

# Spontaneous pyelo-jejunal fistula

P.F. Evans

Central Middlesex Hospital, Acton Lane, London NW10 7NS, UK

**Summary:** This case report describes a patient with a spontaneous jejunal fistula. This is a rare type of nephro-intestinal fistula with only two previously recorded similar cases.

Our patient presented with such a fistula diagnosed by antegrade pyelography, associated with a staghorn calculus and proven at surgery. The value of antegrade pyelography is discussed along with the treatment options and the outcome to be expected in such patients.

## Introduction

Spontaneous pyelo-jejunal fistula is rare with only two previous reports in the literature. Spontaneous nephro-intestinal fistulae are most commonly associated with primary disease of the renal tract. Renal calculi are the underlying cause in the majority of recent cases but require obstruction and infection, it is believed, before a fistula is likely to develop.<sup>1–3</sup>

Traumatic fistulae are the other major group reported with increasing frequency particularly from the United States where penetrating trauma is often given as the cause.<sup>2,4–6</sup> The main difference between spontaneous and traumatic nephro-intestinal fistulae is that in the latter, the involved kidney has usually been functioning normally up until the time of injury.

The traditional treatment for spontaneous nephro-intestinal fistulae has been stated many times and involves removal of the affected kidney and closure of the fistula, although there is one report where the fistula though left open and drained, closed secondarily.<sup>4</sup> A recent paper has suggested that a satisfactory outcome could be achieved by internal stenting of the obstruction.<sup>7</sup>

## Case report

A 27 year old female was admitted as an emergency in March 1987 with severe left loin pain, marked urinary frequency, dysuria, haematuria and rigors of two days duration. She gave a history of increasing urinary frequency, dysuria and weight loss periodically over the previous 2 years since the

diagnosis of a left staghorn calculus. She was awaiting surgery for this at another hospital. On examination she looked pale, cachectic and dehydrated. She was pyrexial and had tenderness in the left loin. There were no palpable masses. Investigation revealed an anaemia of 8.2 g/dl, but white cell count, serum urea, electrolyte and creatinine levels were normal. Plain abdominal X-ray examination (Figure 1) showed a left sided staghorn calculus. An ultrasound examination of the urinary tract performed the day after admission showed a normal right kidney and a hydronephrotic left kidney with reduced parenchymal thickness. After initial clinical improvement on intravenous fluids and antibiotics, the patient's condition deteriorated and with increasing loin pain and pyrexia, pyonephrosis was suspected.

An intravenous contrast injection was given prior to planned percutaneous renal puncture and antegrade pyelography. This demonstrated a normal right upper tract and a non-functioning left kidney. Left antegrade pyelogram was then performed with ultrasound guidance. This confirmed the pyonephrosis and demonstrated a pyelo-jejunal fistula. A 6 French pigtail catheter was placed percutaneously through a middle pole calyx into the left renal pelvis and the position of the catheter checked with a further injection of contrast which again demonstrated the fistula (Figure 2). The patient's condition improved and a DMSA isotope scan performed 10 days later showed less than 10% of function attributable to the left kidney. Operation was carried out the following day.

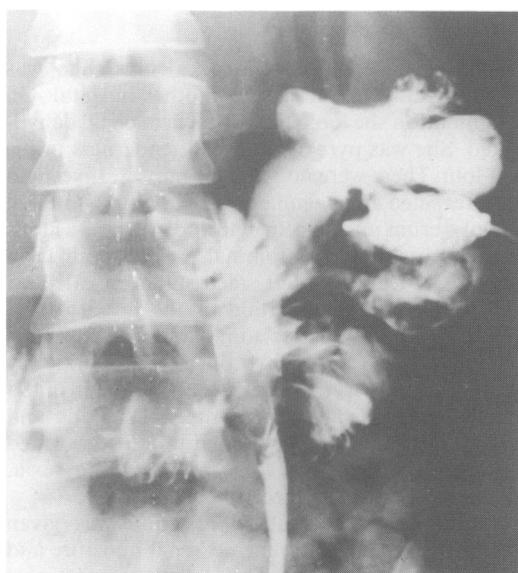
The staghorn calculus was found to have eroded through the pelvi-ureteric junction and into a segment of proximal jejunum creating a pyelo-jejunal fistula. For technical reasons the proposed nephrectomy could not be carried out safely and the operation was concluded by removing the staghorn calculus, separating the pyelo-jejunal

Correspondence: P.F. Evans, F.R.C.S., F.R.C.R., Charing Cross Hospital, Fulham Palace Road, London W6 8RF, UK

Accepted: 25 April 1990



**Figure 1** Plain renal area film to show staghorn calculus with fragments in calyces.



**Figure 2** Antegrade pyelogram to show the proximal jejunum being filled with contrast from the pelviureteric junction at the tip of the staghorn calculus.

fistula and replacing the sutured loop of jejunum back into the peritoneal cavity before closure. The patient underwent interval left nephrectomy two months later and made an uneventful recovery.

