

Interposition of the Appendix for Ureteral Reconstruction in a Patient Treated for Fibrosarcoma

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Abstract: The use of the appendix to reconstruct or replace the ureter is a feasible option in different situations. We present the case of ureteral reconstruction by interposition of the appendix in a patient treated for fibrosarcoma with resection of the retroperitoneal mass adhered to the mesentery and the upper third of the right ureter without cleavage plane. After reconstruction, the patient evolved with a urinary fistula that was resolved on the 29th day after conservative treatment. A computed tomography urography 30 days after surgery showed patency of the anastomosis and closure of the fistula. To the best of our knowledge, this is the first description of a patient submitted to ureteral reconstruction by interposition of the appendix in the surgical treatment of fibrosarcoma.

Keywords: Appendix, Ureteral reconstruction, Fibrosarcoma

Introduction

The first time the appendix was used to substitute the ureter was in 1912, but this procedure did not become common practice (Melnikoff, 1912). However, more recently in the last three decades, the appendix has been used for ureteral reconstruction in cases of extensive injuries of the ureter, ureteral stenosis after primary anastomosis, iatrogenic injuries, renal transplantation with necrosis of the ureter and ureteral neoplasms (Silva et al., 1999; Ximena & Chaves, 2009; Castillo et al., 2012). We did not find any data in the literature on ureteral reconstruction after resection of a fibrosarcoma. In this report, we present the case of a patient submitted to ureteral reconstruction by interposition of the appendix in the surgical treatment of fibrosarcoma.

Case presentation

A 67-year-old male Patient was referred to the surgery department with a tumor in the hypogastric region that had existed for about one and a half years. Its growth had been progressive and was associated with dyspnea that worsened on moderate physical exertion. The patient also complained of asthenia, pollakiuria and urgent need to urinate while standing,

but the patient had no significant weight loss or gastrointestinal symptoms. The physical examination revealed a good general condition, oriented, afebrile, cyanosis, anicteric, hydrated and pallor. Respiratory and cardiovascular systems were normal. Abdominal palpation identified pain in the hypogastrium, mesogastrium and right flank, with a hardened and adhered mass of around 25 cm in diameter. Auscultation evidenced gurgling noises.

Computed tomography of the abdomen showed a retroperitoneal mass with a well-defined border, irregular edges and irregular internal calcifications (Figure 1).

The patient was submitted to laparotomy in order to resect the tumor mass that was adhered to the mesentery. The sectioning of an 8-cm segment of the upper right ureter was necessary, as there was no cleavage plane between it and the tumor. We opted for ureteral reconstruction with interposition of the appendix that was in a retrocecal position with the tip cranially oriented. Dissection and sectioning of the appendicular base was performed with the stump being ligated and sutured with stump intussusception.

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Subsequently, dissection and sectioning of the appendicular tip was performed with preservation of the mesoappendix, which was irrigated with saline solution to protect the abdominal cavity. A double-J catheter was inserted through the appendix positioning the ends on the renal pelvis and urinary bladder. Using separate sutures of PDS 5-0, we anastomosed the proximal and distal stumps of the right ureter to the appendix.

Postoperatively the patient developed a urinary fistula, which was treated clinically and healed by the 29th postoperative day. Computed tomography urography with 3D reconstruction performed 30 days after surgery showed patency of the anastomosis and closure of the fistula (Figure 2).

The double-J catheter was uneventfully removed two months after surgery. A histopathologic investigation of the resected mass showed a high-grade fibrosarcoma. The patient is in outpatient treatment in the oncology department.

Discussion

The use of the appendix for the reconstruction of the ureter has been described more frequently in the literature in recent years. This option for reconstructive surgery of the urinary tract is possible because of the description of different variations of the technique and the experience accumulated by various authors (Silva et al., 1999; Ximena & Chaves, 2009; Castillo et al., 2012; Thomas et al., 2004).

The appendix is not always available due to appendectomies and anatomical variations that prevent its repositioning to the site where it is needed; thus, this surgical technique is not always possible (Wheeler & Malone, 1991). The appendix has advantages for ureter reconstruction as it has a lumen similar to the ureter, peristalsis facilitating the transport of urine and reduced production of mucus compared to the ileum (Naidu et al., 2006). Moreover, it has a small area for urine absorption reducing the risk of metabolic changes. Technically, the interposition of the appendix may be made to substitute either the right or left ureter as it is possible to not only move the appendix but all of the cecum, depending on the individual anatomical characteristics of each organ, while preserving vascularization (Horwitz & Jarrard, 2004).

Several situations have been described in the literature related to interposition of the appendix for ureteral reconstruction (Silva et al., 1999; Ximena & Chaves, 2009; Castillo et al., 2012; Thomas et al., 2004), but no study was found on ureteral reconstruction using the appendix after fibrosarcoma resection. The short-term and long-term results of ureteral-appendix anastomosis and ureteral replacement are good (Mhiri et al., 2005; Komiakov & Ochelenko, 2012).

In this case, ureteral reconstruction with the interposition of the appendix after fibrosarcoma resection was successful, with the only complication being a urinary fistula with spontaneous healing. This result indicates that interposition of the appendix is a feasible option in cases of abdominal tumors with ureteral involvement.

Conclusion

The use of the appendix to substitute part of the ureter after its resection during the surgical treatment of fibrosarcoma is a viable option. From the anatomical and functional points of view, interposition of the appendix presents satisfactory results regarding patency of the urinary tract.

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Fig. 1 – Computed tomography scan showing a retroperitoneal mass with irregular calcifications and heterogeneous uptake of contrast



Fig. 2 - Computed tomography urography showing patent anastomoses without contrast extravasation after 30 days