Correção da Fístula Retouretral: Cirurgia de York-Mason, Princípios e Técnica Cirúrgica

Correction of Rectourethral Fistula: York-Mason Surgery, Principles and Surgical Technique

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Resumo

O nosso objetivo foi escrever, classificar, sistematizar e padronizar a técnica de York-Mason em pacientes que apresentam fístula após trauma por arma de fogo e, em casos mais comuns, que ocorrem feridas como complicações após uma prostatectomia radical retropúbica.

Três pacientes que apresentaram fístula retouretral. Um deles apresentou fístula retouretral após ferimento por arma de fogo. Dois casos após prostatectomia radical e um com radioterapia associada. Todos os pacientes foram submetidos a procedimentos cirúrgicos e avaliados prospectivamente, entre 2016 e 2018. A fístula retouretral foi avaliada pela classificação proposta por Rivera, e foi submetida à correção transesfincteriana de fístula retouretral pela técnica de York-Mason.

Podemos concluir que a resolução das fístulas retouretrais é factível, de fácil reprodução e evolui com poucas e leves complicações.

Palavras-chave: Fístula Retal/cirurgia; Fístula Urinária/cirurgia; Procedimentos Cirúrgicos Urológicos; Resultado do Tratamento

Abstract

We aimed to describe, classify, systematize and standardize the performance of the York-Mason technique in patients who present a fistula after trauma due to a gunshot wound and more common cases that occur, such as complications after a retropubic radical prostatectomy.

Three patients presented with rectourethral fistula. One of them presented rectourethral fistula after a gunshot wound. Two cases after radical prostatectomy, but one was associated with radiotherapy. All patients underwent surgical procedures and were prospectively evaluated between 2016 and 2018. The rectourethral fistula was assessed using the classification proposed by Rivera, who underwent transsphincteric repair of rectourethral fistula using the York-Mason technique.

We can conclude that the resolution of rectourethral fistulas is feasible, easily reproduced and evolves with few and mild complications.

Keywords: Rectal Fistula/surgery; Treatment Outcome; Urinary Fistula/surgery; Urologic Surgical Procedures.

Introduction

The rectourethral fistula (RUF) is a rare complication after a radical prostatectomy due to malignancy and is considered a devastating complication for the patient.[1] Around 60% of the cases are caused by iatrogenic lesions during surgical procedures (such as surgery, cryosurgery, radiotherapy and brachytherapy), unusual in cases of genitourinary trauma, infections or inflammations.[2] Its correction is a complex procedure with a high level of difficulty and depends on the choice and experience of the surgeon as well as the surgical techniques to obtain a satisfactory resolution of the case.[3]

Considering the different surgical techniques proposed for the treatment, the York-Mason surgery can be well applied and shows good outcomes. It is indicated in the correction of fistulas and benign stenosis and benign and malign tumors in the lower 2/3 of the rectum.

This article proposes to describe, classify, systematize and standardize the performance of this surgery, using cases from our service, which present a fistula after trauma due to a gunshot wound and more common cases that occur such as complications after a retropubic radical prostatectomy and radiotherapy. In three cases the surgery can be easily reproduced, regardless of the causes.

In 1960, the British surgeon Aubrey York Mason, from the St. Helier University Hospital in London, showed proof of the possibility of a surgical approach to the rectum with transsphincteric exposure. In 1969, York Mason and Kilpatrick introduced the transsphincteric parasacral coccygeal approach to repair rectourinary fistulas, and

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the York Mason surgery was officially published obeying the following principle: "The complete separation of the anal sphincters provides excellent access to the inside of the rectum [...] If the separated sphincters are sutured with precision restoring the anatomical layers, they cure and allow the patient to have normal defecation and complete anal continence".[4]

The median section of the sphincter is completely safe during the surgical incision regarding injury of the striated anal sphincter innervation, as the innervation occurs through the sphincteric somatic complex, supplied mainly by the fourth sacral nerve (S4 root) that runs laterally through the incision. The precise re-engagement of the anatomic layers is essential to guarantee good functional outcomes, and the technique we propose is described in this article, where the layers are repaired separately and distinguished by surgical fields, which considerably helps to identify and separate the layers, guaranteeing good surgical outcomes.

Rivera et al[5] proposed a classification to make the treatment of recto-urinary urethral fistulas easier (Table 1).

Table 1 - Classification to make the treatment of recto-urinary urethral fistulas easie.

