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An Unexpected Complication of Colonoscopy: A Rare Case of Compartment Syndrome Without Evidence of Perforation

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Introduction

- **Colonoscopy** is a widely performed and generally safe diagnostic and therapeutic procedure, with mortality estimated at **<3 per 100,000** procedures.[1] **Perforation** is rare (<0.1%) but represents one of the most serious complications.[2,3]
- **Abdominal compartment syndrome (ACS),** defined as sustained **intra-abdominal pressure >20 mmHg with new-onset organ dysfunction**, carries significant morbidity and mortality if untreated.[4]
- We present a rare case of **colonoscopy-associated barotrauma** progressing to **ACS** requiring **emergent bedside decompression** and **surgical intervention**.

Case Presentation

- A **67-year-old male** presented with **large-volume painless hematochezia** and **syncope**. Colonoscopy demonstrated **diffuse diverticular bleeding** treated with **extensive Hemospray application**.
- Within one hour post-procedure, the patient developed **marked abdominal distension** followed by **acute hemodynamic instability**. **CT imaging** revealed extensive **pneumoperitoneum and retroperitoneal air.**
- With high suspicion for ACS**, emergent bedside needle decompression using a 14-gauge angiocatheter** was performed, resulting in **immediate hemodynamic improvement.**
- **Exploratory laparotomy** revealed **cecal serosal tears without frank perforation**. Given **diffuse diverticulosis** and concern for **microperforation in the setting of hemorrhage**, **sigmoidectomy with end colostomy** and wound **VAC placement** was performed.
- **Re-exploration** confirmed an **intact but fragile cecum**. The patient **recovered and was discharged in stable condition.**

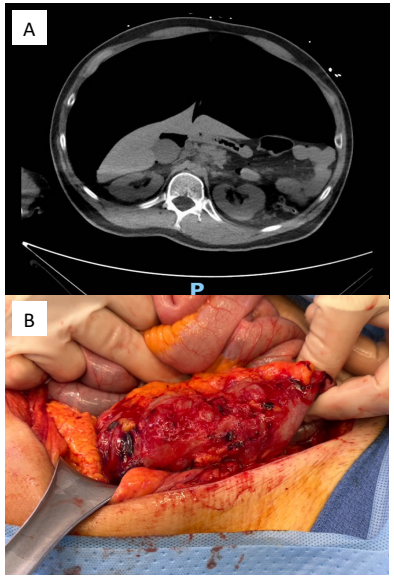

Figure A: Extensive pneumoperitoneum 9 x 10 x 5 cm circumferentially on axial **computed tomography**
Figure B: Intraoperative image from take-back surgery of **serosal tears noted to cecum without frank perforation or spillage**

Discussion

- **Colonoscopy-associated perforation** occurs in **0.01–0.08% of cases**.[3] Although uncommon, progression to ACS is **exceedingly rare and potentially fatal.**
- **Barotrauma** is a recognized mechanism of injury, particularly in the **thin-walled cecum**.[5] **ACS** results from **elevated intra-abdominal pressure** leading **to impaired venous return, reduced cardiac output, decreased renal perfusion**, and **respiratory compromise**.[4]
- **Hemospray** is delivered via a **pressurized CO_2 canister (10–12 psi)** and has been associated with **reported perforations in post-marketing surveillance data**.[6,7] **Extensive application in compromised colonic tissue** may increase susceptibility to **barotrauma**.
- In this case, **colonic insufflation combined with pressurized powder delivery** likely contributed to **rapid pneumoperitoneum** and subsequent **ACS. Immediate bedside decompression** resulted in rapid reversal of **shock physiology** and was **lifesaving.**

Conclusion

- **ACS following colonoscopy** is **rare but catastrophic** if unrecognized.
- **Rapid abdominal distension, hemodynamic instability, or ventilatory compromise** after **colonoscopy** should prompt immediate evaluation for **pneumoperitoneum** and **evolving compartment syndrome.**
- **Emergent bedside decompression** should **not be delayed** when **ACS is suspected.**
- **Heightened vigilance** and **structured post-procedure monitoring protocols** may **improve outcomes in high-risk patients**.

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