A Case of Aerophagia Leading to Compartment Syndrome Requiring Emergency Department Exploratory Laparotomy

Daniel Chester MD, George Raschbaum, MD
INSTITUTIONS: Morehouse School of Medicine, Children's Hospital of Atlanta

Introduction

For patients with chronic aerophagia refractory to behavioral modification or medical management, venting gastrostomy is the treatment of choice as a safe and feasible surgical option. It is recommended to avoid performing an exploratory laparotomy and instead pursuing NG or rectal decompression in patients presenting emergently with distension from chronic aerophagia. Herein, however, we report a case of aerophagia so profound it necessitated exploratory laparotomy in the Emergency Department for rapid resolution of abdominal compartment syndrome resulting in vascular and pulmonary compromise.

Key Words: Aerophagia, Abdominal Compartment Syndrome, Emergent Exploratory Laparotomy, Pediatric Surgery

Patient History and Presentation

The patient was a nineteen-year-old female with autism and developmental delay with chronic aerophagia since early childhood. The patient's aerophagia was stimulated by anxiety and agitation and gradually worsening as the patient reached adulthood. Over the years, speech, psychological, psychiatric, and child developmental specialists were unable to improve the patient's stress induced disorder via behavioral or pharmacologic modification. As the patient had dealt with this problem for years, the patient was planned to receive venting gastrostomy tube placement in accordance with standard treatment for aerophagia refractory to medical or therapeutic management.

She presented to the Emergency Department (ED) with five day history of worsening abdominal distention, decreased stooling, and decreased appetite. Over the 24 hours prior to arrival, the patient had increased work of breathing, and the patient's PCP asked for her to be brought to the ED. On presentation she was tachycardic and tachypnic in obvious distress with a massively distended and tight abdomen. Plain films were obtained showing massively dilated loops of bowel (Fig. 1).

Attempts at rectal and nasogastric decompression were unsuccessful. Due to inability to assess mental status and declining O2 saturations and blood pressure, the decision was made to intubate the patient.

Prior to intubation, the patient became pulseless and achieved return of spontaneous circulation (ROSC) after the first round of CPR. Following ROSC the patient was paralyzed and intubated via RSI. Despite intubation and aggressive ventilatory efforts with 100% O2, patient's saturations continued to drop into the low 70s and blood pressure continued to drop to 65/40. Patient was presumed to be suffering from abdominal compartment syndrome (Fig. 2) with inability to expand lungs or move blood effectively with so much pressure from her distended abdomen and since she was peri-code, the decision was made to perform exploratory laparotomy in the ED prior to transport to the OR. Immediately following incision made with electrocautery, distended loops of bowel pushed out of the abdomen and her vitals immediately stabilized. OR towels soaked in saline were placed over exposed and inflated bowel and patient was taken to OR.

Fig. 1. Abdominal X-Rays obtained at admission from left to right, superior to inferior.



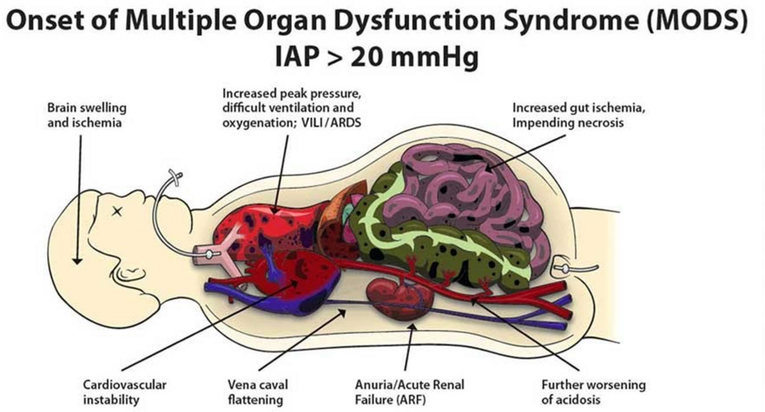


Figure 2

Operative and Post-Operative Course

Upon operative exploration massively distended bowel with numerous areas of deserosalization were encountered as well as adhesions most prominent in the right upper quadrant (RUQ). Enterotomies were made in the small and large bowel and using an ET tube suction device air was evacuated from the GI tract. The bowel had become twisted around adhesions in the RUQ and were lysed. LADD procedure was performed to release those adhesions and the appendix was removed. Patient was given an ileostomy and closed easily before leaving the OR. Post-operatively, Ileostomy became functional on POD 7 and clear liquid diet was initiated. Later that day patient developed increased agitation and distention with free air noted on abdominal plain films. Patient was again brought back to OR and explored with negative abdominal findings and venting gastrostomy tube was placed in the open fashion at this time. On follow up patient has done well with no further episodes of abdominal distention unable to be resolved with the venting gastrostomy. Patient is scheduled for ileostomy takedown in early May.

Discussion

Discussion: 30% of patients with chronic aerophagia undergo unnecessary negative exploratory laparotomy for presumed obstruction. Generally it is advised to utilize rectal and nasograstric decompression for resolution of symptoms until permanent venting gastrostomy tube can be placed. The absence of air fluid levels and clear transition point in patients with known aerophagia is the indicator that it is likely not an obstruction and laparotomy is not indicated. In this case, however, the patient presented with advanced compartment syndrome forcing the more invasive procedure's immediate execution in order to save the patient's life. The uniqueness of her presentation necessitated a usually contraindicated procedure (laparotomy) and strict adherence to the usual standard of care could have led to the patient's demise.

To our knowledge, this is the first report of aerophagia producing a severe abdominal compartment syndrome necessitating laparotomy in the ED. With a paucity of data for this presentation, successful treatment using an atypical method is described here for future discussion and use.

Consent to publish the case report was obtained from the patient's legal guardian. This report does not contain any personal information that could lead to identification of the patient.

References

Raschbaum GR, Bleacher JC, Grattan-Smith JD, Jones RA. Magnetic resonance imaging-guided laparoscopic-assisted anorectoplasty for imperforate anus. J Pediatr Surg. 2010 Jan;45(1):220-3. doi: 10.1016/j.jpedsurg.2009.10.033. PMID: 20105607.

Yota Suzuki, Taylor Williams, Ravi S. Radhakrishnan, Entero-pleural fistula as a long-term complication of patch repair for congenital diaphragmatic hernia, Journal of Pediatric Surgery Case Reports, Volume 64, 2021, 101690, ISSN 2213-5766,

Zheng YC, Pan J, Zhang ZH, Liu ZF, Hao LH, Qian R. [A single-center retrospective analysis of 46 children with aerophagia]. Zhongguo Dang Dai Er Ke Za Zhi. 2020 Sep;22(9):975-979. Chinese. doi: 10.7499/j.issn.1008-8830.2003006. PMID: 32933629; PMCID: PMC7499445.

van der Kolk MB, Bender MH, Goris RJ. Acute abdomen in mentally retarded patients: role of aerophagia. Report of nine cases. Eur J Surg. 1999 May;165(5):507-11. doi: 10.1080/110241599750006802. PMID: 10391173.