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Idiopathic Spontaneous Pneumoperitoneum: When Not to Operate

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ABSTRACT

Pneumoperitoneum is often a surgical emergency related to gastrointestinal tract perforation. On rare occasions, free intraperitoneal air can be present without any discernible cause and is considered Idiopathic Spontaneous Pneumoperitoneum (ISP). Deciding which patients with ISP can be managed conservatively would help prevent some patients from undergoing unnecessary surgery. We describe here two cases of successful management of ISP and the review of literature of ISP management for the past 29 years. In the first case, a patient with ISP with no significant abdominal symptoms was successfully managed non-operatively. In the second case, a patient with ISP and symptoms of small bowel obstruction was successfully treated surgically with exploratory laparotomy and small bowel resection. We recommend conservative management for the subset of ISP patients with no sign of peritonitis or sepsis.

Keywords: Idiopathic Spontaneous Pneumoperitoneum (ISP), perforated viscous, pneumatosis intestinalis, non-surgical pneumoperitoneum

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INTRODUCTION

Over 90% of cases of pneumoperitoneum are caused by gastrointestinal tract perforation, and surgical intervention is the mainstay of treatment (1). Other causes may be of traumatic, thoracic, iatrogenic, or gynecologic origin. On rare occasions, free intraperitoneal air can be present without any discernible cause and is considered idiopathic spontaneous pneumoperitoneum (ISP). Surgery for a certain subset of ISP is neither diagnostic or therapeutic (2). Discerning which patients require surgical intervention and which are better managed conservatively would help prevent some patients from undergoing unnecessary surgery. We present two cases of successful management of ISP and review of literature of ISP management for the past 29 years.

CASE #1

The patient was a 72 year old male with a PMH of CAD, HTN, HLD, COPD, IDDM, GERD/PUD, OA, left Bell's palsy, anemia, morbid obesity and OSA. He was admitted for cardiac arrest during chemotherapy treatment for squamous cell laryngeal cancer. On hospitalization day 10, he developed abdominal pain and distention. Computed tomography (CT) showed significant pneumoperitoneum (Fig. 1). The patient denied fever, chills, nausea or vomiting. On physical examination, his abdomen was distended but soft, non-tender, no guarding or rigidity. His vital signs were within normal limits. His WBC was 37.3 x 10^9/L. His baseline leukocytosis ranged from 22-37 x 10^9/L prior to developing a distended abdomen. Infectious Disease team considered this reactive likely due to IV steroids and laryngeal cancer and not due to infection clinically. The patient refused surgery and was managed conservatively with NPO and fluid hydration. His WBC count trended down to 22.2 x 10^9/L over the next 3 days. He tolerated diet despite NPO order. Patient left AMA 3 days later without any abdominal complaints.

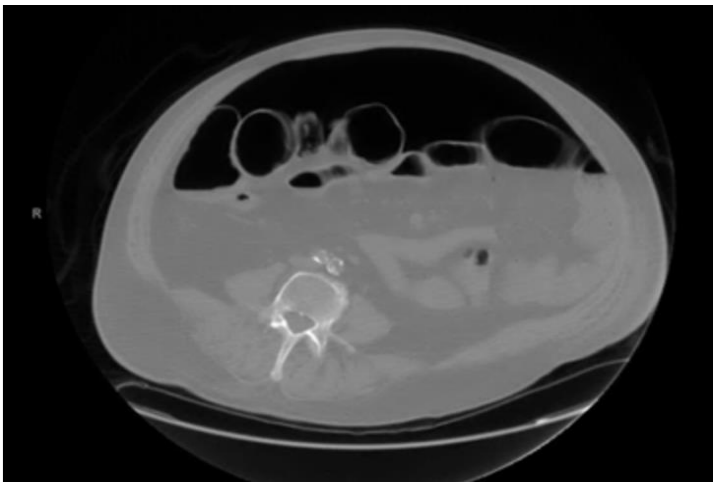

Figure 1. CT abdomen/pelvis shows large amount of pneumoperitoneum. Exact origin is uncertain. Dilated small bowel loop and dilated descending colon with air is seen with no sign of small or large bowel obstruction.

CASE #2

The patient was a 55 year old female with history of HTN and a remote history of a GSW to the abdomen. She presented with 1 year chronic epigastric pain with 2 days of nausea and non-bilious, non-bloody emesis. On physical examination, her abdomen was soft, distended, and had minimal tenderness in the epigastric area with no signs of peritonitis. Vital signs and lab results were within normal limits. CT showed free intraperitoneal air, dilated small bowel consistent with a small bowel obstruction, and pneumatosis in the small bowel (Fig. 2). Surgical service recommended an exploratory laparotomy due to

signs of small bowel obstruction and presence of pneumatosis intestinalis noted on imaging. Intraoperatively, patient was found to have small bowel obstruction due to a pelvic adhesive band and a segment of small bowel with pneumatosis intestinalis (Fig. 4). No perforation of the viscous was identified. The segment of small bowel with pneumatosis intestinalis was resected with primary anastomosis. The patient recovered uneventfully and discharged on post-operative day 7 after return of bowel function.