Staging	Classification
Stage I	Non-irradiated fistula ≤ 4 cm from anal border
Stage II	Non-irradiated fistula > 4 cm from anal border
Stage III	Irradiated fistula located ≤ 2 cm from anal border
Stage IV	Irradiated fistula located > 2 cm from anal border
Stage V	Giant fistula usually related to pressure ulcers

According to this classification, endoanal correction is feasible in stage I, and the York-Mason surgery is indicated for stages II and III, possibly being performed in stage IV. Stage V fistulas undergo multimodal treatment, usually with the need to perform intestinal diversions.[3]

Case Reports

Case 1

A male Caucasian patient, 48 years old, was shot with a firearm. The shot entered the base of the penis on the right and to the right of the thorax in August 1999. He underwent emergency surgery in a trauma hospital, developing fecaluria, pneumaturia and recurrent infections in the lower urinary tract after being discharged from the service where he was treated. A colostomy became necessary effectively in April 2003 due to pyelonephritis associated to urinary sepsis. An internal urethrotomy was also carried out due to urethral stenosis in 2005, and the patient complained of difficulty urinating and a larger amount of urine coming out of the anus compared to the urethra.

He came to our service complaining of pneumaturia and was eliminating urine through the anus and using antibiotics occasionally due to lower urinary tract infections.

His physical examination showed a good general state of health, he was ruddy and hydrated, with no alterations in the cardiopulmonary system, presented a discreetly globular innocent abdomen, no pain or palpable masses and had a loop colostomy on the right side.

The digital rectal exam presented a rectum free of polyps, with urine coming out during the test. The prostate had approximately 30 g, was smooth, without palpable nodules, fibroelastic, with free lateral recesses and without palpable perception of the rectourethral fistula.

A retrograde and voiding cystourethrography was performed, showing the presence of urethral contrast associated with rectal, sigmoid and ascending colon contrast, without a clear view of the urethroprostatic fistula, however showing the probable location of the fistula. A rectourethral fistula was diagnosed 5 cm from the anal border (Fig. 1). Rivera Classification, stage II.

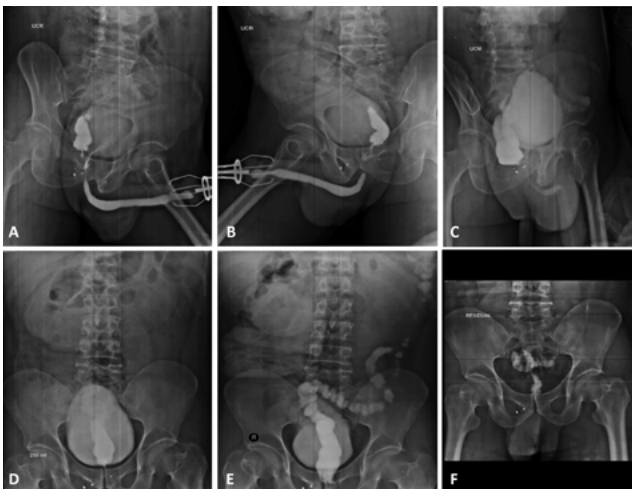

Figure 1 - Cystourethrography with evidence of a rectourethral fistula with contrast of urethra and rectum, showing permeability of bladder to rectum, without signs of urethral stenosis. Post-traumatic fistula.

Case 2

The second case involves a male Caucasian patient, 63 years of age, diagnosed with a prostate Gleason 7 (3+4) adenocarcinoma in 6/12 fragments, in the left base, mid left and left apex regions. A biopsy was made due to the increased PSA value of 6.3. The physical examination presented good general health conditions. The patient was ruddy, hydrated, showed no changes in

the cardiopulmonary system, had an innocent abdomen, not too globular, without pain or palpable masses. The digital rectal exam of the prostate showed an organ of around 30 grams of fibroelastic consistency, without nodules or stiffness, characterizing clinical stage T1c.

A radical prostatectomy was indicated together with a bilateral retropubic obturator lymphadenectomy. The surgery was performed without complications and lasted around 2 hours, with a hemorrhage volume of 400 mL and sparing of the neurovascular bundles. The possibility of intraoperative rectal injury was not observed, however, after about 2 weeks, following the removal of the urinary catheter, the patient suffered urinary loss through the anus and complained of fecaluria and pneumaturia, associated with urine with a strong smell and a urinary infection was diagnosed through a urine culture test. Colostomy was not performed in this patient.

