



## Case Report

# Colo-renal fistula in a patient with recurrent UTI: a case report and review of the literature

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### Abstract

Colorectal fistula is a rare and diagnostically challenging condition due to the variation of clinical presentations and diverse etiologies. This is a case report on a patient presenting with pneumaturia and recurrent urinary tract infections (UTIs). The patient had a 19-year history of multiple UTIs, including episodes of acute pyelonephritis, orchitis, and cystitis. A severe episode occurred five years earlier, when he developed a liver abscess. Computed tomography (CT) revealed air within the left renal pelvis and urinary bladder. The atrophic left kidney was adherent to the descending colon, leading to a diagnosis of colorectal fistula. The patient underwent left nephrectomy with segmental colon resection. The postoperative course was uneventful except for a wound infection on day 4, which was resolved with treatment. Histopathological examination demonstrated chronic inflammation. This case presents as a chronic colorectal fistula with a prolonged asymptomatic phase.

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### Introduction

Colorectal fistula, first reported in 1839, represents an abnormal communication between the colon and the kidney. Among all reno-enteric fistulas, the colorectal type is the most frequently reported.<sup>1</sup> Chronic renal obstruction and delayed management of renal calculi can result in a loss of renal function, persistent inflammation, and eventual fistula formation.<sup>2</sup>

The etiology of colorectal fistulas is heterogeneous and includes iatrogenic causes (e.g., upper urinary tract tumor ablation, percutaneous nephrostomy), malignancy, trauma, chronic infection, or inflammation. Clinical manifestations vary widely, but commonly include abdominal or

flank pain, fever, pneumaturia, and lower urinary tract symptoms (LUTS). As a consequence of the nonspecific presentation, diagnosis is often delayed or missed.

Imaging studies play a pivotal role in diagnosis. Retrograde pyelography remains the gold standard for confirmation of the presence of a fistulous tract.<sup>3</sup> Other useful modalities include contrast-enhanced CT or endoscopic evaluation. Treatment strategies range from conservative management, such as bowel rest and antibiotics, to definitive surgical intervention with nephrectomy and colectomy<sup>4,5</sup>, depending on the etiology and renal function status.

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## Case Report

In January 2025, a 71-year-old Thai man presented with a two-week history of a burning sensation in both testicles. At this visit, he also reported new onset pneumaturia occurring near the end of urination, without any passage of food particles or gross hematuria. The patient had a 19-year history of recurrent urinary tract infections (UTIs), as illustrated in Figure 1.

The patient had chronic renal failure and a known allergy to ceftriaxone. Ciprofloxacin had been used as the antibiotic therapy in all prior infections. His most severe episode occurred in April 2019, when he presented with right subcostal pain and dysuria. Urinalysis showed pyuria, and he was treated for cystitis with ciprofloxacin, consistent with his treatment history.

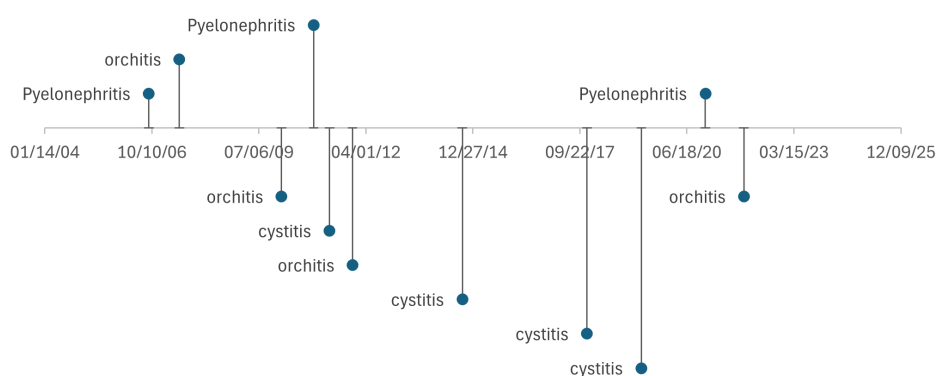
At follow-up one week later, his symptoms, including abdominal pain and dysuria, had not improved, although the degree of pyuria had decreased but was not completely resolved. Ciprofloxacin was continued. Three days later, he

presented at the Emergency Department with worsening right abdominal pain, though he remained afebrile. He was admitted for evaluation, and a contrast-enhanced CT scan was performed for the first time (Fig. 2). The CT revealed a liver abscess, which became the primary focus of treatment at that time.

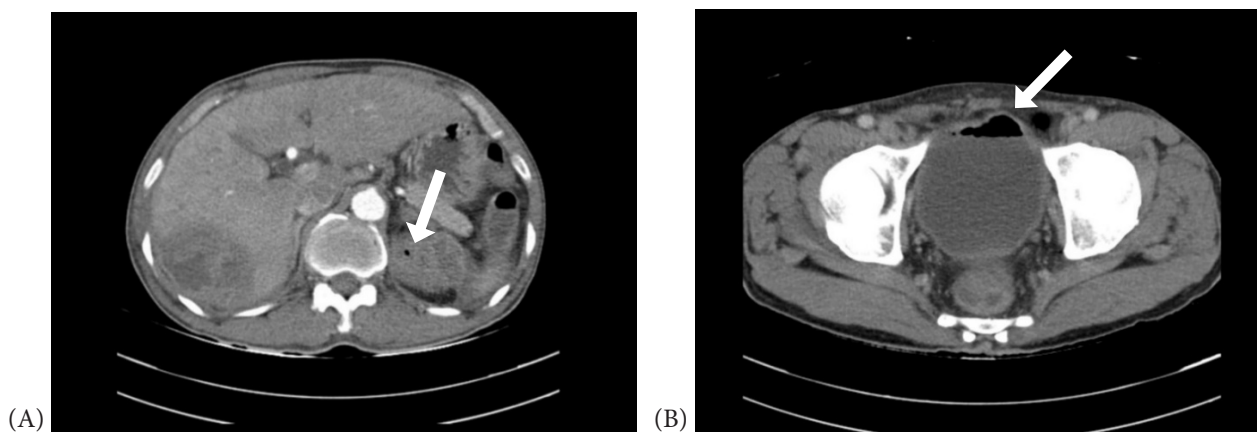
Upon retrospective review of the 2019 CT scan, air was also noted within the urinary bladder and left renal pelvis. However, this finding was not included in the initial report and was clinically overlooked, potentially because attention was focused on the acute liver abscess. The abscess was successfully treated with a six-week course of antibiotics.

A new non-contrast CT scan performed in January 2025 again demonstrated air within the bladder and left renal pelvis, and the left kidney had become progressively atrophic (Fig. 3).