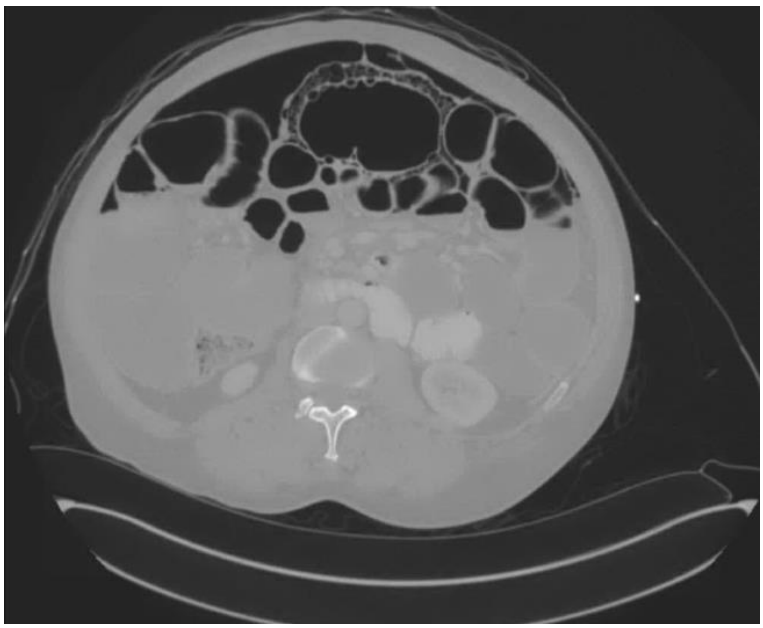

Figure 2. CT abdomen/pelvis shows pneumoperitoneum, pneumatosis intestinalis in ventral mid-abdomen, and evidence of small bowel obstruction.

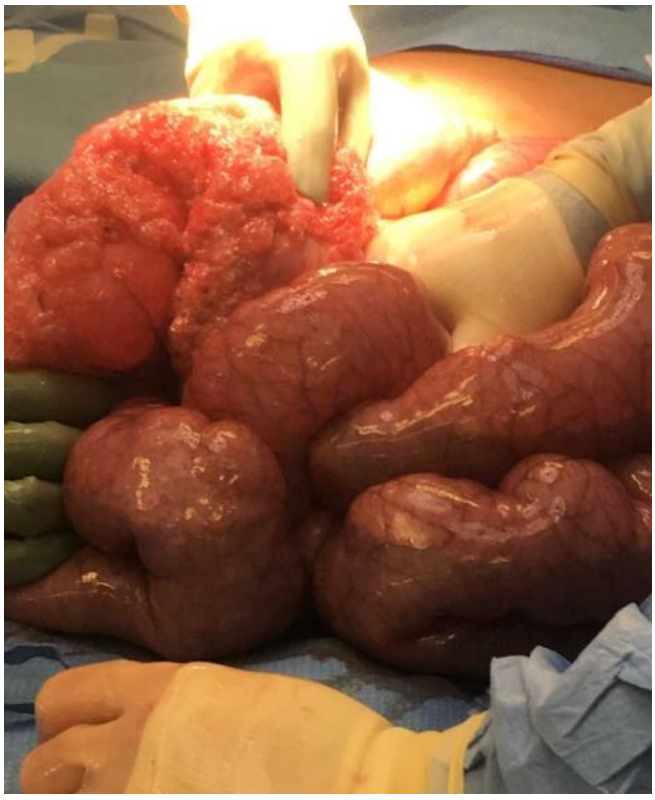

Figure 3. Intraoperative photograph of segment of bowel with pneumatosis intestinalis and dilated small bowel loop due to small bowel obstruction.

DISCUSSION

A literature search was conducted to analyze the treatment approaches in reported cases of ISP. The PubMed database was searched for papers that reported individual cases of ISP in adults. In 2015 Tanaka et al. found 14 cases of ISP in adult from 1990 to 2014 (3). Since the publication of that paper, four additional cases were identified (3,4,5,6,). Including the two cases presented in this paper, a total of 20 cases have been reported since 1990 (Table 1).

In 8 of the 20 cases, the patients underwent exploratory laparotomy (+ sign under laparotomy column on table 1). All of which did not identify a source of perforation. In our second case, surgery was therapeutic in releasing the cause of small bowel obstruction. In the remaining 7 cases, the laparotomy yielded no benefit. Despite the fact that conservative management for ISP has been suggested for decades (3), the surgical community continues to offer ISP patients surgical intervention that might be unnecessary (5,6,7). If the patient did not exhibit signs of peritonitis, our review suggests there is no benefit to surgery. Our recommendation is that surgery will only benefit ISP patients with signs of peritonitis or sepsis, such as hypotension, tachycardia, rising leukocytosis, radiological suggestion of free enteric leak, or failure of conservative management. In addition, we would recommend surgical intervention for ISP if patient has radiologic signs of small bowel obstruction. In the absence of these concerning symptoms, ISP patients may benefit from conservative management.

