgical specimen (coccygectomy).

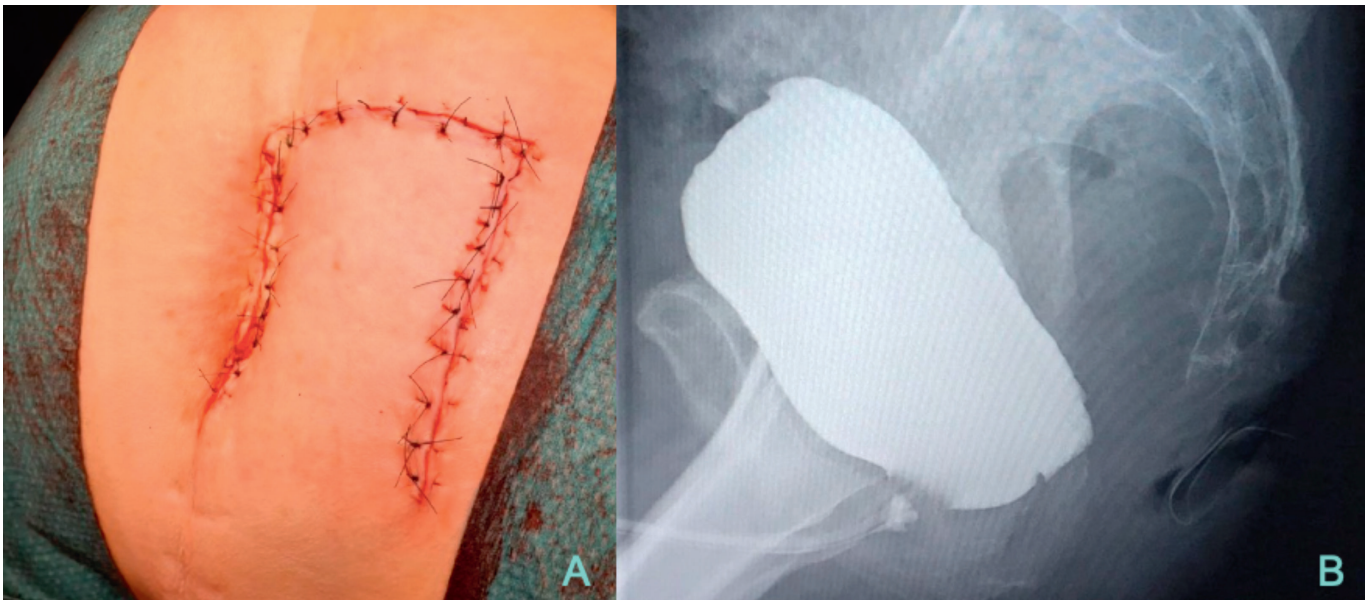


Figure 4 – Surgical wound immediately post-operatively (A) and post-operative cystography (B).

Diagnosis is based on clinical presentation and history (known malignancy, previous surgery, radiation therapy, cesarean section, obstructed labour)¹ and physical examination.¹ Vesical instillation of dye (e.g. methylene blue) can help localize the fistula.¹ Conventional intravenous urography has a sensitivity for the detection of fistulas as low as 33%.⁷ Therefore, cystoscopy, retro-

grade urography and cutaneous fistulography are useful for a complete characterization of location, length and anatomy,^{1,3} which is crucial for treatment planning.¹ Computed tomography (CT) and magnetic resonance imaging (MRI) are very sensitive, and are particularly useful for complex fistulous tracts and/or suspicion of concomitant malignancy.³ CT urography is curren-



tly the clinical standard for the evaluation of lower urinary tract fistulas.¹

Although some fistulas will heal conservatively, surgery is often required.³

Usually the first step is urinary diversion, to reduce urinary flow through the fistula.¹ Conservative management is particularly relevant in cases of low performance status or poor life expectancy.^{2,6} Some authors also encourage a conservative approach in cases of radiation-induced VCF, as the fibrosis and overall tissue viability¹ may increase the risk of further unfavorable outcomes.^{2,3,5,6} Unfortunately, such measures are seldom enough.¹ Surgical repair is often performed in a one-stage procedure, with or without cystoscopic assistance⁵ and includes excision of the fistulous tract with partial cystectomy and interposition of healthy tissue (e.g. omentum or myocutaneous flap) is recommended.^{1,5} Unfortunately, reconstructive efforts fail in up to 35% of cases.¹ Factors affecting wound closure should also be taken into account, such as the fistula output (reduced by urinary diversion) and urinary/local infections.⁴ Negative pressure therapy (NPT) can be useful in such cases.⁴ NPT promotes wound healing by removing excess exudate, reducing interstitial edema and improving blood flow to the area, stimulating the formation of granulation tissue and reducing wound surface area with edge contraction.³

Before surgery, it is necessary to consider the morphology and topography of the fistula, its primary cause (or causes), the performance status of the patient and the presence of tumor/local inflammatory response due to radiotherapy or infection.^{1,3,5} Such discussion should account for a multidisciplinary approach with surgeons, urologists, gynecologists and radiologists, depending on the cause and extent of the fistula.¹

Several risk factors were present in this case, that may have contributed for VCF occurrence: the surgical trauma of the abdominoperineal resection; the late effects of radiotherapy; the scarring and possible tissue erosion from the mesh repair; aside from the repeated urinary tract infections that on this particular case seem to be more of a consequence than a cause for the fistula. The delayed diagnosis may result in physical, psychological and social consequences for the patients,¹ requiring a raised awareness of this entity. Detailed knowledge of the fistula's size and location, etiology, integrity of anal and urethral sphincters, bladder functional status, extent of pelvic radiation damage and the patient's overall performance and nutritional status are essential for tailoring the appropriate approach.

Fistulas secondary to radiotherapy are complex and difficult to treat. They can be associated with concomitant pelvic affections such as fecal/urinary incontinence or urethral/vaginal strictures. To this date, there is no standardized approach for such fistulas, given its seldom occurrence and lack of studies and surgeon experience on large case series.^{1,2,6} Management should be based on a case-by-case approach.

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