An Intestinal-gas Cyst, a Rare Complication of Diverticulitis: Report of a Case*

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The origin of intestinal gas has confounded physicians and patients alike for many centuries. Only a minor problem is present, however, when the gas is intraluminal and is freely passed by one of several avenues available. The finding of single large, isolated, intra-abdominal gas cysts, in patients who often are asymptomatic, is rare, and is poorly understood. Pneumatosis intestinalis, a disease of unknown etiology characterized by numerous gas-filled sessile or pedunculated cysts involving primarily the gastrointestinal tract, does not appear to be the cause of isolated intestinal gas cysts in most cases.

Some cases in which the gas cysts are in intimate association with the sigmoid colon and are thought to represent a complication of diverticulitis have been reported. This report describes such a cyst, which we believe must have communicated with the lumen of the colon at an earlier stage of development.

Report of a Case

A 56-year-old Caucasian man entered the hospital complaining of a painful mass in the lower abdomen which had been present for three weeks. Approximately four months prior to admission, he had experienced severe lower abdominal cramps. Examination at that time had included proctoscopy, a gastrointestinal series, and a barium-enema study (Fig. 1). The diagnosis had been diverticulosis with acute diverticulitis. He had been dismissed from the hospital on a bland diet, treated with antispasmodic agents, and had managed quite satisfactorily until the present episode of cramping pain in the lower abdomen.

A 7-cm, firm, freely movable, tender mass was easily palpable in the lower abdomen. Barium-enema studies showed diverticulosis but no evidence of perforation. Two contiguous, spherical, gas-filled shadows which corresponded in location to the mass were visible on the x-ray (Fig. 2).

After 24 hours of observation without improvement, the patient had a celiotomy, with the tentative diagnosis of sigmoid diverticulitis with perforation. Two large, gas-filled cysts were encountered. They were closely associated with each other and, together, were approximately 13 cm in greatest diameter. They were situated in the lower abdomen and appeared to be attached to the pelvic peritoneum between the bladder and the rectosigmoid. Careful exploration of the abdomen revealed no other abnormalities. There was no evidence of diverticulitis. A small incision was made in the cystic mass, permitting gas under pressure to escape. This collapsed the mass and allowed removal of the two composite cysts, which were attached to, but did not involve, the muscularis of the sigmoid colon. At no point was there evidence of any direct communication between the cyst and the colonic lumen. Postoperative recovery was satisfactory. The patient was dismissed from the hospital eight days later, and he has since remained asymptomatic for 18 months.

Pathology: The gross specimen consisted of an oval, cystic structure measuring $13 \times 6 \times 4$ cm. Its external surface was covered by shaggy, hemorrhagic adhesions with small tags of serosal fat attached (Fig. 3). The cyst was opened and appeared to be a bilocular structure, explaining the two gas shadows seen on the x-ray (Fig. 4). The lining was smooth and gray-tan in one cavity and hemorrhagic in the other.

Microscopic examination showed that most of the fibrovascular wall consisted of a dense collagen formation, sparsely infiltrated by chronic inflammatory cells. It was lined by a dense membrane of granulation tissue containing an abundance of polymorphonuclear leukocytes. Focally, the granulation tissue showed a papillary arrangement containing
polymorphonuclear leukocytes, plasma cells, capillaries, and foreign-body giant cells (Fig. 5). Crystalline deposits, generally not birefringent, were present on and within the exudate (Fig. 6). This material had the same optical characteristics as barium.

Discussion

Intestinal-gas cysts were first described by Hunter or Duverne during the eighteenth century. Many subsequent cases have been reported. Their etiology has often been obscure. Although pneumatosis intestinalis occasionally manifests as a solitary gas cyst, most such cysts are quite small, and they rarely involve the sigmoid colon.6 Most cases are associated with other gastrointestinal diseases, principally peptic ulcer.14 The present case does not appear to represent pneumatosis intestinalis.

Hughes and Green7 reported a case similar to ours, speculating that the cyst arose as either a diverticulum or a duplication

![Fig. 1. Barium-enema study four months prior to the present admission, when the patient had sigmoid diverticulosis.](image1)

![Fig. 2. Barium-enema study on admission. A large, loculated collection of gas is present within the pelvis.](image2)

![Fig. 3. External surface of the surgically removed gas cyst.](image3)

![Fig. 4. Internal surface of the gas cyst. Note the biloculate structure of the cyst. (Barium-like crystals were present in the roughened lining on the right).](image4)