Table 1. 20 cases of idiopathic spontaneous pneumoperitoneum from 1990-2019.

	Year	Age	Sex	PMH	Fever	WBC	Sudden onset	Digestive symptoms	Peritoneal signs	CT	Laparotomy	Recurrence
London et al.	1990	64	F	Scleroderma	-	WNL	-	+	-	-	-	-
Wang et al.	1993	50	F	Systemic sclerosis	-	WNL	-	+	-	-	-	+
Tani et al.	1995	70	M	-	+	WNL	+	+	+	+	-	+
Hussain et al.	1995	93	F	Arthritis	-	10.2	-	+	-	-	-	-
Clements et al.	1996	68	F	On NSAIDs	-	WNL	-	-	-	-	-	-
Mularski et al.	1999	54	M	Bipolar disorder	-	12.5	-	-	-	+	-	-
Mularski et al.	1999	17	F	Raynaud's phenomenon	-	WNL	-	-	-	-	+	-
Eslick et al.	2006	75	M	Duodenal ulcer, Depression	-	WNL	-	-	-	+	+	-
Masood et al.	2009	58	F	-	-	WNL	+	+	-	-	+	-
Mann et al.	2010	88	M	Multiple strokes	-	WNL	-	+	-	+	-	+
Pitiakoudis et al.	2011	69	F	-	+	1.5	+	+	-	-	+	-
Freitas Jr et al.	2011	63	F	Tuberculosis	-	WNL	+	+	-	-	+	-
McLaren	2013	46	M	-	-	WNL	-	+	-	+	+	+
Tanaka et al.	2014	77	F	Brain hemorrhage	+	WNL	-	-	-	+	-	-
Alassaf	2015	66	M	-		WNL	-	-	-	+	+	+
Vinzens	2016	89	F	chronic constipation	-		-	-	-	+	-	-
Vinzens	2016	87	F	GERD, pandiverticulosis	-		-	-	-	+	-	-
Mora-Guzman et al.	2017	93	F	-		12.7	-	-	-	+	-	-
Our Case 1	2018	72	M	Chemotherapy, s/p Cardiac arrest	-	37.3	-	-	-	+	-	-
Our Case 2	2018	55	F	-	-	10.9	-	-	-	+	+	-

CONCLUSION

The vast majority of cases of pneumoperitoneum are caused by gastrointestinal tract perforation (1). As a result, pneumoperitoneum has traditionally been treated surgically. On rare occasion, the etiology of pneumoperitoneum is unknown. It is important to identify these patients because surgery may not be therapeutic. Conservative management has been successful in cases of ISP where the patient does not exhibit

concerning symptoms such as peritonitis, tachycardia, hypotension, leukocytosis, radiological suggestion of free enteric leak, or failure of conservative management. Patients with small bowel obstruction should also receive surgery in order to release the source of obstruction. Otherwise, patients should avoid getting unnecessary surgery.

REFERENCES

1. Williams NMA, Watkin DFL. Spontaneous pneumoperitoneum and other nonsurgical causes of intraperitoneal free gas. Postgrad Med J. 1997;73:531-7.
2. Eslick GD, Chalasani V, Salama AB. Idiopathic pneumoperitoneum. Eur J Intern Med. 2006;17:141–3
3. Tanaka R, Kameyama H, Nagahashi M, Kanda T, Ichikawa H, Hanyu T, Ishikawa T, Kobayashi T, Sakata J, Kosugi S, Wakai T. Conservative treatment of idiopathic spontaneous pneumoperitoneum in a bedridden patient: a case report. Surgical Case Reports. 2015;1: 69
4. Vinzens F, Zumstein V, Bieg C, Ackermann C. Two similar cases of elderly women with moderate abdominal pain and pneumoperitoneum of unknown origin: a surgeon's successful conservative management. BMJ Case Rep. 2016; 2016:bcr2016215816.
5. Alassaf, M. Recurring spontaneous aseptic pneumoperitoneum presenting secondary to an unrelated chief complaint: A case report. Int J Surg Case Rep. 2015;7: 96-8.
6. Mora-Guzmán I, Muñoz de Nova J, del Campo del Val L, Martín-Pérez E. Diffuse pneumatosis intestinalis and pneumoperitoneum. Digestive and Liver Disease. 2017:47: 938.
7. Pitiakoudis M, Zezos P, Oikonomou A, Kirmanidis M, Kouklakis G, Simopoulos C. Spontaneous idiopathic pneumoperitoneum presenting as an acute abdomen: a case report. J Med Case Rep. 2011;5:86.