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Malignant sigmoidoduodenal fistula

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ABSTRACT

INTRODUCTION: Duodenocolic fistula is a rare complication of malignant colonic disease especially when involving and originating from the sigmoid colon. We aim to discuss the unusual clinical presentation of this case as well as the investigation and management of duodenocolic fistulas.
PRESENTATION OF CASE: A 91 year old lady presented as an emergency to a general surgical service at a District General Hospital with diarrhoea, vomiting and weight loss. Computed Tomography (CT) reported a large ovarian cyst elevating the sigmoid colon into immediate proximity of the duodenum. Adenocarcinoma was confirmed on histology obtained by colonoscopy. A classic apple core lesion with fistulating tract from the sigmoid colon to the duodenum was synchronously demonstrated on barium enema.
DISCUSSION: Sigmoido-duodenal fistulae represent a complex manifestation of gastrointestinal pathologies.
CONCLUSION: Management options must be considered in the context of patient wishes, their co-morbidities, and predicted post-operative outcome. In most cases this is likely to represent a non-operative approach, however surgical resection may benefit selected cases on occasion.

1. Introduction

Fistulae affecting the large bowel are common and may occur between bowel and skin (colo-cutaneous) as well as with adjacent viscera including small bowel (colo-enteral), bladder (colo-vesical) and uterus or vagina (colo-uterine/vaginal). Duodenocolic fistula is a rare complication of malignant colonic disease especially when involving and originating from the sigmoid colon. This is the fourth case of sigmoido-duodenal fistula secondary to a malignant sigmoid tumour [1,2]. We aim to discuss the unusual clinical presentation of this case as well as the investigation and management of duodenocolic fistulas.

2. Presentation of the case

We report a rare case of sigmoido-duodenal fistula in a 91 year old lady. She attended the Emergency Department with a 3 day history of diarrhoea and vomiting, and recent weight loss of one stone. Examination revealed a soft and non-tender abdomen, with a large (8 cm × 6 cm) firm mass in the lower abdomen. Her past surgical history included appendicectomy and ovarian cystectomy. She was tachycardic, hypotensive (HR 110, BP 97/47 mmHg) and dehydrated with a Urea of 19.9 mmol/L, Creatinine of 163 μmol/L, a White Cell Count of $15.1 \times 10^9\,L^{-1}$. Tumour markers were also elevated with Carcinoembryonic Antigen (CEA) levels 41.2 μg/L, and Cancer Antigen (CA) 19-9 of 2164.1 kU/L. Her Haemoglobin dropped to 8.0 g/dL and she was transfused 2 units of blood.

Colonoscopy was performed first and revealed a malignant looking villous lesion in the sigmoid colon. Histological examination confirmed this as a well to moderately differentiated adenocarcinoma. Barium Enema (Fig. 1) showed a sigmoid tumour with a classic apple core lesion accompanied by the synchronous finding of a fistula involving the distal duodenum. Staging CT also reported a large (12 cm × 12 cm) left sided ovarian tumour pushing the sigmoid colon cranially and the uterus to the right (Fig. 2). Multi-Disciplinary Team (MDT) review recommended palliative treatment in light of the patient's frailty and significant technical challenges of curative surgery. However, whilst awaiting discharge to the hospice, she deteriorated and later died.

3. Discussion

Fistulae affecting the large bowel are common and may occur between bowel and skin (colo-cutaneous) as well as with adjacent viscera including small bowel (colo-enteral), bladder (colo-vesical) and uterus or vagina (colo-uterine/vaginal). The pathophysiological process is due to localised perforation of the colon into adjacent organs. The aetiology is most commonly benign and associated with inflammatory diseases such as diverticulitis and Crohn's disease. Iatrogenic and traumatic causes, occurring after surgery,

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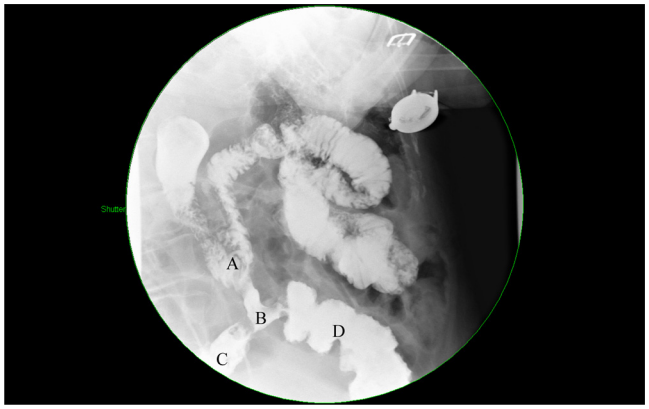

Fig. 1. Barium Enema demonstrating: A – Distal duodenum; B – Apple core lesion in sigmoid colon with fistulating tract into duodenum (A); C – Distal Sigmoid colon; D – Proximal Sigmoid colon.

percutaneous interventional procedures or radiotherapy are less common, whilst colonic fistulae of malignant origin are rare. The colon is by far the predominant source of most fistulae, but they may also less commonly originate from the duodenum following ulceration, the gallbladder due to chronic inflammation, or urinary bladder and uterus secondary to malignancy.

