

## A Case of Pyeloduodenal Fistula Successfully Treated without Nephrectomy

Hytham Ahmed<sup>\*</sup>, Hans-Josef Düwel

**\*Hytham Ahmed**

Department of surgery, HELIOS Hospital Meiningen, Germany

Email: hytham.ahmed81@yahoo.com

### Abstract

Pyeloduodenal fistula is a rare condition and due to its rarity its management has not been well established. We present here a case of a 69-year-old male patient with a long history of lower urinary tract malignancy as well as urinary stones who was admitted to the hospital due to progressive gastrointestinal and constitutional symptoms. Computed tomography showed an Urinoma outgoing from the right renal pelvis with a suspected fistula to the duodenum. The diagnosis of a pyeloduodenal fistula was confirmed endoscopically with an esophagogastroduodenoscopy. From our point of view surgery was necessary. The patient underwent an exploratory operation, where the fistula was excised. Moreover, we performed a primary closure of the renal pelvis and the duodenum. The postoperative course was uneventful. He was discharged from the hospital after an antegrade pyelogram revealed no evidence of leakage or fistula formation. In addition we report on the features of this rare entity and also review and summarize the etiology, diagnosis and treatment options that can be extrapolated from the existing literature.

### Keywords

pyeloduodenal fistula; duodenal fistula; intestinal fistula; urinary fistula

### Abbreviations

PDF: Pyeloduodenal fistula; TCC: Transitional cell carcinoma; CT: Computed tomography; PCN: Percutaneous nephrostomy; EGD: Esophagogastroduodenoscopy

### Introduction

Fistula development between the kidney and the gastrointestinal tract is a rare clinical event, it was first reported in 1893 [1]. It can be caused by various inflammatory or neoplastic disorders as well as trauma [1,2,3,4,5]. Many clinicians have believed that surgical nephrectomy and duodenal closure is the most successful treatment in this situation [6,7]. However, conservative management may be tried in selected cases when the renal function is preserved [8,9]. Due to the rarity of the condition we would like to report a case of a spontaneous pyeloduodenal fistula (PDF) caused by pyonephrosis, in which surgery was indispensable, and was treated successfully without nephrectomy.

### Case Presentation

A 69-year-old male patient was presented at the emergency department due to progressive epigastric abdominal pain, nausea, vomiting, and general malaise. The patient had a long history of

transitional cell carcinoma (TCC) of the lower urinary tract as well as urinary stones. He had to undergo repeated transurethral resection for invasive transitional cell carcinoma of the bladder. Later on, he received a total penectomy with bilateral inguinal lymphadenectomy due to an advanced necrotic urethral-TCC. Besides, he received 9 years later an open surgical removal of multiple large bladder stones.

Physical examination was unremarkable. Laboratory evaluation revealed a white blood cell count of 11,900/ $\mu$ L and a high C-reactive protein level of 191 mg/L. Blood urea nitrogen and serum creatinine levels were at normal range. Urinalysis revealed leukocyturia, microhematuria and a high level of urobilinogen; subsequent urine culture demonstrated enterococcus faecali.

An ultrasound examination revealed hydronephrosis grade 2 of the right kidney. Next, computed tomography (CT) confirmed the hydronephrosis and revealed in addition a large obstructing right ureteric stone. Furthermore it showed a urinoma of 3,7 X 3,4 centimeters between the right renal pelvis and the duodenum with suspected fistula formation to the duodenum (Figure 1). An urgent percutaneous nephrostomy (PCN) was performed. Later the diagnosis of PDF was confirmed through an esophagogastroduodenoscopy (EGD) (Figure 2). We prescribed intravenous antibiotics and planned for surgery. Previous to surgery, due to the proximity of the fistula to the major duodenal papilla a stent was inserted in the common bile duct by an endoscopic retrograde cholangiopancreatography.

