

Journal of Surgery [Jurnalul de Chirurgie]

Case Report



A Rare Cause of Entero-Vesical Fistula Caused by a Skewer, Multidisciplinary Management and Minimally-Invasive Surgical Correction

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Abstract

Entero-vesical fistulae (EVf) occurs rarely but it is a serious clinical condition often correlated with other pathologies. It accounts for 1 to 3000 hospital accesses/year. We present a patient with a sigmoid-vesical fistulae caused by the accidental ingestion of a wood skewer two years before. In literature about 6,09 % of accesses in the first aid area(FAa) are due to the ingestion of foreign bodies(FBs) but in 80-90% of them they are expelled with stools. In frequently FBs in the lower gastrointestinal tract can be the result of an orally ingested sharp object that becomes impacted. The management of this case was multidisciplinary, and the correction was a laparoscopic one time approach.

Introduction

Entero-vesical fistulas (EVf) are a communication between the bowel and the bladder. They can be of four types: colo-vesical, rectum-vesical, ileum-vesical and appendix-vesical according to the bowel tract involved. Most frequently they are colo-vesical and usually between sigma and the dome of the bladder. The colovesical are 70% , the ileovesical are 15% and the rectum-vesical are 10%[1] . They occur more frequently in male, about three times than female [2], due to the presence of the uterus. EVf can be caused by embriological abnormalities, infections, inflammatory bowel diseases, tumours, trauma and iatrogenic lesions [3]. The most frequent cause is the diverticular disease (Dd), 2/3 of total cases [4-7] and about 2-4% of patient with Dd have an EVf [5-10] ,after surgical treatment this percentage increases to 20% [9]. In neoplasia EVf can be caused by the primitive tumour usually from the bowel tract and rarely from the urinary tract or can be caused after radiotherapy [11-13] . The EVf in Crohn disease are usually ileo-vesical [10] while fistulas with the appendix are rare, less than 5 % [5,14], generally after appendicitis. Exceptional is the EVf after the perforation of Meckel's diverticulum [15]. Even more rare situations are iatrogenic lesions after surgery [3,16-19], and bullet wounds involving at the same time bowel and bladder [20,21]. At least there are FBs in the lower gastrointestinal tract like chicken bones and fish bones or Foley's catheter in the bladder. The clinical presentation of EVf is characterized by pneumaturia, fecaluria and, recurrent urinary tract infections [2,4,22,23]. Other symptoms are abdominal pain that occurs in the 40 % of patients and fever related with infections or inflammation [2,24,25]. The presentation is more often related to the urinary tract as the high pressure in the bowel tract define an unidirectional flow to the bladder [26,27]. For this reason these patients at the beginning apply to the Urologist and then their management becomes multidisciplinary involving the radiologist, the gastroenterologist and the surgeon.

Case Report

A 22 years old man presented with hematuria started 2 days before even though he was already treated with antibiotic therapy at home. He refers multiple episodes of urinary tract infections in the last 6 months that were resolved with common antibiotic therapy. Moreover he refer that at the last access in FAa, the urinary culture was positive for Escherichia Coli and so it was changed his antibiotic therapy and so he restored. Also at the interview he refers from some days bubbles in the urine and malodorous urine with the presence of vegetable pieces. His history is negative for other pathologies or trauma. So it was performed a cystoscopy that revealed two small lesions of the anterior wall of the bladder. But cystography resulted negative for the presence of fistula or wall discontinuity (Figure 1 and 2). So without a clear diagnosis even though the persistence of the symptoms it was performed a TC scan. At this exam we found a radiopaque filiform form (foreign body?), angled to the caudal third, with a maximum longitudinal size of about 6.5 cm and with a caliber of about 1-1.5 mm whose proximal and distal portions, crossed the wall and reaches both the lumen of the pelvic sigmoid loop and the lumen of the bladder (Figures 3-6).

That seems FBs thin and sharp towards the sigma and the bladder.



Figure 1: Right obligue projection: No abnormalities of the bladder wall or fistulas in place.

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Received June 23, 2014 ; Accepted July 03, 2014; Published July 20, 2014

Citation: Campagnacci R, Belfiori G, Sperti P, Ortenzi M, Kubolli I, et al. A Rare Cause of Entero-Vesical Fistula Caused by a Skewer, Multidisciplinary Management and Minimally-Invasive Surgical Correction. Journal of Surgery [Jurnalul de chirurgie] 2014; 10 (2): 195-198 DOI: 10.7438/1584-9341-10-2-19

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Figure 2: Left obligue projection: Confirms the absence of parital lesions.





Figure 4: Coronal (1).

