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## SURGICAL IMAGES

# Pneumatosis cystoides intestinalis: Not uncommon cause of free air in acute abdomen



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Available online 22 September 2018

**Summary** Pneumatosis cystoides intestinalis is generally benign in course and sometimes, if cysts ruptured, behave as the not uncommon cause of free air in acute abdomen. In our case, we illustrate ruptured isolated cysts of pneumatosis cystoides intestinalis are responsible for pneumoperitoneum in a 94-year-old male patient. Laparotomy with gastrotomy for decompression of intraluminal aeropressure was performed, with an uneventful recovery. This paper presents with preoperative and intraoperative images of high educational value for this, often underdiagnosed, clinical entity.

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## Clinical Case

A 94 year-old man, with underlying diseases of coronary artery disease, diabetes mellitus and chronic renal insufficiency, was brought to emergency room because of constipation and abdominal pain for 3 days. There was no leukocytosis or elevation of C-reactive protein. Prominent air within small, large bowel, and “free” in bilateral sub-diaphragmatic area (Fig. 1A) and extra-luminal space (Fig. 1B, arrowheads), together with comb-shape mesentery could be observed in images (Fig. 1C, arrow). He received emergent laparotomy and several air-filled cystic clusters were noted at the distended small bowels (Fig. 2), without bowel perforation. Because of inadequate function of nasogastric tube, gastrotomy was performed for rapid

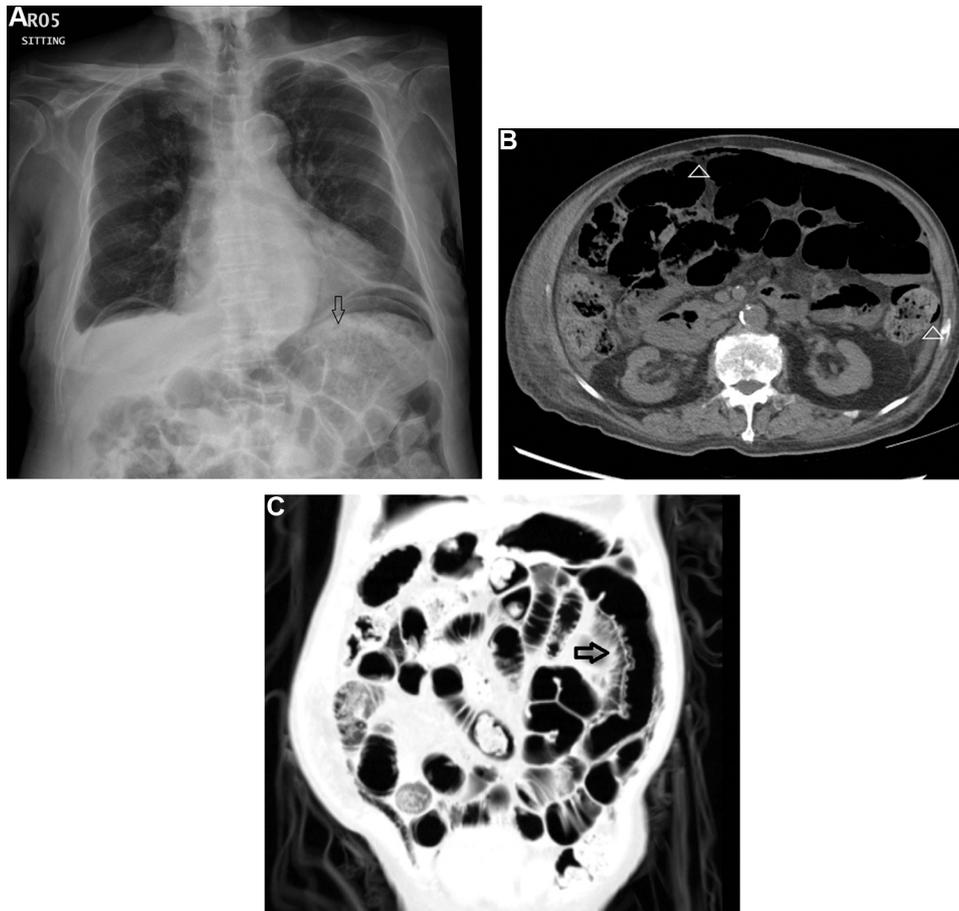
decompression of intraluminal contents (air and food debris) in GI tract to reduce intraluminal pressure and further risk of bowel perforation, according to Laplace’s law. Biopsy of the isolated air-filled cysts revealed pneumatosis cystoides intestinalis (PCI). Post-operative recovery was slow but uneventful.

## Discussion

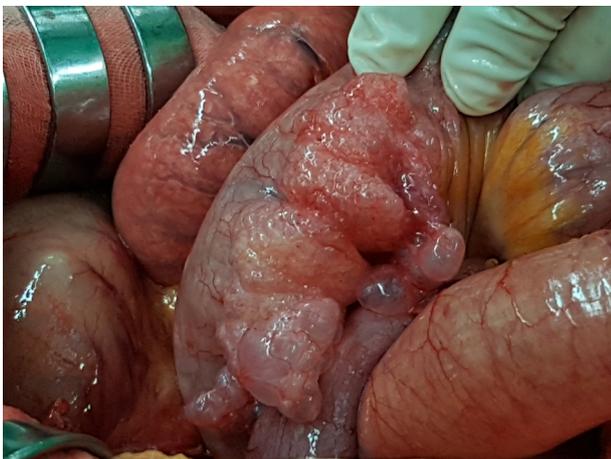
PCI is a rare disease in which gas develops in the mucosa or submucosa of the digestive tract. Pneumoperitoneum caused by ruptured serosal cyst(s) of PCI is a rare “benign” entity in the emergency setting that can be managed conservatively [1]. Tracing back his history revealed long-term use of acarbose (alpha-glucosidase inhibitor), which was associated with increased GI intraluminal air, PCI formation [1] and this episode was probably due to perforation of isolated intestinal clustered cysts. Aside from

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**Figure 1.** Imaging studies of acute abdomen. (A). Chest X ray showed bilateral subphrenic free air and large amount of contents (arrow) in the distended stomach. Axial (B) and coronal (C) images of CT scan confirmed extra-luminal air (B, arrowheads) and showed comb-like mesentery (C, arrow) in lung window.



**Figure 2.** Pneumatosis cystoides intestinalis. Air-filled clustered cysts were found at the mesenteric side of the small intestine, in contrast to the normal yellowish mesentery in the neighborhood. Grossly, not all cysts communicated with the intestinal lumen.

$\alpha$ -glucosidase inhibitors, PCI can develop secondary to use of anti-psychotic or chemotherapeutic agents, occupational exposure to trichloroethylene, and underlying diseases including GI, pulmonary, and autoimmune (scleroderma, dermatomyositis) diseases [1,2]. Wu et al. analyzed 239 PCI cases from 77 reported incidence over 11 years (2002–2012) and suggested that PCI can be safely managed by conservative treatments[3]. Sole presentation of pneumoperitonium is not an absolute indication for surgical exploration. With

this diagnosis in mind, risk and benefit should be weighted in surgical decision-making.

### Funding

None.

### Contribution of authors

C.M.H. and C.L. collected and analyzed the data. S.M.T. drafted the report. C.M.H. provided care for the patient, and revised the manuscript for important intellectual content. All authors approved the final version.

### Disclosure of interest

The authors declare that they have no competing interest.

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