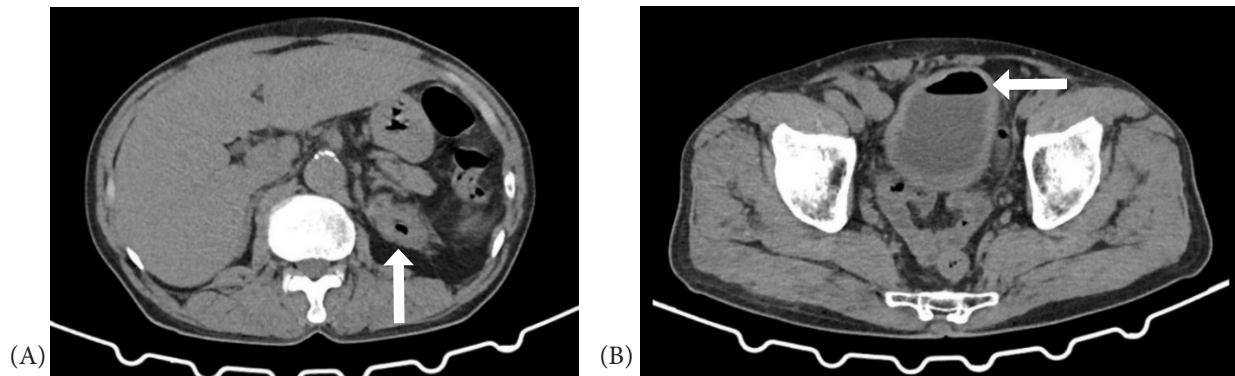
The patient was treated for complicated UTI using sitafloxacin for two weeks. However, after the antibiotic course was completed, urinalysis



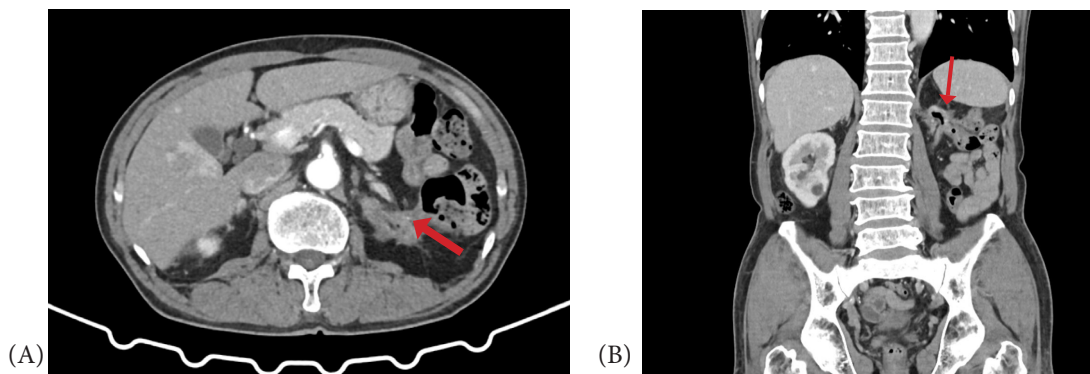
**Figure 1.** Timeline of urinary tract infections in this patient.



**Figure 2.** CT scan with contrast (April 2019) showing the liver abscess, air in the left kidney (A), and urinary bladder (B).



**Figure 3.** Non-contrast CT scan (January 2025) showing persistent air in the left kidney (A) and bladder (B).



**Figure 4.** Contrast-enhanced CT scan (March 2025) demonstrating adhesion between the left kidney (A) and colon with a suspected fistula site (B).

still showed  $>100$  pus cells/HPF, and his symptoms persisted. Upon further review of the CT images, a colorenal fistula was suspected due to persistent air in the left renal pelvis and the presence of fat stranding between the atrophic left kidney and the adjacent descending colon, despite the absence of a clearly visualized fistula tract.

This suspicion was reinforced by the persistence of pneumaturia despite appropriate antibiotic therapy, suggesting that the air source was not due to an active gas-forming infection. In addition, the CT scan excluded occurrence of a vesicocolic fistula. A contrast-enhanced CT performed in March 2025 (Fig. 4) confirmed the diagnosis of colorenal fistula.

Given that the left kidney was atrophic and non-functioning, a left nephrectomy was planned. Written informed consent was obtained for both the surgery and publication of the case details, including accompanying images.

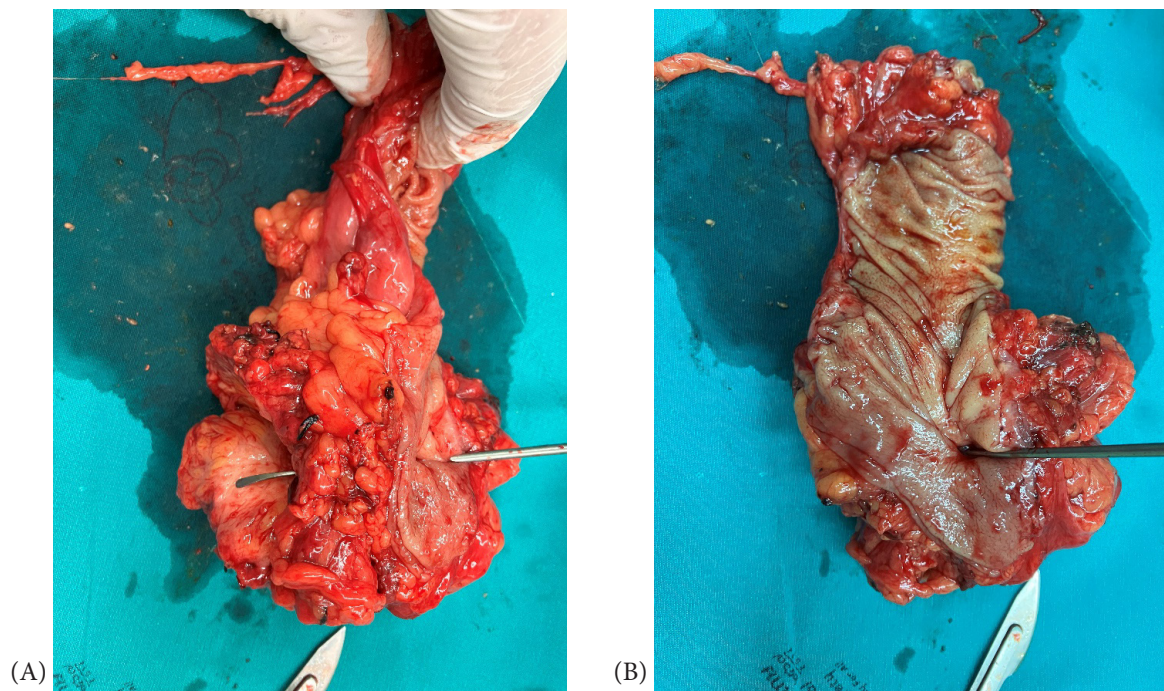
Preoperative evaluation included a normal chest X-ray, with no evidence of tuberculosis. Although tuberculosis was considered a possible etiology, the initial work-up was negative. Surgery was primarily indicated to remove the fistulous

tract, with the definitive etiology to be confirmed via histopathology. The patient underwent mechanical bowel preparation using Niflec solution one day before surgery. A general surgeon was consulted for the colonic portion of the operation. As the CT findings did not suggest malignancy, preoperative colonoscopy was not performed.

