Colonic gall-stone ileus

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Summary

A case of obstruction of the colon by a solitary, large gall-stone is described. This rare event usually occurs in elderly females in whom there is frequently an underlying pathological condition at the site of obstruction in the colon. The calculus usually migrates via a cholecystocolic fistula. Diagnosis may be assisted by plain abdominal X-ray and contrast radiography. Immediate operative treatment should be tailored to the patient's general condition and the nature of the pathological changes.

Introduction

Gall-stone obstruction of the colon is one of the very rare complications of gall-stone disease and the present case is only the 57th on record. Although uncommon, this condition has a mortality of 45%, but this may be due largely to the patients' age and poor general condition. Initial management should therefore be as simple as possible. In the following report, surgery was directed towards treating the acute intestinal obstruction. Management of the cholecystocolic fistula was subsequently found to be unnecessary.

Case history

A 90-year-old female was admitted to the Royal Newcastle Hospital, New South Wales, with a 4-day history of colicky lower abdominal pain, vomiting, and absolute constipation. She had been well in the past, apart from an episode of acute cholecystitis 18 months previously which had been managed conservatively. Since that time she had experienced occasional bouts of vague, left-sided abdominal pain.

Physical examination revealed mild dehydration, abdominal distention, and left-sided abdominal tenderness. On rectal examination, a hard, non-tender mass was palpable in the pelvis. Sigmoidoscopy to 15 cm was normal.

After fluid and electrolyte replacement, laparotomy was performed. There was generalized large bowel distention due to a hard mass obstructing the

lower sigmoid colon. Marked diverticular disease was also affected the sigmoid colon. Dense adhesions were noted between the gall-bladder and the hepatic flexure of the colon. A right transverse colostomy was performed.

A Gastrografin contrast enema was carried out on the 10th postoperative day. The control film showed gas in the biliary tree (Fig. 1). The contrast study demonstrated diverticular disease with stricture associated with a uniformly oval filling defect in the lumen of the sigmoid colon (Figs 2 and 3).

Five days later, a sigmoid resection was performed and a large, immovable gall-stone, 3.2×2.6 cm in size with a circumference of 9 cm, impacted in a segment of sigmoid colon narrowed by diverticular

FIG. 1. Control X-ray showing gas in biliary tree.

disease (Figs 4 and 5), was removed. There were no other palpable gall-stones. The colostomy was closed 7 weeks later and the patient subsequently discharged. There have been no further gall-bladder symptoms.

Discussion

Incidence

Since Courvoisier's original paper (1890), colonic obstruction due to gall-stone has been shown to account for 2–8% of cases of gall-stone ileus (Foss and Summers, 1942; Fjermeros, 1964).

Eighty per cent. of patients with colonic gall-stone ileus have been female, the majority in the 6th and 7th decades of life.

Pathology

The calculus usually enters the intestine via a cholecystocolic fistula (Miller *et al.*, 1965; Cooperman, Dickson and ReMine, 1968; Brown, 1972; Balsano and Reynolds, 1974). It is interesting, however, that in none of the cases described was there a past history of diarrhoea or cholangitis. In the present case this may have been because the cystic duct obstruction arising from chronic biliary disease prevented either bile from entering the colon, or faecal soiling of the biliary tree. As with gall-stone ileus, generally, little constitutional disturbance appears to have occurred during the passage of the stone from gall-bladder to colon.

Mechanism of obstruction

It is difficult to conceive that a stone able to pass the ileo-caecal valve would obstruct the large bowel. However, colonic obstruction due to a solitary gall-stone has been demonstrated both with cholecystoduodenal fistulae (Møller, 1913; Harris, McNamara and Dardinski, 1947; Buetow, Glaubitz and Crampton, 1963) and a choledochoduodenal fistula (Shore, Jacob and Cannon, 1953). Large bowel obstruction has also been caused by an inspissated mass of small calculi (Holm-Nielsen and Linnet-Jepson, 1954) and by faecal deposition on a small gall-stone (Haffner, Semb and Aakhus, 1969). Gall-stones that exceed 2.5 cm in size cause colonic obstruction when there is an underlying pathological condition in the colon, usually diverticular disease (Young, 1961; Buetow *et al.*, 1963; Brown, 1972). However, when the gall-stone is very large, obstruction may occur without colonic abnormality. Turner (1932) recorded the largest gall-stone to have caused obstruction of the large bowel. It impacted in the transverse colon and measured 7.6 × 5.7 cm and was 17.8 cm in circumference. There was no underlying pathological condition in the colon.

FIG. 2. Barium has been introduced via a Foley catheter into the distal loop of the transverse colostomy. The X-ray shows diverticular stricture and filling defect at extreme right in colon.

FIG. 3. Contrast X-ray showing diverticular disease and filling defect in sigmoid colon.

FIG. 4. Gallstone measuring 3.2 × 2.6 cm.

FIG. 5. Gall-stone impacted in sigmoid colon (cm).

Management

Early

The diagnosis of large bowel obstruction due to gall-stone impaction is not usually considered. However, X-ray of the abdomen may demonstrate air in the biliary tree or a change in position of a previously observed calculus (Rigler, Borman and Noble, 1941). Indirect visualization of the calculus is also possible with contrast medium in the colon.

There is a limited experience in the operative treatment of gall-stone obstruction of the large bowel and cholecystocolic fistula. Most surgeons have performed proximal colostomy and stone removal via a colotomy (Turner, 1932; Miller *et al.*, 1965), the colostomy (Buetow *et al.*, 1963), or per rectum (Young, 1961). Alternatively, a Paul-Mikulicz resection of the sigmoid colon has been advocated (Harris *et al.*, 1947; Williamson, 1952; Brown, 1972).

Recently a gall-stone causing large bowel obstruction was diagnosed and removed by colonoscopy (Zaretsky, Kodsi and Iswara, 1977).

Late

The management of the fistula is more controversial. It is a widely held view that because of the patient's age, poor general condition, and the nature of the pathological changes, the internal biliary fistula should not be treated at the time of initial surgery for gall-stone ileus.

In many instances of gall-stone ileus of the colon, a fistula is not subsequently demonstrable. This lends further support to the belief that the fistula tract should not be explored. However, some chronic cholecystocolic fistulae are associated with weight loss, malabsorption and, less commonly, cholangitis (Wakefield, Vickers and Walters, 1939; Elsas and Gilat, 1965). In such instances the fistula will clearly require further operative intervention.

In studies of small bowel obstruction due to gall-stone, recurrent obstruction occurs in 3% to 5% of cases (Buestow *et al.*, 1963; Way and Dunphy, 1975). Therefore, for colonic gall-stone ileus, Balsano and Reynolds (1974) recommend single stage cholecystectomy, colotomy for stone removal if feasible, and exteriorization of the fistula as a diverting colostomy. The importance of a defunctioning colostomy proximal to or at the site of colotomy for stone removal is also emphasized in some surgical texts (Clain, 1977).

The initial surgical aim is to treat the intestinal obstruction. In the subsequent management, the morbidity of a possible cholecystocolic fistula must be weighed against the surgical hazards.

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