

Appendicocalicostomy: A case of mistaken identity

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ABSTRACT

Anatomical structures with similar appearance may at times be confused for each other. This situation can be compounded by lack of normal anatomical planes. We did ureterocalicostomy on a 32-year-female with secondary pelvi-ureteral junction obstruction. Post-operatively, it was discovered that she had a long appendix running parallel to ureter in retroperitoneum, which was misidentified as ureter and anastomosed to the lower pole of the kidney. She was re-explored, appendix was removed, ureter was identified and ureterocalicostomy was done. Patient is asymptomatic at 1 year follow-up.

Key words: Appendicocalicostomy, appendix, ureter, ureterocalicostomy

INTRODUCTION

Appendix lies in close proximity to the distal portion of upper ureter. There are multiple variations in the location and length of the appendix. It may rarely lie parallel to the upper ureter when it can be confused with the latter. We encountered one such case of long appendix running parallel to the ureter in retroperitoneum. It was mistaken for ureter and anastomosed to the lower calyx of kidney

CASE REPORT

A 32-year-old female patient presented with right flank pain of 3 weeks duration. She had undergone right open pyelolithotomy 6 weeks ago at the private hospital. Intraoperatively, a double J (DJ) stent was placed, which was removed 3 weeks later. Following

stent removal she had progressively increasing flank pain. Examination showed a well healed scar of pyelolithotomy and tenderness in the right flank. Her hematological and biochemical investigations were normal. Ultrasonography showed normal left kidney with hydronephrotic right kidney (parenchymal thickness of 7 mm) and 400 ml perinephric collection. A perinephric drain and right percutaneous nephrostomy (PCN) tubes were placed. A total volume of 300 ml of turbid perinephric fluid was drained stat. PCN output was \approx 1.5 L/day. Drain was removed after 7 days. A right nephrostogram with the right retrograde ureteropyelogram (RGP) was done, which showed complete cut-off at the pelvi-ureteric junction with small intrarenal pelvis and ureter showed complete cut-off at L2 vertebral level [Figure 1a and b]. Length of defect was \approx 3 cm. After 1 month, right ureterocalicostomy was done. Intraoperatively, there were dense perinephric adhesions. Lower pole of the kidney could be mobilized only in the subcapsular plane and the PCN came out during the mobilization. Ureter was dissected inferomedial to the lower pole of the kidney. Lower polar parenchyma was amputated and ureter was spatulated. Ureterocalicostomy was done over DJ stent. Stent could be placed easily. However, urinary bladder was not distended prior to stent placement; hence, no attempt was made to see retrograde efflux of urine from side holes of cranial end of the stent. Post-operative X-ray showed a malpositioned lower end of stent [Figures 1c]. Right RGP showed stent lying outside the ureter [Figure 1d]. PCN was placed and nephrostogram was done, which showed that the contrast going into the cecum thereby establishing that the lower pole of the kidney was inadvertently anastomosed to tip of the appendix. Patient was re-explored. Ureter was identified medial to the appendix [Figure 2a]. Ureterocalicostomy and

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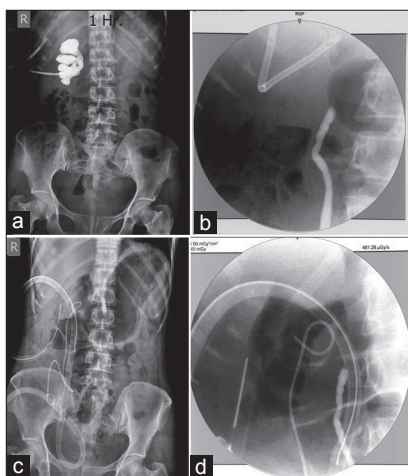


Figure 1: (a) Nephrostogram showing complete cut-off at the pelvi-ureteric junction with intrarenal pelvis. (b) Retrograde ureterogram showing cut-off at L2 vertebral level. (c) X-ray kidney, ureter and bladder region showing malpositioned caudal end of double J (DJ) stent. (d) Retrograde ureterogram showing DJ stent lateral to ureter

appendicectomy was done [Figure 2b]. Post-operatively patient made smooth recovery. PCN and DJ stent were removed after 1 week and 6 weeks respectively. Intravenous urography done 6 weeks following stent removal showed patent ureterocalyceal anastomosis with prompt drainage of contrast. Patient is asymptomatic at 1 year follow-up.

DISCUSSION

Appendix is the *bête noir* of medicine. However, in urological practice it is a useful substitute for the right as well as left ureter and for creating catheterizable stomas.^[1]

The position of the appendix is highly variable. Retrocecal position is most common seen in 69.2% of cases.^[2] Monks and Blake examined 656 cadavers regarding variations in anatomy of appendix. In 4.4% cases, the appendix tracked cranially and to right of caecum. Sometimes, it tracked upward behind caecum, passed over the anterior surface of the right kidney until its upper margin. Another variation was to find the appendix behind the peritoneum, under the caecum and extending to the lower border of the right kidney. The length varied from 1 cm to 25 cm. In 50% cases, the mesoappendix was attached to half-length of appendix at the base, tip remaining free. In certain cases mesoappendix was absent.^[3] If a long appendix is positioned adjacent to ureter and the tip is free, it can be easily misidentified as ureter.

In the index case, patient was previously operated and had developed perinephric collection in the post-operative period due to which there were dense perinephric adhesions with obliteration of normal anatomical planes rendering

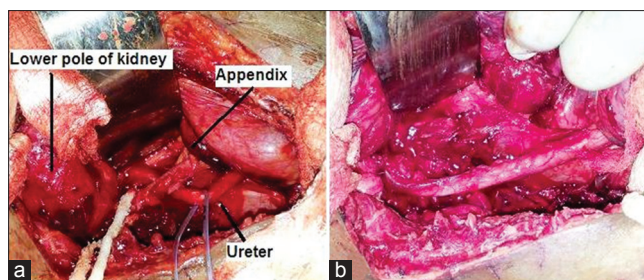


Figure 2: (a) Intraoperative picture showing appendix anastomosed to the lower pole of kidney and ureter lying separately. (b) Intraoperative picture after appendicectomy and ureterocalicostomy

identification of ureter difficult. Intraoperatively, lower end of the DJ stent went into the appendix without any resistance and coiled into the caecum. Because of the ease of placement of stent no misadventure was suspected. However, bladder was not distended prior to stent placement and hence no attempt was made to see efflux of urine from the side holes of cranial end of the stent after positioning it.

In retrospect, this complication could have been avoided by pre-placement of ureteric catheter to aid intraoperative identification of ureter. Giving attention to finer details like partially distending the bladder prior to placement of the stent and to observe retrograde flow of urine from cranial end of stent might also have thwarted this misadventure.

CONCLUSION

The position of the appendix is highly variable and it may lie adjacent to the right ureter where it can be confused with the latter. In urological surgeries, when dense fibrosis is expected, pre-placement of ureteral catheter may aid its intraoperative identification. Though ease of placement usually suggests correct positioning of stent, it should always be confirmed by observing retrograde flow of urine from the bladder through side holes of the stent.

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