

Running Title: Appendiceal Conduit

Appendiceal conduit: A novel technique to be applied after radical cystectomy: A case study report

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Abstract

This paper introduces a novel technique, known as appendiceal conduit. It could be used as an alternative for ileal conduit and cutaneous ureterostomy, ultimately applied after radical cystectomy. The six-month follow-up indicated that the patient had appendix-stoma as nipple without any stenosis, nor did he have any hydronephrosis, as confirmed by abdominal sonography.

Key words: Radical cystectomy, Ileal conduit, Cutaneous Ureterostomy, Orthotopic neobladder, Appendix.

Introduction

It is generally assumed that bladder carcinoma is one of the most common types of cancer in many countries. ^(1,2) It is widely thought that about 30% of bladder carcinoma cases are muscle invasive, for which the radical cystectomy (RC) is a gold standard treatment. ^(3,4) Moreover, it is believed that after radical cystectomy, urinary diversion (UD), ranging from simple cutaneous ureterostomy (CU) to difficult reconstructive procedures, is applied for treatment. ⁽⁵⁾ Also, Ileal conduit (IC) and orthotopic neobladder (ONB) are supposedly deemed as the most common procedures used for UD, which could be followed by RC. ⁽⁴⁾ According to the ethical code of IR.MUBABOL.REC.1398.017, we introduced

a new technique, called the appendiceal conduit (AC), to replace IC and CU. This novel technique could be used as a less complex and more timesaving technique after RC.

Case Report

An 85-year-old man with refractory dysuria was referred to the hospital, and the sonography evidence demonstrated a mass, 63×59×58 mm, in bladder diverticulum. Cold biopsy was also taken from the mass, which represented a squamous cell carcinoma. Abdominopelvic CT was subsequently done (Figure 1).

Surgical technique

After spinal anesthesia, RC with lymphadenectomy was performed. In the retroperitoneum, the left ureter was transposed to the right. The length of detected appendix was 12 cm, which was proper for bringing to the skin, and a window was made in the mesoappendix, adjacent to its base (figure 2A). The appendix was separated from the cecum. The cecum was then sutured (figure 2B). Both ureters were spatulated anteriorly, and the medial borders of both ureters were sutured together (figure 2C). A small vertical incision was made in the antimesenteric border of the appendix tip. Two ureteral stents were inserted, and the ureters were anastomosed to the appendix tip (figure 2D). The base of the appendix was brought to the skin as nipple stoma (figure 2E).

Follow-up

The patient was discharged with ureteral stents on the fourth day. Two weeks later, the ureteral stents were removed. No hydronephrosis was found by abdominopelvic ultrasonography (Figure 3). No urine leakage was observed around the urine bag and the stoma retained its nipple state (Figure 4) six months after the surgery.



Figure 1. Abdominopelvic CT scan

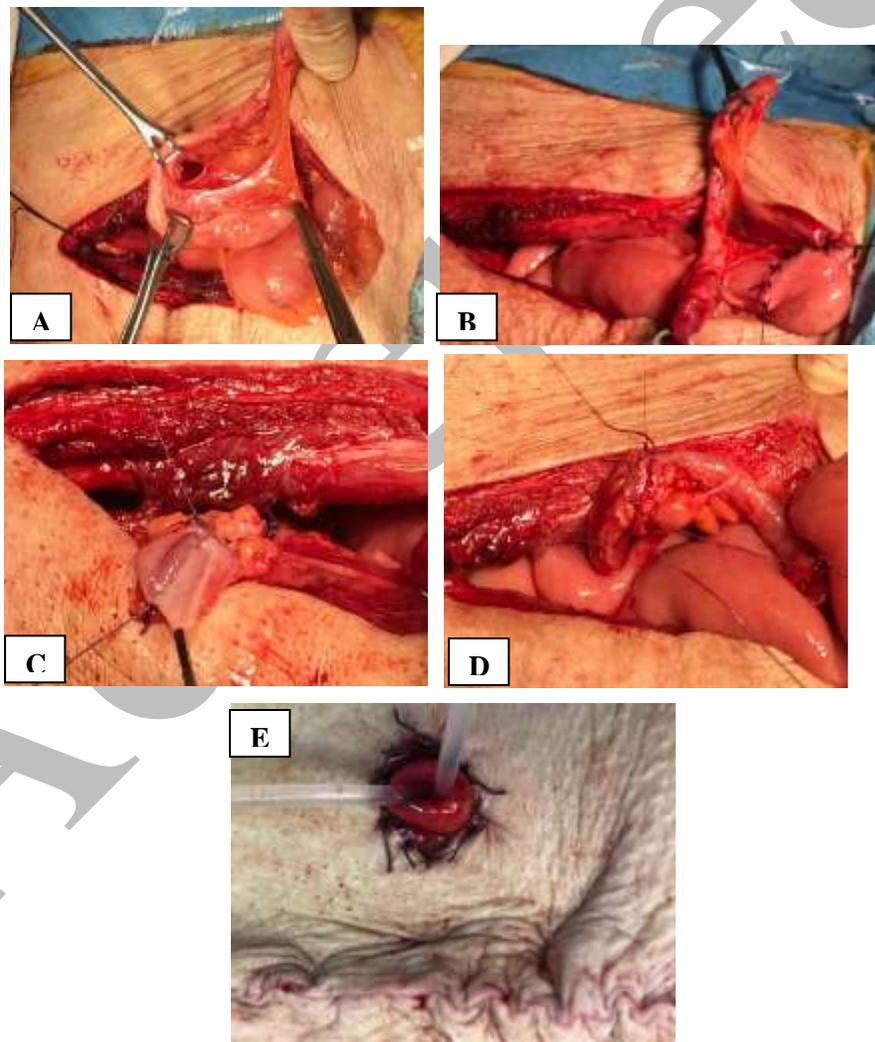


Figure 2. a) A window in mesoappendix b) Separated appendix and cecum repair, c) Spatulation of the ureters and sutures together, d) Anastomosis of the ureters to appendix tip, e) Nipple stoma of the appendix