The operation was performed electively, we used a tranperitoneal approach. During the procedure a fistulous tract connecting the renal pelvis and the retroperitoneal second portion of the duodenum was found. The necrotic margins of fistula tract were excised and a three-layer closure of the duodenum was performed. The renal pelvis was closed in two layers. Besides, a fibrin sealant patch was applied over both suture lines and the greater omentum was placed in between the kidney and the duodenum. At the end the uretric stone was removed through an ureterolithotomy. Multiple drains were placed in the wound and the incision was then closed in a routine manner.

The postoperative course was uneventful, after a contrast radiography of the upper gastrointestinal tract excluded leakage or obstruction we started the patient's oral intake at the 5<sup>th</sup> postoperative day. Thereafter, the nephrostomy tube was then removed at the 15<sup>th</sup> postoperative day after an antegrade pyelogram showing no evidence of urinary leakage. Later on, the biliary stent was removed electively after discharge.

The histological result showed no evidence of malignancy.

## Discussion

PDF is a rare but serious condition. There are almost 100 cases of PDF that have been reported since the first case was described by Campaignac in 1839 [1]. Most PDFs occur because of a chronic renal inflammatory disease, such as pyonephrosis, perinephritis, renal calculi, xanthogranulomatous pyelonephritis or tuberculosis ([1]. Less commonly they are of a duodenal origin [10]. Rarely it can occur due to trauma like a gunshot [3]) or advanced malignancy of the kidney [4,5].

The anatomic proximity between the right renal pelvis and the second portion of the duodenum is an important factor. The posterior aspect of the second portion of the duodenum lies in close proximity to the medial portion of the kidney and renal pelvis, its relative immobility and lack of posterior peritoneal covering as well make this portion of the duodenum more easily involved when perirenal inflammation

takes place.

Presenting symptoms that have been reported include a variety of urinary tract, gastrointestinal and constitutional symptoms as a result of involvement of both the digestive and urinary systems [11]. An insidious and progressive pyelonephritis was always an attendant clinical condition, but the gastrointestinal symptoms should be considered as an important clue for diagnosis [7].

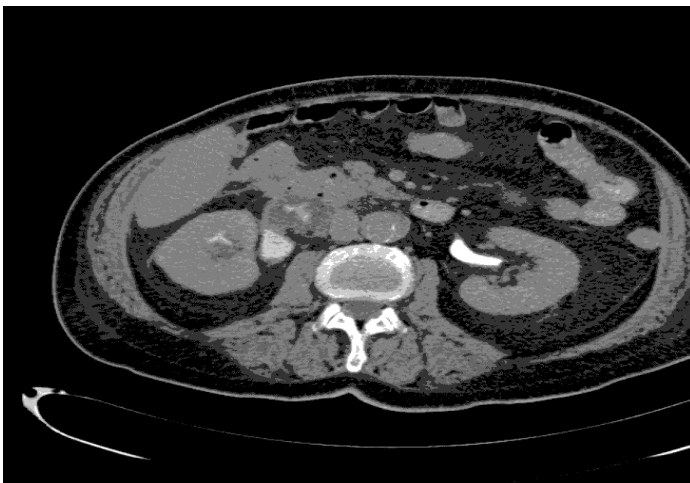
Diagnosis of PDF requires imaging studies of the urinary system. Contrast examinations such as intravenous urography or CT can demonstrate the fistula, however their application is sometimes limited due to poor function of the affected kidney. Retrograde or antegrade pyelogram is considered in many case reports and reviews as the method of choice for diagnosing PDF. However, the existence of PDF can also be demonstrated and diagnosed with EGD [6].

Surgical nephrectomy and primary closure of the duodenum are traditional therapeutic methods for treatment of non traumatic PDF, either a transperitoneal or retroperitoneal approach may be used [6,7]. However, there have been a few reports of successful conservative management [6,8,9]. Conservative management of PDF would include appropriate intravenous antibiotics, relieving the obstruction by employing PCN or internal ureteric stents. Recently, Kyung Nam Lee et al. 2014 successfully treated a case of PDF by endoscopic ligation [6]. The decision concerning whether to operate and possibly to remove the kidney or to apply a conservative management seems to depend mainly on the function of the involved kidney and the underlying pathological process, taking into consideration the size of the fistula.