### Discussion

All divisions of the alimentary tract with the exception of the oesophagus have been implicated in the various types of nephro-intestinal fistulae. Arthur and Morris<sup>8</sup> provide a good review of the literature on the types and frequency of these lesions. Nephro-colic followed by nephro-duodenal are the commonest spontaneously occur-

ring fistulae. There are now more than 30 reports of such nephro-duodenal fistulae only three of which have occurred on the left.<sup>7,9,10</sup> The jejunum is even further removed from the left renal hilum than the fourth part of duodenum. This and the interposition of the peritoneum may explain the rarity of this type of lesion. There are only two previous such case reports. The first was by Horwich<sup>11</sup> who described a fistula connecting the left renal pelvis of a non-functioning kidney to a loop of upper jejunum diagnosed by retrograde ureterogram, confirmed by upper intestinal barium examination and proven at surgery. In the second patient, reported by Bianchi and Franzolin,<sup>12</sup> the fistula was associated with a left ureteric calculus and a non-functioning kidney. It was diagnosed by antegrade pyelography and shown at histology after nephrectomy to be associated with xantho-granulomatous pyelonephritis.

If a fistula is present at the time of investigation it will always be shown by appropriate radiological investigation.<sup>13</sup> Until recently retrograde ureterography<sup>14</sup> and sinography<sup>15-17</sup> have been the most frequently reported successful investigations used to demonstrate the connections of urinary fistulae. However, a sinus is an infrequent accompaniment of urinary fistulae and retrograde ureterogram may prove impossible if the ureteric orifice cannot be seen or the catheter will not pass into the ureter. When the ureter is occluded the fistula may not be shown even if the examination is a technical success.<sup>18</sup>

Antegrade pyelography has been used many times in recent years to confirm a suspected nephro-intestinal fistula and is now the investigation of choice in this context. The technique is described along with the indications, contra-indications and complications in papers by Jeans<sup>19</sup> and Pfister and Newhouse.<sup>20</sup> The infective complications may be significantly reduced by prophylactic antibiotics.<sup>21</sup> The success of antegrade pyelography in the diagnosis of urinary-intestinal fistulae has been ascribed to the injection of contrast under controlled pressure.<sup>20</sup> This probably also accounts for the relative success of sinography and retrograde pyelography where contrast is also injected under similar conditions of controlled pressure.

The accepted treatment for spontaneous fistulae between kidney and bowel has been nephrectomy and closure of the fistula as already stated. Attempts to conserve the kidney in the past have almost always lead to persistent morbidity with no evidence of function.<sup>22,23</sup> There are, however, two papers which show that this dogmatic approach may not always hold the only solution to the problem. Rost<sup>24</sup> and Desmond<sup>7</sup> between them report three cases of spontaneous nephro-intestinal fistulae where the kidney was successfully conserved. The authors did not explore the reasons for

their success but in all three cases there was evidence to support the presence of significant function in the salvaged kidneys at the time of presentation. This evidence consisted of retained concentrating ability on the intravenous urography or retained excretory function in the form of watery diarrhoea, a feature of nephro-intestinal fistula which has been described before.<sup>25</sup> The frequency of successful renal conservation in traumatic fistulae where the kidney usually has normal or presumed normal function at the time of injury,<sup>2,4,5,6</sup> the absence of any reports of successful conservation of a non-functioning kidney involved in a nephro-intestinal fistula and the evidence presented in the papers by Desmond and Rost<sup>7,24</sup> leads us to the following hypothesis concerning nephro-intestinal fistulae.

Where the kidney involved in a nephro-intestinal fistula of any cause retains significant function at presentation or demonstrates function after a period of conservative treatment then attempts to conserve the kidney can provide a successful alternative to nephrectomy.

This approach may need to be tempered by the knowledge that carcinomas have been rarely reported to be associated with these fistulae.