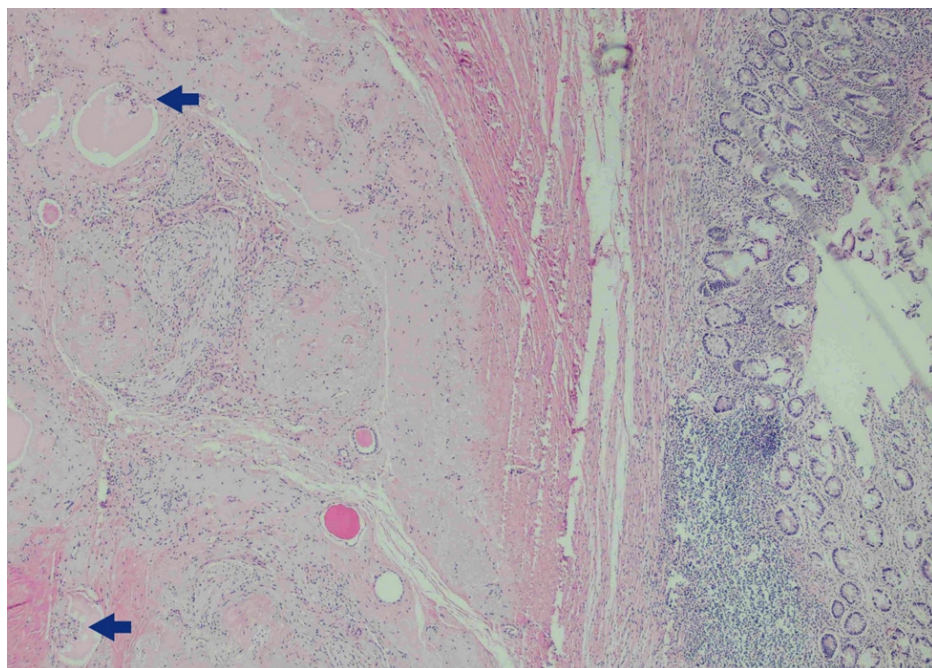
Intraoperative exploration via a long midline incision was performed to confirm the suspected fistula, with a plan for segmental colectomy if identified. Dense adhesions were noted around the left kidney. Left nephrectomy was completed, and upon mobilization of the splenic flexure, the left kidney was found to be firmly adherent to the descending colon with thick fibrotic tissue. Segmental colectomy was performed with end-to-end anastomosis. A Jackson-Pratt drain was placed in the renal fossa.

Gross examination of the bivalved specimen revealed a fistulous communication between the colon and the kidney. The mucosal surface appeared smooth with no visible mass (Fig. 5).

Postoperatively, the patient initially recovered well but developed fever on the fourth postoperative day. Examination revealed an infection at



**Figure 5.** Gross specimen (bivalved) showing the fistula tract from the colon to the kidney (A) with smooth mucosal surfaces and no mass (B).



**Figure 6.** Histopathology showing a fistulous tract lined by colonic mucosa with surrounding chronic inflammation (left) and adjacent renal tissue with glomeruli (blue arrow) and marked fibrosis (right).



the surgical site, and all sutures were removed. A small amount of pus was drained from the umbilical region. The patient was treated with ciprofloxacin and metronidazole. Following suture removal and antibiotic therapy, he became afebrile, regained bowel function, and was discharged several days later.

Histopathologic examination demonstrated colonic mucosa invagination through the colonic wall, forming a fistulous tract connecting to renal tissue. Scattered chronic inflammatory cells surrounded the tract. The renal tissue exhibited glomeruli with dilated Bowman's spaces, tubular dilatation, and marked interstitial fibrosis (Fig. 6).

## Discussion

In this patient, the differential diagnosis for pneumaturia included gas-forming infections such as emphysematous pyelonephritis or emphysematous cystitis. These conditions were excluded as the patient's pneumaturia persisted even after completion of a two-week, culture-directed antibiotic course. The persistence of pneumaturia strongly suggested a chronic, non-infectious source of air.

While a vesicocolic fistula is a more common cause of pneumaturia, this was ruled out based on CT findings. The presence of persistent air in the left renal pelvis, along with inflammatory fat stranding between the atrophic kidney and the adjacent colon, was highly suggestive of a colorenal fistula, even though the actual fistulous tract was not clearly visualized on imaging.

The choice of a long midline incision in this case was primarily guided by the need for potential segmental colectomy. After multidisciplinary discussion with the general surgery team, this approach was deemed optimal because it provided excellent exposure and superior control of the proximal and distal colon, which is critical for a safe resection and anastomosis.

An alternative incision, such as an anterior subcostal approach, might have sufficed for nephrectomy alone; however, it would have made colonic resection and anastomosis technically

challenging. A laparoscopic approach was considered but not chosen due to the expected dense, chronic inflammation and fibrosis between the kidney and colon which was confirmed intraoperatively. The midline approach therefore offered the most secure and controlled operative field for this complex two-organ procedure, despite its known disadvantages such as greater postoperative discomfort and a potential risk of incisional hernia.

The decision to perform a segmental colectomy rather than simple fistula repair was based on two main considerations. First, simple repair is generally reserved for cases in which renal preservation is feasible. In this patient, the left kidney was atrophic and non-functioning, making nephrectomy unavoidable. Second, intraoperative findings revealed dense fibrotic adhesion involving the colon wall around the fistula. This chronic inflammatory process rendered simple closure of the colonic defect unsafe, as the tissue margins were unhealthy and poorly vascularized. Segmental colectomy was therefore required to remove the diseased portion and restore bowel continuity with healthy tissue.

Malignancy was excluded through multiple steps. Preoperative CT scans revealed no colonic mass, and intraoperative inspection confirmed that the mucosal surface of the fistulous tract was smooth and lesion-free. Histopathological analysis subsequently confirmed chronic inflammation with colonic mucosa lining the tract, with no evidence of neoplasia.

Colorenal fistula is a rare condition. Table 1 summarizes previously reported cases from 1953 to 2023, detailing the clinical presentations, etiologies, laterality, and management strategies for both the renal and colonic components.

Among the reviewed cases, female patients were slightly more prevalent than males (56.10%). Patient age ranged from 2 to 83 years, with a mean of  $54.5 \pm 19.33$  years. The left kidney was affected in the majority of cases (85.96%, left : right = 49:8).