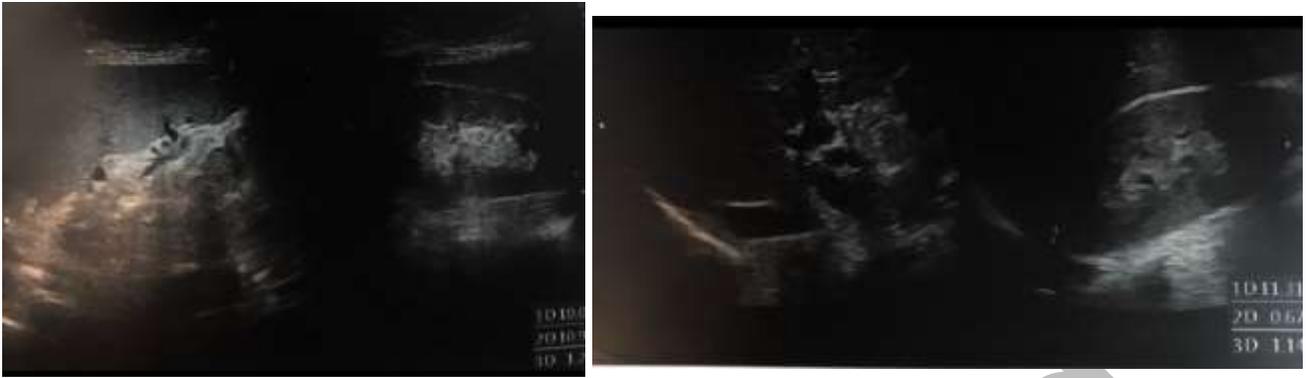


Figure 3. Post-operative ultrasonography

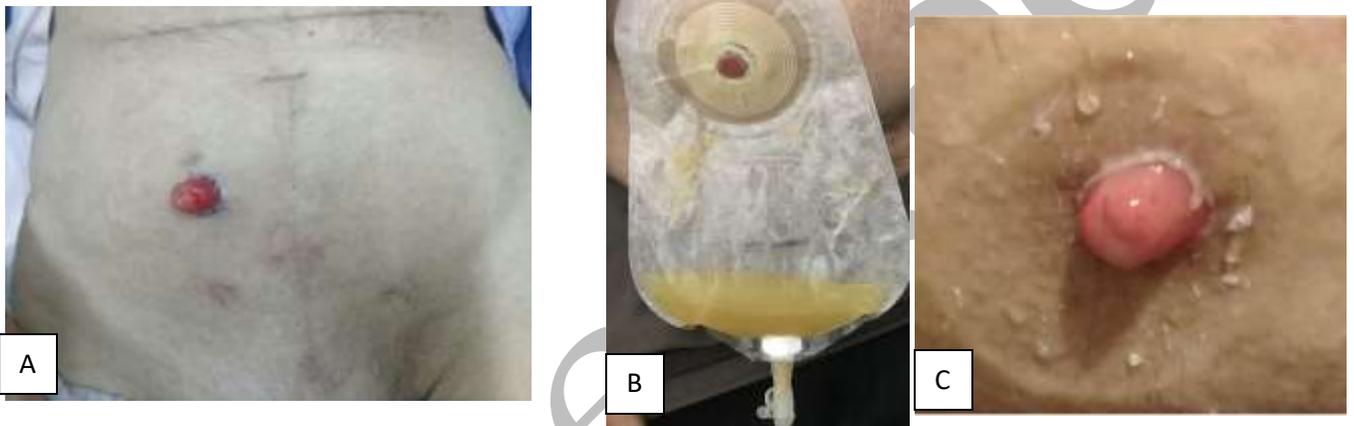


Figure 4. Stoma of the appendix A: 1 month B&C: 6 months after surgery

Discussion

It is generally presumed that ONB and IC are the most frequently used techniques after RC. ⁽⁴⁾ With regard to the health quality of life, ONB is undoubtedly regarded as the best option for UD. ⁽⁵⁾ But it is not suitable for old patients with comorbidity. As a result, IC and UC should be applied as alternative procedures for treatment. ^(4,6) In the case of the elderly, due to the complications of bowel manipulation and metabolic disturbance, CU is preferred to IC. ⁽⁶⁾ CU, nevertheless, could have many stomal complications such as retraction, stricture, and necrosis; therefore, the ureteral stents should be used and changed monthly to minimize the potential risks. ⁽⁷⁾

In an attempt to mitigate these potential complications, the AC, as a novel technique, was applied. The benefits of AC are as follows: AC is devoid of metabolic disturbances. It has the least intestinal manipulation as well as complications. Furthermore, it can lead to minimal stomal retraction and

stricture. That could be due to the fact that the wide appendix base is brought to the skin without the use of permanent stents.

Nonetheless, the AC has the following drawbacks: It is difficult or impossible to apply it in the case of obese patients or patients with short appendix. Under such conditions, the cecum and terminal ileum ought to be released and fixed to abdominal wall. The left to right transureteroureterostomy should be done, and the right ureter should be anastomosed to the appendix. Ultimately, the simultaneous use of both options is recommended.

In the case of our patient, the stoma had no stricture and was prominent without a leakage around the urine bag during the six-month follow-up (Figure 4).

Accepted

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