After being diagnosed with a rectourethral fistula, a retrograde and voiding cystourethrography was performed showing the fistula, with rectal, sigmoid and ascending colon contrast, and a view of the probable fistulous region - about 4cm from the anal border (Fig. 2). Rivera Classification, stage II.

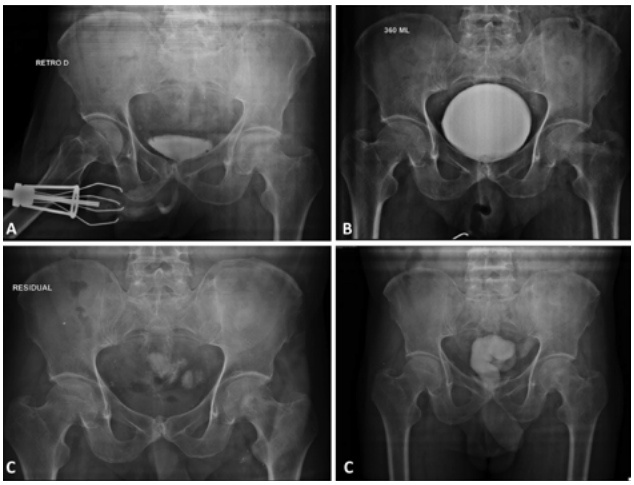

Figure 2 - Cystourethrography showing bladder-filling phase and full bladder without the perception of contrast overflow into the rectum (A and B), rectal contrast through the fistula (C), and residual with emptying close to that of complete bladder and rectum (D), which can cause fecaluria and pneumaturia as well as recurrent UTI. Post radical prostatectomy fistula.

Case 3

The third case involves an African-American patient, 57 years old, diagnosed with prostate cancer Gleason 7 (4+3) adenocarcinoma in 8/12 fragments, in both lobes. A biopsy after a suspicious digital rectal exam with an apparently extra-prostatic involvement (cT3), and an initial PSA of 17.2. He was submitted to a retropubic prostatectomy plus extended lymphadenectomy. During surgery, there was a small rectal lesion of 0.5 cm, closed with interrupted double-layer 3-0 polyglactin suture. He was discharged after 4 days and returned after 2 weeks for urinary catheter removal, evolving with pneumaturia and urinary loss from the anus. Postoperative pathology indicated a Gleason 5+4 with extraprostatic and seminal vesicle invasion, and lymph node involvement (pT3bN1). Radiation therapy was indicated because of a biochemical recurrence after 4 months. In this period, he evolved with urethral stenosis and cystostomy by an emergency general surgeon and colostomy. A cystography was performed and confirmed a fistula, about 3 cm from the anal border, classified as Rivera stage IV.

The York-Mason rectourethral fistula correction surgery was indicated in all patients.

Figure 3 - Cystourethrography with evidence of a rectourethral fistula with contrast of urethra and rectum, showing permeability of bladder to rectum.

Discussion

Described by Kilpatrick and Mason in 1969, with a transsphincteric parasacral-coccygeal opening and modified in 1970 by York-Mason.[3]

It basically consists of preoperative preparation with antibiotic prophylaxis, urinary catheterization with an 18 Fr Foley catheter, with the patient in the prone jack-knife position (Fig. 4) where buttocks are retracted with heavy tape to expose the anal cleft and the anus (Fig. 5). A median incision is made in the skin of the intergluteal cleft, from the anal margin to the level of the coccyx (small variation in the York-Mason surgery, which makes the incision laterally to this vertebra, and was done on the patient with a post-prostatectomy fistula).[2] The wall posterior to the rectum is sectioned using

electrocautery, the layers are identified and repaired with Catgut threads per plane during the sectioning. It could have been necessary to resect the last coccygeal vertebra, as done in the first patient, however, it was not necessary in the second case, without further complications or increase in patient morbidity.[2]

Figure 4 - Jack-knife position.

The posterior wall of the rectum is then opened and repaired with wires in the cranial and caudal portions and sectioning of the sphincter complex (external and internal sphincter and anus levator muscle).[2-4] The wires that repair each of the layers up to the rectal opening have the objective of increasing the ease of synthesis per plane for surgical closure.

Figure 5 - Retraction of buttocks for exposure.