**Table 1.** Review case reports of colorenal fistula according to symptoms, causes, and treatments.

Author	Year	Gender	Age (year)	Clinical Presentation	Cause	Side	Kidney	Colon	Result
BRIGGS et al. <sup>6</sup>	1953	Male	56	Flank pain	Staghorn	Left	Nephrectomy	Colon resection	Recovered
FETTER et al. <sup>7</sup>	1956	Female	48	Flank pain	Staghorn	Left	Nephrectomy	Colostomy → closure fistula	Recovered
Husted et al. <sup>8</sup>	1974	Female	78	Fever	Pyonephrosis, Diverticulitis	Left	Died	NA	Died
Brust et al. <sup>9</sup>	1974	Male	63	Flank pain, UTI	CA colon	Left	Nephrectomy	Colon resection	NA
Vargas et al. <sup>10</sup>	1975	NA	NA	NA	Pyonephrosis	Left	Nephrectomy	Closure fistula	Recovered
Underwood et al. <sup>11</sup>	1977	Female	69	Abdominal pain, vomiting	Staghorn stone	Left	Pyelolithotomy (two stages)	Colostomy, colon resection	Recovered
Goldman et al. <sup>1</sup>	1979	Female	54	Abdominal pain	Pyonephrosis	Left	Nephrectomy	Colon resection, colostomy	Recovered
Davillas et al. <sup>12</sup>	1981	NA	NA	NA	Renal stone, Pyonephrosis	Left	Nephrectomy	Colon resection	NA
List et al. <sup>13</sup>	1983	NA	NA	NA	XGP	NA	NA	NA	NA
Cohen et al. <sup>14</sup>	1983	NA	NA	NA	Renal stone	NA	Nephrectomy	Closure fistula	Recovered
Morozumi et al. <sup>15</sup>	1986	Female	53	Flank pain, fever	Renal stone, perinephric abscess	Right	Nephrectomy	Colectomy	Recovered
		Female	63	Flank pain, fever	Staghorn stone	Left	Nephrectomy	Colectomy	Recovered
Parsons et al. <sup>16</sup>	1986	Male	5	blood clots in the urine, frequency, dysuria	Pyonephrosis	Right	Nephrectomy	closure fistula	Recovered
Doughney et al. <sup>17</sup>	1986	Female	52	Nausea, vomiting, cough, fever	Staghorn stone, perinephric abscess	Left	Died before definite surgery	Colostomy	Died
Mooreville et al. <sup>18</sup>	1988	Female	83	Polyuria, back pain	Staghorn stone, pyonephrosis	Right	Nephrectomy	Conservative (could not do)	Recovered
Bretagne et al. <sup>19</sup>	1989	NA	2	NA	VUR, XGP	Right	Nephrectomy	Closure fistula	NA
Yamaguchi et al. <sup>20</sup>	1990	Female	58	Flank pain	XGP	Left	Nephrectomy	Closure fistula	Recovered
Connor et al. <sup>21</sup>	1991	NA	NA	NA	Staghorn stone	NA	NA	NA	NA
Lekili et al. <sup>22</sup>	1991	Male	8	Flank pain	Bilateral VUR, recurrent UTI	Right	Nephrectomy	Colon resection	Recovered
Lozano et al. <sup>23</sup>	1992	NA	NA	NA	Renal stone, pyonephrosis	Left	Nephrectomy	Closure fistula	NA

**Table 1.** Review case reports of colorenal fistula according to symptoms, causes, and treatments. (continued)

Author	Year	Gender	Age (year)	Clinical Presentation	Cause	Side	Kidney	Colon	Result
Yildiz et al. <sup>24</sup>	1993	NA	NA	NA	Chronic pyelonephritis	NA	NA	NA	NA
Mander et al. <sup>25</sup>	1993	Male	70	Pneumaturia, frequency, dysuria	UPJO	Left	Partial nephrectomy	Closure fistula	Recovered
Ono et al. <sup>26</sup>	1995	Female	68	Flank pain, fever	XGP, ureteric calculi	Left	Nephrectomy	Closure fistula	Recovered
Blatstein et al. <sup>27</sup>	1996	Male	57	Abdominal discomfort, weight loss	RCC	Left	Radical nephrectomy	En bloc resection	Recovered
Parvey et al. <sup>28</sup>	1997	Male	71	Flank pain, weight loss	UPJO, perirenal abscess	Left	Nephrectomy	Colectomy, colostomy	NA
		Female	45	Flank pain, fever	XGP, stone, perinephric abscess	Left	Nephrectomy	NA	NA
		Female	66	Fever	Acute suppurative pyelonephritis, perinephric abscess	Left	Nephrectomy	Colectomy, colostomy	NA
Borum et al. <sup>29</sup>	1997	Female	45	Cough	Staghorn stone, XGP, perinephric abscess	Left	Nephrectomy	Colon resection	Recovered
Majeed et al. <sup>30</sup>	1997	NA	NA	NA	XGP	Left	Nephrectomy	Colon resection	Recovered
		NA	NA	NA	XGP	Left	Nephrectomy	Colon resection	Recovered
		NA	NA	NA	XGP	Left	Nephrectomy	Colon resection	Recovered
		NA	NA	NA	XGP	Left	Nephrectomy	Colon resection	Recovered
Duddalwar et al. <sup>31</sup>	1998	Male	72	Abdominal pain, anorexia, weight loss, constipation	RCC	Left	Nephrectomy	Colon resection	Died
Tundidor et al. <sup>32</sup>	1999	Female	48	NA	Pyonephrosis	Left	Nephrectomy	Colon resection	Died
el Otmány et al. <sup>33</sup>	1999	NA	NA	NA	TB, ectopic kidney	Left	Nephrectomy	Sigmoid resection	Recovered
Tsujimoto et al. <sup>34</sup>	2000	Female	78	Pneumaturia	Staghorn stone	Left	Nephrectomy	Colon resection	Recovered
Bencheikroun et al. <sup>35</sup>	2002	NA	NA	NA	Renal stone, TB	Left	Nephrectomy	Closure fistula	Recovered
Bachelier et al. <sup>36</sup>	2004	NA	NA	NA	XGP	Right	Nephrectomy	Repair fistula	NA
Fariña et al. <sup>37</sup>	2004	Female	75	Fever	Renal stone, XGP	Left	Nephrectomy	Colon resection	Recovered
Ito et al. <sup>38</sup>	2004	Male	51	Fever, abdominal pain	Diverticulitis, polycystic kidney	Left	Nephrectomy	Colon resection	Recovered