#### Acknowledgements

The author would like to thank Mr E.P.N. O'Donoghue for permission to report details of the patient under his care, Charing Cross Hospital photographic department for reproduction of the radiographs and Schering AG Ltd for the provision of reprints.

#### References

1. North, J.P., Livingston, S.O. & Lovell, B.K. Spontaneous renoduodenal fistula. *Surgery* 1956, **39**: 683-687.
2. Bissada, N.K., Cole, A.T. & Fried, F.A. Reno-alimentary fistula: an unusual urological problem. *J Urol* 1973, **110**: 273-276.
3. Geisse, G. & Blath, R.A. Spontaneous nephro-duodenal fistula. *J Can Assoc Radiol* 1976, **27**: 118-121.
4. McDougal, W.S. & Persky, L. Traumatic and spontaneous pyeloduodenal fistulas. *J Trauma* 1972, **12**: 665-670.
5. Pickard, L.R., Tepas, J.J., Agarwal, B.L. & Haller, J.A. Duodeno-renal fistula: an uncommon complication of an ingested foreign body. *J Pediatr Surg* 1980, **15**: 337-338.
6. Infantino, A., Dodi, G. & Lise, M. Ureteroduodenal fistula. *Br J Surg* 1987, **74**: 499.
7. Desmond, J.M., Evans, S.E., Couch, A. & Morewood, D.J.W. Pyeloduodenal fistulae. A report of two cases and review of the literature. *Clin Radiol* 1989, **40**: 267-270.
8. Arthur, G.W. & Morris, D.G. Reno-alimentary fistulae. *Br J Surg* 1966, **53**: 396-402.
9. Arendt, J. & Brockmann, H. Ungewöhnliche Pyelographische Befunde. *Fortschr Geb Rontgenstr* 1934, **49**: 335-341.
10. Ross, J.M. & Tanna, D.D. Pyeloduodenal fistula. *J R Coll Surg Edinb* 1974, **19**: 51-53.
11. Horwich, M. A reno-jejunal fistula. *Br J Surg* 1961, **49**: 109-110.
12. Bianchi, G. & Franzolin, N. Renojejunal fistula caused by xanthogranulomatous pyelonephritis. *Br J Urol* 1980, **52**: 66.
13. Lippert, M.C., Teates, C.D. & Howards, S.S. Detection of enteric-urinary fistulas with a noninvasive quantitative method. *J Urol* 1984, **132**: 1134-1136.
14. Newman, J.H. & Jeans, W.D. Reno-colic fistula demonstrated by antegrade pyelogram. *Br J Urol* 1972, **44**: 692-697.
15. Gup, A.K., Rogers, H.C., Evans, B.B. & Alley, S.A. Fistula involving the left kidney, small bowel and skin. *South Med J* 1968, **61**: 748-750.
16. Barlan, E.V., Lee, P.T. & Hans, S.S. Pyeloduodenocutaneous fistula. *Br J Urol* 1982, **54**: 59.
17. Cheattle, T.R., Waldron, R.P. & Arkell, D.G. Xanthogranulomatous pyelonephritis associated with pyeloduodenal fistula. *Br J Surg* 1985, **72**: 764.
18. Sumiya, H., Nagashima, K., Naito, H., Ito, H. & Shimazaki, J. Ureteroduodenal fistula. *Urol Int* 1985, **40**: 33-35.
19. Jeans, W.D., Penry, J.B. & Roylance, J. Renal puncture. *Clin Radiol* 1972, **23**: 298-311.
20. Pfister, R.C. & Newhouse, J.H. Interventional percutaneous and pyeloureteral techniques. *Radiol Clin North Am* 1979, **17**: 341-350.
21. Lundin, E. & Wadstrom, L.B. Translumbar pyelography. *Acta Chir Scand* 1965, **130**: 267-278.
22. Bloom, B. Spontaneous renoduodenal fistulas. *J Urol* 1954, **72**: 1153-1158.
23. McEwan, A.J. Pyelo-duodenal fistula. *Br J Urol* 1968, **40**: 350-353.
24. Rost, G.S., Cooper, D., Knouf, C.E., Ferguson, P. & McCrary, A. Acquired renocolic fistula in remaining functioning kidney with recovery. *J Urol* 1956, **75**: 787-792.
25. Boggs, J.E., Blundon, K.E. & Davis, D.M. Pyelo-duodenal fistula. *J Urol* 1961, **86**: 199-204.