Fistulae between two organs that are usually not adjacent, such as the sigmoid colon and duodenum, is exceptionally rare. In this case, the sigmoid colon, a mobile intra-peritoneal structure, was elevated by a large ovarian tumour and thus lay in immediate proximity to the duodenum. In other cases, the proximity of the sigmoid colon to the duodenum is explained by dolichocolon [1]. Dolichocolon is an abnormally large and long intestine but does not have luminal distension as seen in megacolon. This is the fourth case of sigmoido-dudodenal fistula secondary to a malignant sigmoid tumour [1,2]. Fistulation between the dudodenum and sigmoid has also occurred following oral ingestion of a metallic wire [3]. Colo-duodenal fistulae, although still rare, is more common, with several cases reported in the published literature [4].

Fig. 2. Sagital contrast enhanced Computed Tomography scan demonstrating a lesion fistulating into the duodenum (A) and arising from the sigmoid colon (B); (C) ovarian tumour.

They are often associated with colonic malignancy located in the hepatic-flexure and hence lie in close proximity to the duodenum.

Duodenocolonic fistulae typically present with diarrhoea, weight loss and colicky abdominal pain [2]. Other symptoms such as gastrointestinal bleeding, faeculant vomiting and constipation may also occur. The sequence of radiological investigation may depend on the clinical presentation of the patient, however double-contrast barium enema permits synchronous appreciation of both the fistula and the underlying pathology and is thus the definitive investigation of choice [5]. CT and Magnetic Resonance scans may also provide valuable information for staging of the malignancy as well as assisting in pre-operative planning and facilitating appropriate clinical decisions. Endoscopic evaluation is essential for histological diagnosis and is best performed by colonoscopy. Duodenoscopy may be a challenging procedure due to the common location of the fistula in the distal duodenum. Moreover, intraluminal colonic pressure proximal to the tumour may encourage the passage of stool into the duodenum and make satisfactory antegrade visualisation difficult [1].

Surgical management depends on the anatomy of individual patients and their underlying pathology. Segmental colectomy, as per the standard technique for isolated right and left sided colonic tumours, is appropriate for removing the colonic portion of the tumour. However, surgical resection of the duodenal portion presents a greater challenge proportionate to the location of the fistula in the duodenum. Fistulae affecting and limited to the anterior wall of the third or fourth parts of the duodenum may be resected along its longitudinal axis and closed as per the standard closure of a duodenotomy.[2] However, the *curative* status of such resections may attract considerable criticism given that dissection of regional lymph nodes may be limited. Meanwhile, fistulae affecting the first or second parts would require pancreaticodudoenectomy with *en bloc* resection of both the duodenal and colonic portions of the malignant fistula.[6,7] Morbidity and mortality associated with such a major undertaking is likely to be high and these cases should be discussed at a joint Hepatobiliary and Colorectal MDT prior to proceeding to surgery. Moreover, patients should undergo a comprehensive pre-operative anaesthetic assessment and Cardio Pulmonary Exercise Testing prior to committing to surgical resection. Outcomes following surgical resections of benign colo-duodenal fistulae may be more favourable.

4. Conclusion

Sigmoido-duodenal fistulae represent a complex manifestation of gastrointestinal pathologies and as such the presenting symptoms may be disproportionate to the radiological findings. Management options must be considered in the context of patient wishes, their co-morbidities, and predicted post-operative outcome. In most cases this is likely to represent a non-operative approach. However an open mind must always be maintained where successful surgical resection may be of benefit in selected cases.

Conflicts of interest

All authors declare no conflicts of interest.

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Ethical approval

Not required.

Patient consent

Obtained.

Contributorship

I. Shapey wrote the article. K. Mahmood identified the fistula, reported the radiological images and reviewed the article. M. Solkar identified the fistula, provided surgical care for the patient, and reviewed the article.

Data sharing

All authors declare no objection to data sharing. There is no additional relevant unpublished data.

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