Title

Successful Management of a Complex Renal-Duodenal Fistula with Multiple Fistulous Tracts and Severe Aortic Stenosis: A Case Report

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Abstract Form

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Research Category (please check one):

☐	**Original Research**	☒	**Clinical Vignette**	☐	**Quality Improvement**	☐	**Medical Education Innovation**

Abstract

Introduction

Renal-duodenal fistula is a rare phenomenon that often arises from untreated chronic pyelonephritis, typically precipitated by the obstructing renal staghorn calculi. It occurs more commonly in women than in men . Other causes include duodenal ulcer disease, ureteric calculi, roundworm infestation, iatrogenic injury, trauma, or ingestion of foreign objects. When present, the renal-duodenal fistula tends to form between the renal pelvis and posterior duodenum due to their proximity and the duodenum's relatively fixed position. Patients typically experience a combination of fever, leukocytosis, lower urinary tract infection symptoms, including flank or abdominal pain, dysuria, increased urinary frequency, and urgency. Because the symptoms of a renal-duodenal fistula are often masked by the underlying disease, its finding is often incidental. We report a case of renal-duodenal fistula caused by chronic pyelonephritis secondary to unilateral obstructing staghorn calculi in a 72-year-old male who undergoes surgical intervention with an excellent outcome.

Methods: Single patient case report was conducted.

Case Presentation: A 72-year-old male with a history of hypertension, nephrolithiasis, NSTEMI, appendectomy, recurrent urinary tract infection, and right nephrostomy presented to the hospital with dyspnea and left upper extremity pain. The patient reported experiencing dyspnea on exertion for the last 3 days and left arm pain up to his neck that was exacerbated with movement. The patient was initially on TPN through PICC line due to renal-duodenal fistula, and CT of abdomen showed right renal staghorn calculi and right mid-ureter with hydroureter/hydronephrosis. The patient was placed on NPO for 1 week with TPN and recommended eventual nephrectomy of the right kidney.

Upon admission, CT angiogram of the chest was completed with contrast due to suspicion for PE; results revealed severe deep soft tissue infection along the left upper extremity PICC line insertion, extending into the anterior mediastinum, with mild anterior mediastinal emphysema, concerning for mediastinitis. Cardio-thoracic surgery recommended no surgical intervention unless evidence of destruction of the mediastinum, abscess formation, or mass-effect. CT abdomen/pelvis revealed a fistulous connection between the third portion of the duodenum and the right postural ureter with oral contrast and pooling inferiorly in mid-distal right ureter. Due to severe aortic stenosis, balloon valvuloplasty was performed prior to right nephrectomy and duodenal ureteral fistula repair. During the surgery, the patient was found to have multiple fistulous connections, which were sharply dissected followed by right nephrectomy. The duodenum was repaired, and fistulous tracts were debrided. Postoperative prognosis was satisfactory, and the patient was discharged on day 10 after surgery.

Conclusion:

Chronic urinary tract obstruction by renal calculi can create a niche for bacterial overgrowth, thus precipitating pyelonephritis. Without proper treatment, inflammatory milieu can lead to tissue destruction and remodeling, forming fistular tracts. All patients with staghorn calculi should undergo immediate evaluation followed by removal of the stone. In an event where a fistula is present as a complication of chronic pyelonephritis, surgical repair in conjunction with nephrectomy should be recommended if the kidney is deemed non-functional.