Retroperitoneal, transmuscular appendico-cutaneous fistula, as a hazard of incomplete appendicectomy

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A B S T R A C T

A male child 9 years of age presented with fever, tender swelling in the right flank, with a right paramedian scar. Child had undergone exploratory laparotomy for peritonitis with appendicectomy one year back. Radiological investigations (Ultrasoundography and Computed Tomography) revealed retrocecal abscess extending to the psoas muscle, which was drained via flank incision. Intermittent discharge continued through an opening in the flank just above the posterior superior iliac spine. Ultrasonography and CT fistulogram revealed a fistulous communication from skin to the cecum/appendix. Upon second exploration a fistulous communication from the tip of residual appendix (which was left in situ at the initial exploration) was found with multiple adhesions in the terminal ileum, cecum, and ascending colon. Local resection of the cecum and ascending colon was performed with ileocolic anastomosis. Fistulous tract was curetted out. Exploration confirmed the incomplete appendicectomy as a cause of this hazardous condition.

1. Case report

A 9 year old male student presented as a tertiary care hospital with 3 day history of pain right flank, vomiting and fever, difficulty in walking. Patient was having tachycardia and temperature of 101 °F. Per abdomen examination was soft, except a tender swelling in the right flank, with a right paramedian scar. His previous surgical record revealed appendicectomy with peritoneal mopping, which was performed at some other tertiary care hospital. Investigations were normal apart from raised WBC counts of 18,000 with neutrophil count of 80%. Ultrasonography revealed a
8 × 12 cm echogenic area as right psoas abscess. This abscess was drained through right flank incision. Culture of the pus drained demonstrated *Escherichia coli*. Patient received appropriate antibiotics and antiseptic dressing. Two month after the abscess drainage patient developed an opening at the lateral aspect of the wound, superior to the iliac crest at posterior superior iliac spine. A discharging sinus was located in the right loin. Abdominal examination was normal. WBC count was normal. Tuberculosis, Crohn’s disease and osteomyelitis were ruled out. Patient was lost to follow-up over next one year. Again patient presented with intermittent drainage of pus through the same site. A sinogram delineated the tract between skin and cecum (Fig. 1). USG and CT fistulogram delineated a well developed fistulous tract between the skin, through the psoas muscle to the colon (Fig. 2). Laparotomy was done through the previous incision (right paramedian). The colon and the terminal ileum were adherent to the retroperitoneum. The retroperitoneal surface of ascending colon was inflamed due to recurrent infection in this area. After mobilizing the right colon, the residual part of appendix was seen communicating with the fistulous tract, through psoas muscle to the skin opening (Figs. 3–5). Whole small and large gut was normal except for inflammatory nodes near cecum and terminal ileum. Right colon was resected with ileo-colic anastomosis (single layer interrupted). Fistulous tract was curetted out in toto (Fig. 6). Histopathological examination of the fistulous tract showed a well epithelialized tract.

2. Discussion

Fistulous of appendix with viscera or skin is a very rare and difficult to manage complication of acute appendicitis [4]. Fistula may develop spontaneously as a complication of acute perforating appendicitis [2,3]. In our case the cause of fistula was inadequate

![Fig. 2. CT fistulogram showing the fistulous tract (thick arrows) and the communication with skin (thin arrows).](image-url)
Fig. 3. Feeding tube through the fistula patient in lateral position.

Fig. 4. Fistulating tract site in the retroperitoneum (asterisk).

Fig. 5. Fistulous tract being curetted out posteriorly.

Fig. 6. Colonic specimen with residual appendix.
appendicectomy which was performed one year prior. According to Muthukumarassamy, the main mechanism of the fistula formation is the rupture of appendix in the adjacent bowel or skin and persistence of fistula may be due to carcinoid tumor or tuberculosis of the appendix [4]. In our index case, both the two conditions were ruled out and the persistence of the pus discharge was due the epithelialization of the tract. Fistulas initially manifest as a subcutaneous abscess, which after rupture may persist as a discharging sinus [5]. In our case fistula initially manifested as a psoas abscess fistululating posteriorly. All though rare, it may be a hazard of incomplete appendicectomy [6]. Our case is second in literature were incomplete appendicectomy was the cause of fistula.

Our case is unique, as the location of the cutaneous opening was very posterior in the loin. The cutaneous opening has been located in the buttck [1], right iliac fossa [7], right groin [8] and right flank.

The effect of the fistula on our patient was least pronounced except for nutritional anemia. As this being a low output fistula, the loss of fluids and electrolytes was minimal. Diagnosis in our case was confirmed by 3-D CT fistulogram. Simple fistulography can also be sufficient for the diagnosis [9]. Sometimes the fistulous tract may take a helical course as in our case, in such instances CT fistulography with 3-D reconstruction provides better delineation of the two ends of the fistula and the course of the tract, which latter facilitates an optimal surgical procedure. At times it may not be easy to diagnose even with the support of sophisticated diagnostic technique.

Recently interventional radiology has taken a prominent role in the management of these complex patients. As flexible endoscopic technology has improved and new endoscopic devices have been developed, endoscopists are expanding their role in the management of gastrointestinal fistulae [10]. Endoscopically deployable stents, endoscopic suturing devices, through-the-scope and over-the-scope clips, sealants, fistula plugs, and vacuum sponges are among the technologies currently being attempted to treat fistulae [11]. Although attempts of endoscopic and laparoscopic fistula closure has been performed in adults, no literature could be found about the role of endoscopic attempts of fistula closure in children.

Laparotomy is the optimal management for the confirmation of this rare complication and the same time laparotomy permit to corroborate the exact site of the fistula. Laparotomy occasionally reveals the persistence of any residual stump of the appendix as in our case and permits the safe resection of the fistulous tract which in our case was through the psoas muscle. All though appendicectomy and excision of the tract or limited resection of cecum may be therapeutic in many instances, right colectomy with ileo-transverse anastomosis may at times be obligatory to cure this condition as in our case.

We recommend that the complicated appendicitis should be managed very carefully and meticulously in an attempt to avoid such hazardous consequence, which may result due to the persistence of the part or whole of the appendix in situ while managing a complicated appendicitis.

References