**Table 1.** Review case reports of colorenal fistula according to symptoms, causes, and treatments. (continued)

Author	Year	Gender	Age (year)	Clinical Presentation	Cause	Side	Kidney	Colon	Result
Matsuoka et al. <sup>39</sup>	2006	Female	60	Flank pain, fever	Parapelvic cyst, XGP	Left	Nephrectomy	Colon resection	Recovered
Gimenez et al. <sup>40</sup>	2008	NA	NA	NA	Staghorn stone, diverticulitis	NA	NA	NA	NA
Ishikawa et al. <sup>41</sup>	2008	Female	60	Hematuria, pneumaturia	Renal cyst	Left	Nephrectomy	Colon resection	Recovered
Lee et al. <sup>42</sup>	2009	Female	69	Flank pain	Bilateral obstructive uropathy (CA Cx), forgotten DJ stent, perinephric abscess	Right	Conservative	NA	Died
Chalise et al. <sup>43</sup>	2009	Male	55	NA	PCN, retrorenal colon	Left	Nephrectomy	Closure fistula	Recovered
Ould et al. <sup>44</sup>	2010	Male	28	Abdominal wound from firearm	Penetrating injury	Left	DJ stent	Repair fistula	Recovered
Sáenz et al. <sup>45</sup>	2010	NA	NA	NA	Radiofrequency ablation of RCC	NA	Nephrectomy	NA	NA
Wysocki et al. <sup>4</sup>	2010	Female	76	Hematochezia	Cryoablation	Left	Nephrectomy	Colon resection	NA
Lee et al. <sup>46</sup>	2011	Male	36	Pneumaturia	Car accident 4 months ago, kidney injury gr IV	Left	Nephrectomy	Colon resection	Recovered
Marwah et al. <sup>47</sup>	2012	Female	42	Flank pain, difficult to breath	Renal stone, emphysematous pyelonephritis, TB	Left	Subcapsular nephrectomy	Colon resection	Recovered
Zeller et al. <sup>48</sup>	2013	female	47	Flank pain	Staghorn, recurrent UTI	Right	Nephrectomy	Closure fistula	Recovered
Patil et al. <sup>49</sup>	2013	Female	25	Abdominal pain, fever	Staghorn stone, XGP	Left	Nephrectomy	Closure fistula	Recovered
Abdelaziz et al. <sup>50</sup>	2014	Male	28	Hematuria	automatic gun	Left	DJ stent only	Not done	Recovered
Elvas et al. <sup>51</sup>	2018	Female	64	Back pain, sepsis	Emphysematous pyelonephritis, TCC	Left	Nephrectomy	Colon resection	Died
Iwashita et al. <sup>52</sup>	2018	Male	65	Fever, abdominal pain	ADPKD	Left	Nephrectomy	Colon resection	Died
Auld et al. <sup>53</sup>	2018	Male	77	Watery and bloody diarrhea, sepsis	TCC	Left	RT, DJ stent	NA	Died
Mozo et al. <sup>54</sup>	2018	Male	58	NA	Cryoablation	Left	Repair fistula	Closure fistula	Recovered
Thiyagarajan et al. <sup>55</sup>	2018	Female	42	NA	Radiotherapy of CA Cx	Left	DJ stent only -> cure	Not done	Died (from CA Cx)

**Table 1.** Review case reports of colorenal fistula according to symptoms, causes, and treatments. (continued)

Author	Year	Gender	Age (year)	Clinical Presentation	Cause	Side	Kidney	Colon	Result
Yilmaz et al. <sup>2</sup>	2019	Female	76	Flank pain	Creteric calculi	Left	Nephrectomy	Repair fistula	Recovered
Numan et al. <sup>56</sup>	2019	Female	40	Fatigue, anemia, frequency	Staghorn stone, XGP, perinephric abscess	Left	Nephrectomy	Closure fistula	Recovered
Boopathy et al. <sup>57</sup>	2020	Male	55	NA	DJ stent	Left	DJ stent	Conservative	Recovered
Lulla et al. <sup>58</sup>	2021	NA	79	Flank pain	Staghorn, recurrent UTI, Hx of Crohn's disease	Left	Nephrectomy	Colectomy	NA
Goddard et al. <sup>59</sup>	2022	Male	32	NA	Gunshot wound	Left	DJ stent only	Not done	Recovered
Hillman et al. <sup>60</sup>	2023	Female	53	Altered mental status, fever, chill, dysuria	Emphysematous pyelitis	Left	Nephrectomy	Colectomy, colostomy	Recovered

UTI = urinary tract infection, CA = cancer, XGP = xanthogranulomatous pyelonephritis, VUR = vesicoureteral reflux, UPJO = ureteropelvic junction obstruction, RCC = renal cell carcinoma, TB = tuberculosis, Cx = cervix, ADPKD = autosomal dominant polycystic kidney disease, TCC = transitional cell carcinoma, RT = radiotherapy, DJ = double J, Hx = history, PCN = percutaneous nephrostomy

Pain was the most frequent presenting symptom (Fig. 7), with flank pain reported in 32.35% of patients.<sup>2,6,48,58,7,9,15,20,28,39,42,47</sup> When combined with abdominal pain, seen in 14.71% of cases<sup>1,11,31,38,49,52</sup>, pain-related symptoms accounted for 47.06% overall.

The second most common symptom was fever, which occurred in 26.47% of cases.<sup>8,15,17,26,28,37-39,49,52</sup> Other presentations included pneumaturia (8.82%)<sup>25,34,41,46</sup>, hematuria (5.88%)<sup>41,50</sup>, and lower urinary tract symptoms (LUTS) including frequency and dysuria (14.71%)<sup>16,25,56,60</sup>

Unlike most reported cases presenting with pain or fever, the main symptom in our patient was pneumaturia, a less common but highly specific finding reported in only 8.82% of cases. This sign was key to the eventual diagnosis, even though it had initially been overlooked.

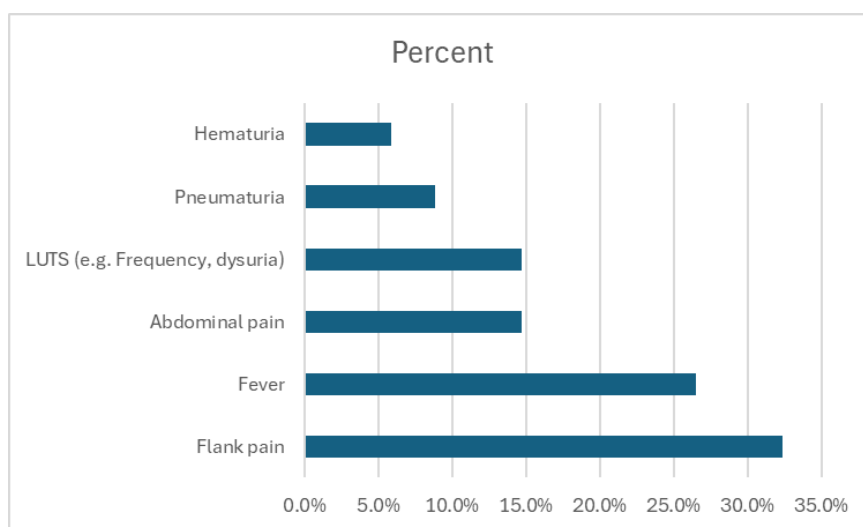
The most common etiology of colorenal fistula was renal calculi, observed in 25.97% of cases. This was followed by renal infection or abscess (24.68%) and chronic inflammatory conditions such as xanthogranulomatous pyelonephritis (XGP) (19.48%), as illustrated in Figure 8.