After reaching the rectum through an opening in its posterior wall, which provides excellent exposure to the anterior wall of the rectum and anus as well as the rectourethral fistula, the latter is then identified and catheterized with a 10 Fr. urethral probe, and completely resected with the help of a cold blade and scissors. The resection of the rectal and urethral walls and the underlying tissues is also performed, and the Foley catheter becomes visible in the urethra.[2]

After resecting the fistula, the resected borders are brought close together in 4 planes, with absorbable polyethylene glycol thread (Vicryl) 3.0 and separate sutures, where 3 of the planes are longitudinal and the fourth in the direction of the rectal wall, transversal to the rectum. There is no need to place the tissue between the urethra and the rectum (Fig. 6),[2] like transsphincteric modified for Dafnis.[6]

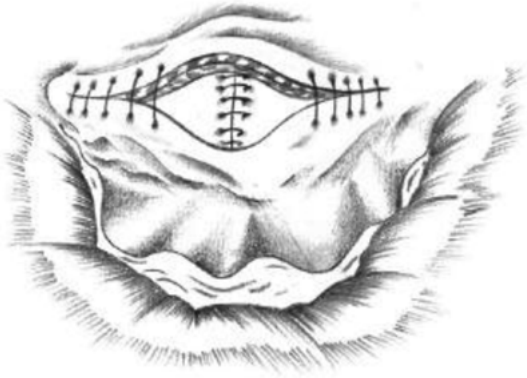

Figure 6 - Suture per plane in perpendicular direction.

The synthesis of the posterior rectum wall is performed with absorbable polyethylene glycol thread (Vicryl) 3.0 with a continuous suture and from the posterior wall to the rectum in planes, with polyethylene glycol thread using continuous sutures in 5 distinct planes, with approximation of the external anal sphincter already previously repaired (Fig. 7).

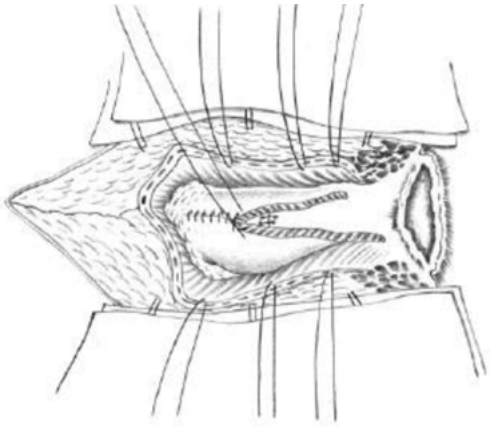

Figure 7 - Repairing per planes of layers posterior to rectum wall.

Synthesis of the anal mucosa with absorbable poliglecaprone (mono-cryl) 4.0 occurs with simple stitches using nylon thread 4.0 and Donatti stitches in the skin of incision. An occlusive dressing is placed without the need to maintain the catheter in the coccygeal vertebra that was removed or other additional measures.

All patients evolved in a similar manner. Immediately after the surgery, neither of the patients complained of local pain, bleeding or anything else. They were discharged on the 2nd day after surgery with a delaying vesical catheter through the urethra, using antibiotics for gram-negative and anaerobic bacteria for 15 days and they were asked to return in 1, 2 and 3 weeks after surgery.

In the 1st week after surgery, the first patient was fine, with mild discomfort in the surgical wound, however without any further complaints, with urine output through the delaying vesical catheter and without urine output through the rectum. The second and third patient had absolutely no complaints, evolving in this manner during the follow-up period.

After another week, the first patient appeared at the outpatient clinic with mild pain in the region of the incision and a small amount of serous secretion from the surgical wound that did not present phlogistic signs. Local pain improved expression of seroma. The nylon stitches were then removed from the skin and the patient was directed to return after one week.

When the patient came back after three weeks, he was fine, with significant improvement of the pain and no other associated complaints.

After the third week, a voiding cystourethrography was performed, with contrast injection through the vesical catheter the patient had been using since the surgery and removal of the catheter for micturition, without performing the retrograde phase, to evaluate urethral permeability and leakage of extraurethral contrast or maintenance of the fistula (Fig. 7).

All tests from patients showed a bladder with good capacity, without diverticula or stones, the urethra showed no signs of stenosis, leakage of contrast, maintenance of the retrourethral fistula or contrasting of colon/rectum and absence of the final residue.

After removal of the delaying urinary catheter, 21º postoperative day the patient stated he was satisfied with the urinary stream, without voiding effort, and without urine being eliminated through the rectum.

All patients evolved similarly. Immediately after the surgery, neither of the patients complained of local pain, bleeding or anything else. They were discharged on the 2nd day after surgery with a delayed vesical catheter through the urethra, using antibiotics for gram-negative and anaerobic bacteria for 15 days and they were asked to return in 1, 2 and 3 weeks after surgery.