In our case, in view of the patient's history of urinary tract malignancy we took the decision to operate in order to exclude or verify any underlying malignant nature of the PDF. We were able to save the patient's kidney and avoid an unnecessary nephrectomy without any mentionable complications. The definitive histology revealed a chronic inflammation on top of a severe pyelonephritis with no evidence of malignancy.

We believe that patients with non traumatic PDF, in whom the surgical management is essential, should undergo a kidney sparing surgery with primary closure of the duodenum.

## Figures



**Figure 1:** A computed tomography showing the urinoma with contrast media extravasation from the kidney and its relation to the duodenum.



**Figure 2:** An esophagogastroduodenoscopy showing the fistula formation in the second part of duodenum with plenty of purulent discharge.

## References

1. Hui Wu J, Xu Y, Qiang Xu Z, Yangv K, Qiang Yang S, Shun Ma H. Severe anemia and melena caused by pyeloduodenal fistula due to renal stone associated squamous cell carcinoma. *Pak J Med Sci.* 2014; 30: 443-445.
2. Kitagawa T, Sato K, Maetani I. Pyeloduodenal fistula diagnosed by esophagogastroduodenoscopy. *Ann Gastroenterol.* 2015; 28: 287.
3. Ginsberg DA, Stein JP, Grossfeld GD, Tarter T, Skinner DG. Traumatic pyeloduodenal fistula: a case report and review of the literature. *Urology.* 1996; 47: 588-591.
4. Tsuchiya T, Yoh M, Ito Y, Ban Y. Primary adenocarcinoma of the renal pelvis with a pyeloduodenal fistula: a case report. *Hinyokika Kiyō.* 2001; 47: 421-423.
5. Chen CH, Cheng HL, Tong YC, Pan CC. Spontaneous pyeloduodenal fistula: an unusual presentation in advanced renal transitional cell carcinoma. *Urology.* 2002; 60: 345.
6. Lee KN, Hwang IH, Shin MJ, Lee SB, Kim IY, Lee DW, et al. Pyeloduodenal Fistula Successfully Treated By Endoscopic Ligation without Surgical Nephrectomy: Case Report. *J Korean Med Sci.* 2014; 29: 141–144.
7. Rodney K, Maxted WC, Pahira JJ. Pyeloduodenal fistula. *Urology.* 1983; 22: 536-539.
8. Baraket O, Lahmidi MA, Chaari Mi. A pyeloduodenal fistula. Report of case. *Tunis Med.* 2013; 91: 745–746.
9. Herbert FB, Goodacre B, Neal DE Jr. Successful conservative management of nephrocolic fistula. *J Endourol.* 2001; 15: 281-283.
10. Nair KV, Pai CG, Rajagopal KP, Bhat VN, Thomas M. Unusual presentations of duodenal tuberculosis. *Am J Gastroenterol.* 1991; 86: 756-760.
11. McEwan AJ. Pyelo-duodenal fistula. *Br J Urol.* 1968; 40: 350-353.

**Manuscript Information:** Received: August 29, 2016; Accepted: November 16, 2016; Published: November 18, 2016

**Authors Information:** Hytham Ahmed\*, Hans-Josef Düwel  
Department of surgery, HELIOS Hospital Meiningen, Germany

**Citation:** Ahmed H, Duwel HJ. A case of pyeloduodenal fistula successfully treated without nephrectomy. *Open J Clin Med Case Rep.* 2016; 1187

**Copy right statement:** Content published in the journal follows Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0>). © Ahmed H 2016

**Journal:** Open Journal of Clinical and Medical Case Reports is an international, open access, peer reviewed Journal focusing exclusively on case reports covering all areas of clinical & medical sciences.

Visit the journal website at [www.jclinmedcasereports.com](http://www.jclinmedcasereports.com)

For reprints & other information, contact editorial office at [info@jclinmedcasereports.com](mailto:info@jclinmedcasereports.com)