Many cases involved multiple overlapping causes, for example, renal calculi coexisting with XGP or perirenal abscess. Stones were typically the primary factor. Other reported etiologies included:

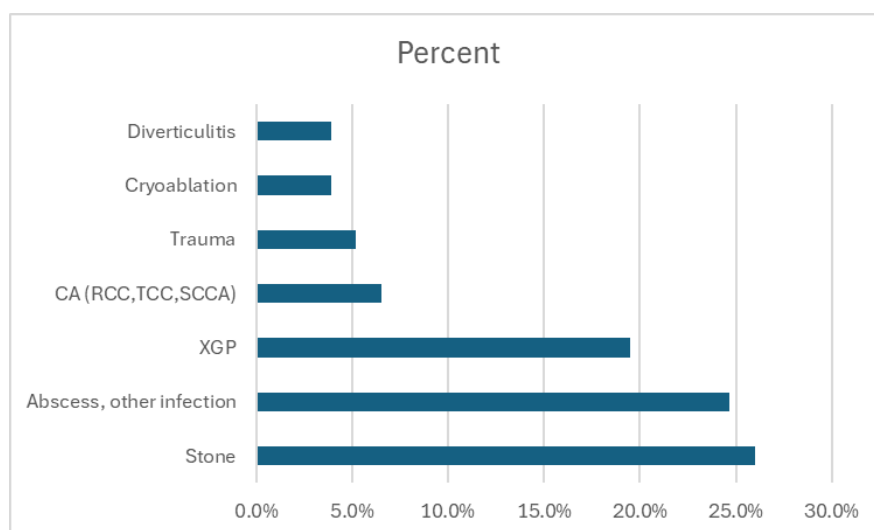
- Renal malignancy (RCC, TCC, or squamous cell carcinoma): 6.49%<sup>7,27,31,51,53</sup>
- Colon carcinoma: 1.75%<sup>9</sup>
- Trauma such as gunshot wounds: 3.51%<sup>44,46,50,59</sup>
- Cryoablation or radiofrequency ablation: 3.51%<sup>4,45,54</sup>
- Ureteral (DJ) stent insertion: 3.51%<sup>42,57</sup>
- Renal cysts: 3.51%<sup>41,52</sup>
- Colonic diverticulitis: 5.26%<sup>8,38,40</sup>

Although stones (25.97%) and XGP (19.48%) were the predominant causes, the condition of our patient most closely resembled those caused by chronic infection and abscess (24.68%). Postoperative pathology demonstrated chronic inflammation without calculi, malignancy, or diverticulitis, supporting this classification.

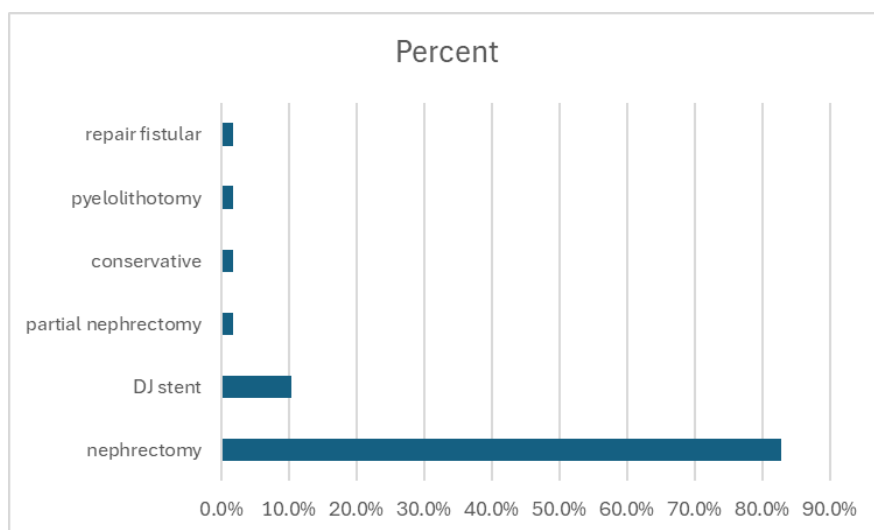
Regarding management, nephrectomy was the most common treatment for the renal component, performed in 82.76% of cases (Fig. 9). Conservative management<sup>12</sup> accounted for 1.72%, while DJ stenting<sup>44,50,53,55,57,59</sup> was repre-



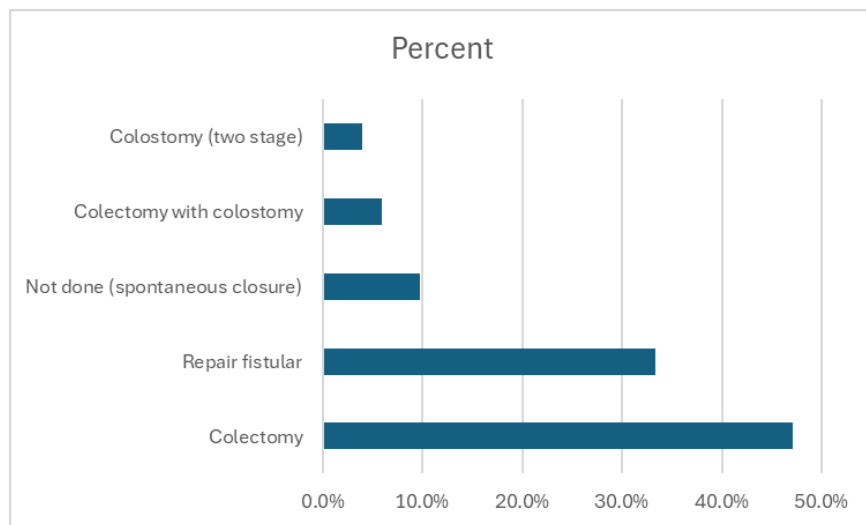
**Figure 7.** Distribution of symptoms among patients with colorenal fistula.



**Figure 8.** Etiologies of colorenal fistula reported in relevant literature.



**Figure 9.** Management strategies for the renal component.



**Figure 10.** Management strategies for the colonic component.

sented in 10.34% of cases. Partial nephrectomy<sup>25</sup> and pyelolithotomy<sup>11</sup> accounted for 1.72% of cases each.

In the case of the colonic component, 47.06% underwent resection, while 33.33% underwent fistula repair (simple closure or fistulectomy). Both colectomy and colostomy were performed in 5.88% of cases<sup>1,28,60</sup>, and approximately 9.80% healed spontaneously, mainly in cases secondary to trauma or DJ stent insertion<sup>18,50,55,57,59</sup> (Fig. 10).

The management of our patient mirrored the most common approach reported in the literature: nephrectomy for the non-functioning kidney (82.76%) and segmental colectomy (47.06%) rather than simple repair (33.33%), due to the extensive fibrosis found intraoperatively.

Currently, no standardized treatment algorithm exists for colorenal fistula.<sup>5</sup> Although nephrectomy is required in most cases, the choice depends on renal function and underlying pathology. Nephron-sparing or conservative approaches may be suitable in selected patients, particularly those with preserved renal function or traumatic etiologies. In this case, nephrectomy was necessary because of severe atrophy and non-functioning of the affected kidney.

