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CLINICAL CASE

Complete substitution of the left ureter with vermicular appendix during hemicolectomy for cancer in an adult patient



Substitution complète de l'uretère gauche par l'appendice vermiculaire lors d'une hémicolectomie pour un cancer chez un patient adulte

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Received 25 January 2020; accepted 30 March 2020

Available online 11 May 2020

KEYWORDS

Ureter;
Ureteral
replacement;
Appendix

Summary We demonstrated that a complete left ureteral substitution with appendix is a feasible and safe technique. To our knowledge, this is the first case of a successful complete substitution of the left ureter with vermicular appendix in an adult patient reported in the literature.

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MOTS CLÉS

Uretere ;
Remplacement
Urétéral ;
Appendice

Résumé Nous avons démontré qu'une substitution urétérale gauche complète avec appendice est une technique faisable et sûre. À notre connaissance, il s'agit du premier cas de substitution complète réussie de l'uretère gauche par un appendice vermiculaire chez un patient adulte rapporté dans la littérature.

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Introduction

Ureteral lesions occur as a consequence of surgical procedures, tumours, radiation, or fibrosis. The management of these lesions is often a challenge. The surgical options for the management of complex long-segment ureteric defects are limited. We report a technique for complete ureteric replacement using the cecal appendix. This approach was often proposed for the management of short right/left ureteral lesions or in pediatric patients; here we report a case of complete left ureteral substitution in an adult patient.

Case Report

An intraoperative consultation was requested by general surgeons during the left hemicolectomy in a 76-year-old man with recurrent rectal adenocarcinoma. Colon cancer totally surrounded the left ureter and a complete ureteral resection was performed removing the colon mass en bloc. Classical surgery techniques could not be performed in this situation for several reasons: bladder psoas hitching was not sufficient to reach the renal pelvis; Boari flap ureteroneocystostomy could not be performed due to the reduced volume of the bladder and the thickness of the bladder wall (high risk of ischemia); the "ileal ureter" or the use of a small ileal segment according to the Yang-Monti principle were absolutely contraindicated due to a prior removal of the long

intestinal tract (high risk of short bowel syndrome); kidney auto-transplantation was not indicated due to high risk of bleeding (Jehovah's Witness patient); a synthetic graft was non-available; left gonadal vein was previously removed [1].

Technique

We opted for a complete left ureteral reconstruction with appendicular transposition (Fig. 1). After partial mobilization and reconfiguration of the bladder (bladder psoas hitching), we mobilized the cecum and appendix (to preserve the appendicular vascularization): a crucial step was the fixation of the cecum close to the bladder using three reabsorbable stitches. The appendix (7 cm) was divided at its base; its distal end was then anastomosed to the renal pelvis with 4/0 monofilament (single stitches), and its proximal portion to the bladder with a direct refluxing technique (4/0 monofilament interrupted suture), after the insertion of a ureteral stent of double J (6 Ch/24 cm).

Results

The operative time for the ureteral replacement was 40 minutes. No intra- and post-operative complication was recorded and the stent was removed after 2 months. An angioCT scan performed after 1 month demonstrated a