Only at this time the patient remembered the accidental ingestion of a wood skewer two years before. So it was performed a laparoscopic approach combined with an intra-operative cystoscopy. During this operation it was divided the sigma from the bladder with identification of the two orifices of the fistula and the remove of the FBs that really was a skewer (Figure 7 A and B). A small part of the sigma involved in the fistula was resected and an end to end anastomosis was executed. The other orifice of the fistula was closed with 2 continuous sutures and an omental flap interposition after the identification of distal ureter tract and bladder's ostium by combined cystoscopy/laparoscopy. After the operation the vesical cathether was maintained for 12 days until the patient performed a new cystography that was negative. No recurrence of fistula occurred.

Discussion

The diagnosis of an enterovesical fistula poses a significant challenge

as there is no consensus on any clear gold standard for EVf workup. Nevertheless, diagnosis of EVf is necessary not only to establish the presence of a fistula but also to exclude stricture of the bowel and presence of abscess and to evaluate the tract of involved intestine to guide the subsequent treatment. Cystoscopy has the capability to identify potential but nonspecific lesions, such as erythema, oedema, and congestion. Even though cystoscopy can fail to detect EVf in 54-65 % of cases, its use is essential for the entire investigation process [4,6,28,29] . Considering that 10%-15% of colovesical fistulae are secondary to neoplasms, colonoscopy should be part of the diagnostic work-up of EVf in order to determine the bowel pathology responsible for the fistula formation [4,5,29] Cystography can demostrate the presence of contrast outside the bladder but may not a fistula [29] its detection rate for EVf ranges between 20% and 30% [30] . Another test that could be used is the poppy seed test that yielded the best detection rate (100%) in some series30. However Computed tomography (CT) is the procedure of choice for the diagnosis of entero-vesical fistulae due to its high accuracy (90-100%) for the detection of EVf, but



Figure 5: Coronal (2).



Figure 6: Volume rendering.



Figure 7A & B: Fragments of Foreign body removed laparoscopicaly.

more importantly it provides essential additional information about the adjacent anatomical structures [5,29]. In this case it was initially used cystoscopy and cystography as the patient was managed by the urologist because of his clinical signs. Since the strong clinical suspicion of an EVf, it was next performed directly a CT, in order to define and characterize it in the absence of other pathologies or comorbidities in a substantially well-being young patient.

About the Management of EVf, it can be considered a non operative one, based on the use of bowel rest, total parenteral nutrition, antibiotics, steroids, immunomodulatory drugs, and urethral catheter drainage. This one is preferred for patients minimally symptomatic with nonmalignant EVF origin, particularly in those with Crohn's disease [3]. Endoscopic, open, and laparoscopic approaches have all been used in surgical treatment of enterovesical fistulae [10,31,32]. Operative management of enterovesical fistulae is mainly dependent on the underlying pathology, site of the bowel lesion, and patient's preoperative status. The use of a laparoscopic treatment depends on the ability of the Surgeon in this technique. The aim of operative management is to resect and reanastomose the offending bowel segment and to close the bladder. The treatment may involve singlestage or multistage procedures [31,32]. Staged procedures have been advocated in patients with gross faecal contamination and large intervening pelvic abscesses or in those with advanced malignancy or radiation changes [32,33]. Bowel resection with primary anastomosis is advocated in the majority of EVF cases [32]. Successful one-stage resections have been reported in 18% to 92% of EVF cases [34] Surgical technique involves blunt dissection of the bowel from the bladder, resection of the intestine, and primary anastomosis. As an opening of a fistulous tract in the bladder may not be directly visible, distention of the bladder with methylene blue solution instilled through a catheter may be helpful. The type of bladder repair, whether excision or oversewing, is not of critical importance since small defects do not require closure and may be left to heal spontaneously. Although no strong evidence is available, if technically possible, interposition of the omental flap between the bladder and intestine may be employed. Such maneuver might improve healing process and reduce the fistula recurrence rate due to high vascularity and immunological properties of the omentum [35]. In this case we performed a laparoscopic one stage procedure in order to offer to the patient all the benefits of this technique as we are more familiar with it. Intraoperative cystoscopy was preferred than methylene solution as the skewer was near the ureter's outlet. In this way it was easily identified the bladder's opening, that was too big to heal spontaneously and so then it was sutured in safety.

Conclusions

Entero-vesical fistula is an uncommon complication of both malignant and benign processes and even a rare etiology must be considered, like in our case. Computed tomography is the most sensitive test for entero-vesical fistula as it allows the delineation of its course, and characterization of its complexity and its etiology, affecting the EVf management. The outcome of entero-vesical fistulae management is, in the majority of cases, positive. For this reason, we believe that in benign etiology lesions, a surgical one-stage preferably by a minimally invasive approach represents the management of choice in most cases.

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