The management of the colonic segment depends on the etiology, degree of inflammation, and overall patient condition. Initial conservative measures such as drainage, bowel rest, or stenting may be attempted in stable patients. However, definitive treatment typically requires surgical resection. The standard approach involves en bloc resection of the diseased colonic segment with primary anastomosis if local tissues are healthy.

In the presence of severe infection or inflammation, a staged procedure may be safer, specifically initial resection with proximal diversion (e.g., colostomy), followed by delayed restoration of bowel continuity once inflammation is resolved.

## Conclusions

Colorenal fistula is an uncommon and diagnostically challenging condition that requires a high index of clinical suspicion, especially in patients with a long history of recurrent UTIs. This case highlights how indirect but classic radiologic signs, such as persistent air within the urinary system, can be overlooked for years when attention is directed toward other acute pathologies, such as a liver abscess.

The key clinical lesson is that in any patient with chronic or recurrent UTIs, the persistence of air in the renal pelvis or urinary bladder, even when the fistulous tract is not directly visualized, should raise strong suspicion of a colorenal fistula. Such findings warrant thorough investigation and, in appropriate cases, surgical exploration.

Contrast-enhanced CT remains the most valuable diagnostic modality, both in identification of the underlying pathology and for surgical planning. Definitive treatment often requires en bloc resection of the affected kidney and the involved colonic segment, particularly when the renal unit is non-functioning or when chronic inflammation and fibrosis preclude conservative repair.

This case adds to the limited number of documented reports of colorenal fistula, underlining the importance of long-term vigilance in

patients with recurrent urinary infections and chronic renal inflammation. Early recognition and multidisciplinary surgical management can lead to favorable outcomes and prevent serious complications.

### Conflict of Interest

The authors declare no conflict of interest.

### References

- Goldman HS, Smith DL, Foote RF, Gualtieri V, Ross SC, Holder NW. Spontaneous disruption of the colon associated with pyonephrosis. *Dis Colon Rectum* 1979;22:172-4.
- Yilmaz G, Ranasinghe B, Teper E. Renocolic fistula. *JAAPA* 2019;32:29-31.
- Formoso R, Vaz V, Borda J, Martinho D, Lopes T. Fistula Reno-Cólica como complicação de Pielonefrite Xantogranulomatosa. *Acta Urológica* 2008; 2:57-61.
- Wysocki JD. Colo-renal fistula: An unusual cause of hematochezia. *World J Gastrointest Pathophysiol* 2010;1:106.
- Ashfaq A, Ferrigni R, Mishra N. Laparoscopic approach to colo-renal fistula with renal preservation and omentoplasty: A case report. *Int J Surg Case Rep* 2017;35:53-6.
- Briggs JD, Neale RM. Renocolic fistula: report of a case. *J Urol* 1953;69:484-6.
- Fetter TR, Varano NR. Renocolic fistula: report of two cases. *J Urol* 1956;76:550-6.
- Husted JW. An unusual case of pyelonephritis: nephrocolic fistula owing to a ruptured colonic diverticulum. *J Urol* 1974;111:724-6.
- Brust RW, Morgan AL. Renocolic fistula secondary to carcinoma of the colon. *J Urol* 1974;111:439-40.
- Vargas AD, Victor I. Renocolic fistula. *South Med J* 1975;68:652-4.
- Underwood JW. An unusual renocolic fistula. *J Urol* 1977;118:847-8.
- Davillas N, Panayotidis N, Thanos A, Scoutéris M. [Spontaneous renocolic fistula from lithiasic pyonephrosis (author's transl)]. *J Urol (Paris)*. 1981;87: 269-72.
- List AR, Johansson SL, Nilson AE, Pettersson S. Xanthogranulomatous pyelonephritis with renocolic fistula and coexistent contralateral renal carcinoma. *Scand J Urol Nephrol* 1983;17:139-43.
- Cohen EL, Greenstein AJ, Katz SE. Nephro colo cutaneous fistula: use of CT scan to aid diagnosis. *Comput Radiol* 1983;7:291-4.
- Morozumi M, Ogawa Y, Fukushima T, Murata M, Tanaka T, Yamaguchi K, et al. [Renocolonic fistula complicated by a renal stone: report of two cases]. *Hinyokika Kiyo* 1986;32:581-5.
- Parsons MA, Harris SC, Grainger RG, Ross B, Smith JA, Williams JL. Fistula and sinus formation in xanthogranulomatous pyelonephritis. A clinicopathological review and report of four cases. *Br J Urol* 1986;58:488-93.
- Doughney KB, Dineen MK, Venable DD. Nephro-bronchial colonic fistula complicating perinephric abscess. *J Urol* 1986;135:765-7.
- Mooreville M, Elkouss GC, Schuster A, Pearce AE, Rosen J. Spontaneous renocolic fistula secondary to calculous pyonephrosis. *Urology* 1988;31:147-50.
- Bretagne MC, Bernard C, Canel MA, Dulucq P, de Miscault G, Schmitt M, et al. Fistule réno-colique compliquant un reflux vésico-rénal et une pyélonéphrite xanthogranulomateuse chez un enfant de 20 mois [Renocolonic fistula complicating vesicorenal reflux and xanthogranulomatous pyelonephritis in a 20-month-old child]. *J Radiol* 1989;70:483-6.
- Yamaguchi T, Irisawa C, Ishii N, Mitobe K, Nishio A. [Renocolic fistula caused by xanthogranulomatous pyelonephritis: a case report]. *Hinyokika Kiyo* 1990; 36:63-7.
- Connor JP, Schwartz M, Lehrhoff B. Nephrocolic fistula in association with a staghorn calculus discovered intraoperatively. *Int Urol Nephrol* 1991;23:113-6.
- Lekili M, Esen A, Ozen HA, Bakkaloğlu M. Spontaneous renocolic fistula in vesicoureteric reflux. *Br J Urol* 1991;68:324-5.
- Lozano Ortega JL, Adiazola Semino M, Viñuela B, Tejeda Bañez E, García Cobo E, Romero Rodríguez F. [Spontaneous renocolic fistula secondary to pyonephrosis of lithiasic etiology]. *Actas Urol Esp* 1992; 16:342-4.
- Yildiz M, Atan A, Aydoğanlı L, Cengiz T, Akalin Z. Renocolic fistula secondary to chronic pyelonephritis. *Int Urol Nephrol* 1993;25:229-33.
- Mander BJ, Menzies D, Motson RW. Reno-colic fistula. *J R Soc Med* 1993;86:601-2.
- Ono Y, Sekihara T, Kurokawa K, Saruki K. Renocolic fistula caused by xanthogranulomatous pyelonephritis. *Int J Urol* 1995;2:277-8.
- Blatstein LM, Ginsberg PC. Spontaneous renocolic fistula: a rare occurrence associated with renal cell carcinoma. *J Am Osteopath Assoc* 1996;96:57-9.
- Parvey HR, Cochran ST, Payan J, Goldman S, Sandler CM. Renocolic fistulas: complementary roles of computed tomography and direct pyelography. *Abdom Imaging* 1997;22:96-9.
- Borum ML. An unusual case of nephrobronchial and nephrocolonic fistula complicating xanthogranulomatous pyelonephritis. *Urology* 1997;50:443.