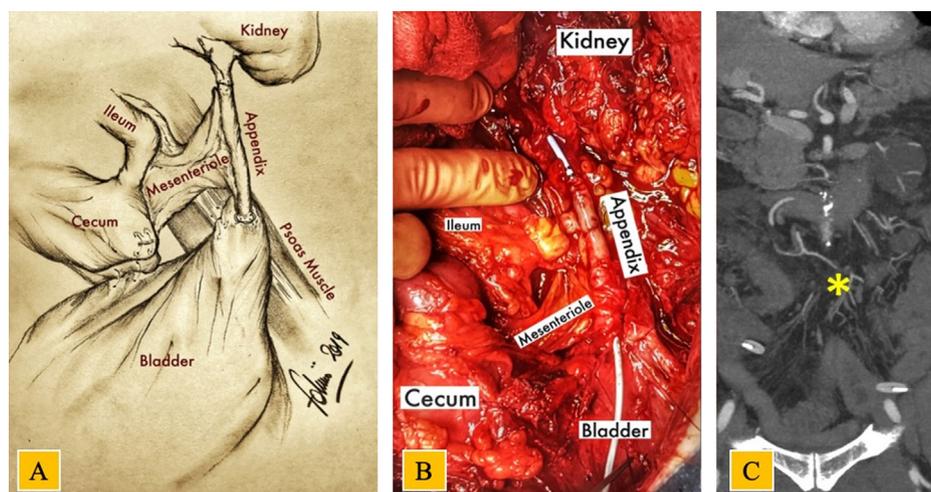


Figure 1. A. Scheme of the complete substitution of the left ureter with vermicular appendix. B. Intraoperative image. C. Angio CT scan after 1 month demonstrating a normal vascularization of the appendix (*).

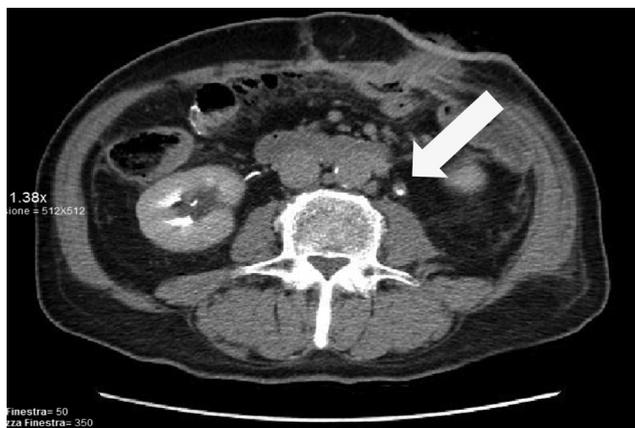


Figure 2. Uro-CT scan after 2 months confirming a regular vascularization of the appendix (arrow) with a normal washout of the urine from the pelvis.

normal vascularization of the appendix. A cystogram control confirmed no urinary leakage. A uro-CT scan after 2 months confirmed a regular vascularization of the appendix with a normal washout of the urine from the pelvis (Fig. 2). The follow-up (1 year) was uneventful, without evidence of strictures (no renal dilation at ultrasonography) or stones or renal impairment.

Discussion

In the past we described a case of an extended ureteral stricture corrected with appendiceal replacement in a kidney transplant recipient [2]. Nevertheless, the substitution of the left ureter represents a challenge due to the anatomical, and above all, vascular risks correlated to the transposition of the appendix from the right to the left side [3].

Although in the Literature few experiences reported the use of the cecal appendix in replacing the left ureter, the majority of procedures are related to pediatric patients or in case of long ureteral stricture after kidney transplantation [4]. There is only one case report describing the use of the appendix as a conduit to bridge the gap from the divided segment of left ureter to the bladder the urinary tract: in that case the Authors used the appendix from the divided segment of left ureter to the bladder [5].

Instead, in our case we were forced to replace all the ureter from the pelvis to the bladder. Only the extensive

mobilization of both the bladder and the cecum allowed a tension-free anastomosis among the appendix, the renal pelvis and the bladder.

Moreover, we decided to orient the appendix with the distal end to the renal pelvis in order to avoid any kind of traction/distortion of the mesoappendix: indeed, an isoperistaltic anastomosis, while would help propel urine down the segment, would twisted the mesenteriole with an ischemic damage of the appendix.

To our knowledge, this is the first case of a successful complete substitution of the left ureter with vermicular appendix in an adult patient reported in the literature.

We demonstrated that a complete left ureteral substitution with appendix is a feasible and safe technique. A trick could be the extensive mobilization of the cecum and its fixation close to the bladder (after psoas-hitching). Special attention must be given to preserving the appendicular arteries, ensuring that the mesoappendix was not twisted.

Acknowledgments

None

Disclosure of interest

The authors declare that they have no competing interest.

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