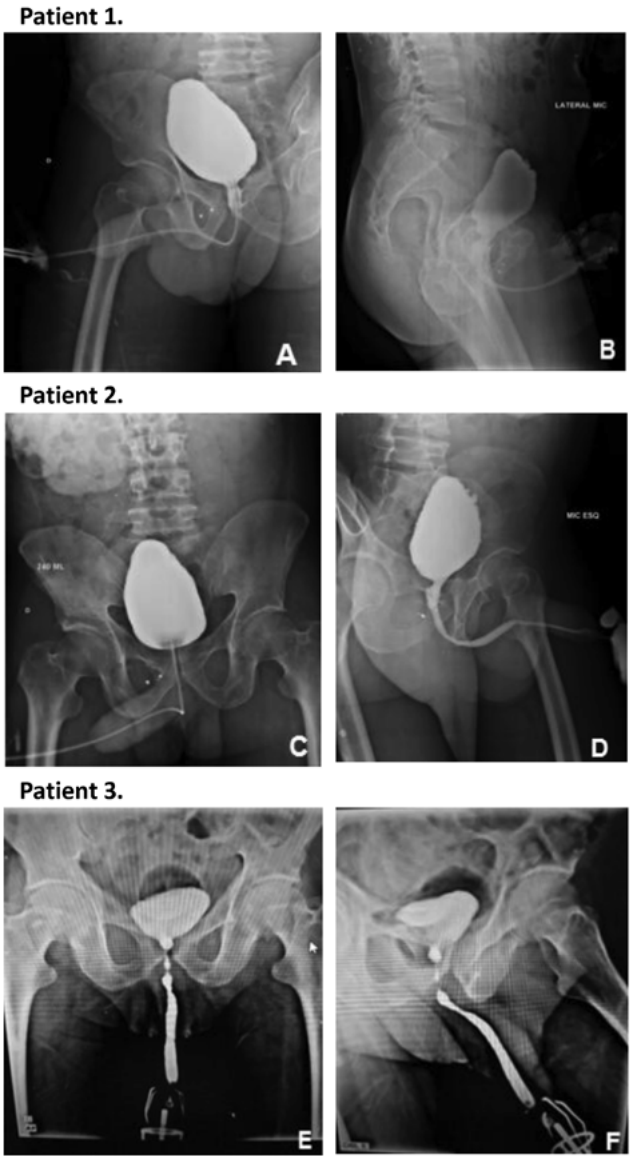

Figure 8 - Voiding cystourethrography with contrast injected through delaying vesical catheter, removal of catheter for micturition. Note the absence of contrast leakage in the rectum. Absence of fistulas, as well as stenosis or urethral narrowing in the micturition phases (**D** and **E**).

The first patient was followed up in the outpatient clinic, returning every 4 months in the first year, and evolving without new episodes of urine output through the anus or of pneumaturia. Reconstruction of the intestinal transit by the proctology team progressed well, without any new complaints of fecaluria or urinary infection.

The second patient progressed satisfactorily without complaints of fecaluria or pneumaturia, showing that there is no need for intestinal transit diversion for the surgery to be successful.

The third patient was submitted to an internal urethrotomy (anastomosis stricture) after 2 months, then the cystostomy was removed, with no fecaluria or urine loss from the anus, just mild incontinence, with the use of 1 pad/day.

The satisfaction of the patients as to the voiding and defecation standards is high, being considered within the normal range of what they had before surgery or the trauma that occurred.

Repairing each sectioned layer after the incision and performing the synthesis guided by these layers, makes the surgery simple and without complications such as fecal incontinence, anal stenosis or rectocutaneous fistulas.

Conclusion

Using the York-Mason surgery, the modified technique as well as the one described by Kilpatrick and Mason in 1969, we can conclude that the resolution of rectourethral fistulas is feasible, easily reproduced and evolves with few and mild complications.

Responsabilidades Éticas / Ethical Disclosure

Conflitos de Interesse: Os autores declaram a inexistência de conflitos de interesse na realização do presente trabalho.

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Declaração de Contribuição / Contributorship Statement

Todos os autores aprovaram a versão final do manuscrito para publicação e assumem responsabilidade por todos os aspetos do trabalho, garantindo a exatidão e a integridade dos dados apresentados.

All authors approved the final version of the manuscript for publication and assume responsibility for all aspects of the work, ensuring the accuracy and integrity of the data presented.

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