30. Majeed HA, Mohammed KA, Salman HA. Renocolic fistula as a complication to xanthogranulomatous pyelonephritis. *Singapore Med J* 1997;38:116-9.
31. Duddalwar VA, Robertson EM. Renocolic fistula: a case report. *Scott Med J* 1998;43:59-60.
32. Tundidor Bermúdez AM. [A renocolic fistula diagnosed by retrograde pyelography]. *Arch Esp Urol* 1999;52:788-90.
33. el Otmany A, Hamada H, Hachi H, Benjelloun S, Oukhira H, Souadka A. [Reno-sigmoid fistula in a tuberculous pelvic ectopic kidney]. *Prog Urol* 1999; 9:122-4.
34. Tsujimoto Y, Oka T, Arai H, Miki T, Miyagawa Y, Takano Y, et al. Renocolic fistula: a case report. *Hinyokika Kyo* 2000;46:409-12.
35. Benchekroun A, Nouini Y, Zannoud M, Ahmed el Alj H, Lachkar A, Belahnech Z. [Cutaneo-reno-colonic fistula in tubercular kidney with staghorn calculus: report of a case]. *Ann Urol (Paris)* 2002; 36:361-4.
36. Bachelier MN, Carteron M, Gazaigne J, Mornet M, Mozziconacci JG, Ntarundenga U. [A case of renocolic fistula complicating xanthogranulomatous pyelonephritis treated by laparoscopy]. *Prog Urol* 2004;14:67-9.
37. Fariña Pérez LA, Pesqueira Santiago D, Alvarez Alvarez C, Zungri Telo ER. [Diffuse xanthogranulomatous pyelonephritis with a renocolic fistula neglected for more than two years]. *Actas Urol Esp* 2004;28:553-5.
38. Ito H, Miyagi T, Katsumi T. [A renocolic fistula due to colonic diverticulitis associated with polycystic kidney]. *Nihon Hinyokika Gakkai Zasshi* 2004; 95:67-70.
39. Matsuoka Y, Arai G, Ishimaru H, Takagi K, Aida J, Okada Y. Xanthogranulomatous pyelonephritis with a renocolic fistula caused by a parapelvic cyst. *Int J Urol* 2006;13:433-5.
40. Gimenez E, Raman JD, Lieberman M, Vaughan ED. Cutaneous renocolic fistula associated with diverticulitis. *Can J Urol* 2008;15:4191-3.
41. Ishikawa E, Kudo M, Minami Y, Ueshima K, Chung H, Hayaishi S, et al. Intracystic hemorrhage in a patient of polycystic kidney with renocolic fistula diagnosed by contrast-enhanced ultrasonography. *Intern Med* 2008;47:1977-9.
42. Lee SW, Kim JH. Renocolic fistula secondary to a perinephric abscess: a late complication of a forgotten double J stent. *J Korean Med Sci* 2009;24:960-2.
43. Chalise PR, Sharma UK, Gyawali PR, Shrestha GK, Joshi BR, Ghimire RK. Renocolic fistula following percutaneous nephrostomy: a case report. *Nepal Med Coll J* 2009;11:143-4.
44. Ould Ismail T, Hajji F, Janane A, Dekkak Y, Sossa J, Chafiki J, et al. Les fistules rénocoliques post-traumatiques: à propos d'une observation [Renocolic fistula following abdominal trauma: a case study]. *Prog Urol* 2010;20:230-2.
45. Sáenz Medina J, Redondo González E, Hernández-Atance JM, et al. Renocolic fistula as a complication of radiofrequency in the treatment of renal cell carcinoma. *Arch Esp Urol* 2010;63:74-7.
46. Lee SD, Kim TN, Ha HK. Delayed presentation of renocolic fistula at 4 months after blunt abdominal trauma. *Case Rep Med* 2011;2011:103497.
47. Marwah S, Garg S, Marwah N, Chaudhry D. Tubercular renocolic fistula: an unusual presentation. *Clin J Gastroenterol* 2012;5:347-50.
48. Zeller FL, García Garzón JM, Peralta J, Benguigui Benadiva J. Asymptomatic renocolic fistula as a complication of staghorn calculus: case report. *Arch Esp Urol* 2013;66:817-9.
49. Patil SB, Patil GS, Kunderagi VS, Biradar AN. A case of Xanthogranulomatous pyelonephritis with spontaneous renocolic fistula. *Turkish J Urol* 2013;39:122-5.
50. Abdelaziz H, Adourrouj I, Elabiad Y, Janane A, Ghadouane M, Ameer A, et al. Management of renocolic fistula following abdominal trauma from a Gunshot: Two cases reports. *Can Urol Assoc J* 2014;8:E207-9.
51. Elvas AR, Pereira BJ, Carrega F, Vicente L. [Fulminant Emphysematous Pyelonephritis Secondary to Urothelial Neoplasia with Reno-Colic Fistula]. *Acta Med Port* 2018;31:129-32.
52. Iwashita Y, Negi S, Iwashita Y, Higashiura M, Shigi Y, Yamanaka S, et al. Severe refractory infection due to renocolic fistula in a patient with a giant kidney and ADPKD undergoing long-term hemodialysis. *CEN Case Rep* 2018;7:174-7.
53. Auld M, Keller A. Renocolic fistula secondary to urothelial carcinoma. *BMJ Case Rep* 2018;2018.
54. Mozo M, Gonzálo R, Gutiérrez JM, Gutiérrez LE, Cotruta L, Roca A, et al. Colorenal fistula after renal tumour cryotherapy. *Int J Surg Case Rep* 2018;53: 441-3.
55. Thiyagarajan D, Hughes M, Tamarkin F, Zighelboim I. Renocolic fistula secondary to curative intent extended field radiotherapy for cervical cancer. *Gynecol Oncol Rep* 2018;26:66-8.
56. Numan L, Zamir H, Husainat NM, Tahboub M. Xanthogranulomatous Pyelonephritis Causing Renocolic Fistula Presenting as Symptomatic Anemia. *Cureus* 2019;11:e4947.
57. Boopathy Vijayaraghavan KM, Rajendran R, Thomas A. A rare presentation of renocolic fistula due to

- misplaced ureteral stent - presentation, management and literature review. *Urol Case Rep* 2020;33:101305.
58. Lulla T, Sheng J, Maheshwari V, Bhalla R. Management of Left Staghorn Calculus With Colorenal Fistula. *Urology* 2021;154:e13-4.
59. Goddard B, Stein DM. A traumatic enterorenal fistula. *Urol Case Rep* 2022;44:102159.
60. Hillman E, Fu H, Anele U. Colo-renal Fistula in a Patient With Refractory Anemia and Recurrent Urinary Tract Infections: A Case Report and Review of the Literature. *Cureus* 2023;15:e44741.