

## Colo Right Ureteric Fistula: A Unique Complication Post Laparoscopic Bowel Surgery

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### Introduction

Coloureteric fistula, unlike colovesical fistulae, is extremely rare and has never been reported following open/laparoscopic resection. Even, more unusual is right ureteric involvement. Treatment strategies vary but usually tend toward radical resection. We present the first case of a colo right ureteric fistula post-laparoscopic anterior resection. The involvement of the right ureter introduces a complication that may be more specific to laparoscopic resection rather than open surgery. Furthermore, we highlight a conservative treatment strategy with ureteral stent placement, without need for radical resection either redo anastomosis or defunction with diverting stoma, and resulting in abrogation of the benefits of laparoscopic resection.

### Case History

A 62 year old male presented with new onset rectal bleeding on a background of chronic diarrhea. Pre-operative staging confirmed T4N2M0 tumor in the recto-sigmoid region. He underwent uncomplicated straight forward laparoscopic high anterior resection with standard four ports and was discharged. He re-presented with

pneumaturia and yellow rectal discharge 14 days later. Computed Tomography (CT) reported extra luminal air pockets in relation to site of anastomosis consistent with leak subsequently had Contrast enema which showed trans-anastomotic contrast passage into the right ureter suggesting Colo right ureteric fistula. The patient was very well and fit for further radical surgery but decision was made to treat conservatively with a retrograde JJ stent. CT one week later showed no further air in the urinary system. Patient was followed up by contrast studies. Contrast studies one month following stent insertion showed no contrast passage into the ureter. Further contrast studies three month after showed no leak and completely healed fistula. He completed adjuvant chemotherapy for colorectal cancer. The stent was removed a year later and ureterogram showed no evidence of fistula.

### Discussion

Colovesical fistulas are recognized complications especially following surgical resection or with pelvic disease due to the overlying recto/sigmoid and close anatomical relations within the pelvis. However, coloureteric fistulae are extremely rare, and even more so, those involving the right ureter. Electronic database search reported only 17 cases, none of which were caused by surgery. The commonest causes are (a) obstructing renal stones where impacted calculi cause urosepsis and ureteral wall necrosis, leading to peri-ureteral abscess with communication to bowel and subsequent fistula formation [1,2]; and (b) diverticulitis, where similarly, paracolic abscess leads to ureteral inflammation and fistulation [3]. Other more rare conditions (all historical reports with only one case per etiology) include malignancy - sigmoid carcinoma, transitional cell carcinoma of ureter, Hodgkins lymphoma; indwelling ureteral stents, inflammatory bowel disease or following extra-corporeal shock wave lithotripsy [4-7] (Figures 1 and 2).

Laparoscopic colorectal surgery is associated with fewer traumas than open surgery. However, the reduction of open access and simultaneous multiple instrumentation, combined with narrow field view may increase the risk of this unrecognized anatomical distortion or damage. It is likely that there are certain complications that are more specific to laparoscopic resection such as the involvement of the right ureter. There are no records of right ureteric fistulation to left colonic region in open surgery. In this case, there may have been inadequate direct damage (e.g. diathermy) during instrumentation which furthermore, may have "hitched" the right ureter to the vicinity of the



**Figure 1:** Contrast Enema - Trans anastamotic contrast passing in to Right ureter & Bladder suggesting Colo Right Ureteric Fistula.



**Figure 2:** X-ray - Cysto retrograde Right JJ stent insertions.

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**Figure 3:** Contrast Enema - Small Amount of Contained leak less than previous. No Communication with Ureter.



**Figure 4:** Contrast Enema - Fistula completely healed. No leak. No Communication with Ureter.

anastomosis leading to this complication. This is the most plausible explanation and this should be recognized by laparoscopic surgeons (Figures 3 and 4).

The increasing use of radiotherapy in rectal cancer may also contribute but this is more likely to be vesical rather than ureteric fistula. There are no reported cases of this unique complication following open or laparoscopic surgery. Symptoms are usually urinary as colonic pressures are higher than vesical pressures leading to contamination of the urinary system. Patients usually present with urological symptoms such as recurrent urinary sepsis, pneumaturia, faecuria or non-specific flank pain [1]. Diagnosis can be delayed for years as all reported cases developed spontaneously without a clear history of preceding insult. This combined with the rarity of this complication and the resulting low index of clinical suspicion leads to delayed diagnosis [1,5]. If suspected, CT is usually the investigation of choice for diagnosis. Contrast CT is accurate for stones, with the additional benefit of identifying contributing factors such as paracolic sigmoid perforations or ureteric gas with hydronephrosis [5]. Once identified, a ureterogram is the investigation of choice for delineating the fistula (especially using local contrast infiltration into the tract) and simultaneous treatment by stent placement if suitable, as was in this case. Double contrast enema can be used if CT and ureterogram are negative but a high index of suspicion remains. However, contrast studies and other renal investigations (e.g. intravenous ureterogram, renal ultrasounds) are less likely to demonstrate the fistulous tract and may only provide secondary evidence of fistula (e.g. hydro/pyo-nephrosis) [5]. The treatment of each case is unique to its etiology and residual renal function of the affected kidney following decompression and resolution of sepsis. The majority of treatment has been surgical where

options include proximal defunctioning stoma, or colonics resection and primary re-anastomosis without renal surgery, or fistulectomy and nephro-ureterectomy [1]. Temporary stents may alleviate obstruction prior to surgery but permanent stents are only used in patients unfit for radical surgery [5]. There is a single reported of spontaneous fistula resolution following stent placement in a patient with inflammatory bowel disease [8]. We report the first use of temporary ureteric stent for this complication post-laparoscopic resection as definitive treatment. The optimal duration of stent placement is unknown. We opted to keep the stent in-situ (even with no evidence of leak) until patient had completed chemotherapy. There are only minimal complications with ureteric stents but one case reported long-term indwelling ureteral stent itself leading to right iliac arterio-ureteral and left uretero-sigmoid fistula.

## Conclusions

This is the first report of colo right ureteic fistulation following laparoscopic surgery. Furthermore, the presence of colo right ureteric fistula is unique, and may represent a complication more specific to laparoscopic surgery which the surgeon should be aware off peri- and post-operatively. We also report that conservative treatment may be sufficient, without the need for radical excision which is associated with increased morbidity and abrogate the advantages of primary laparoscopic resection.

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