COMPLICATIONS OF VENTRAL HERNIA WITH PRONE POSITIONING DURING NON-ABDOMINAL SURGERY: A SYSTEMATIC REVIEW

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INTRODUCTION

- Prone positioning is used to access the posterior head, neck, spine, and retroperitoneum
- Associated with complications from **increased anterior structure pressure**, including postoperative vision loss, pressure ulcers, cardiovascular compromise, abdominal compartment syndrome, and brachial plexopathy
- However, previous studies have not documented the epidemiology for hernia incarceration secondary to prone positioning and only emphasized that lateral and anterior approaches can lead to incisional hernias

OBJECTIVE

- We present two cases of ventral hernia complication after surgical prone positioning that we hypothesize were secondary to increased thoracoabdominal compression

Patient A
Top – pre-surgical abdomen
Bottom – Right hemicolectomy with necrotic bowel







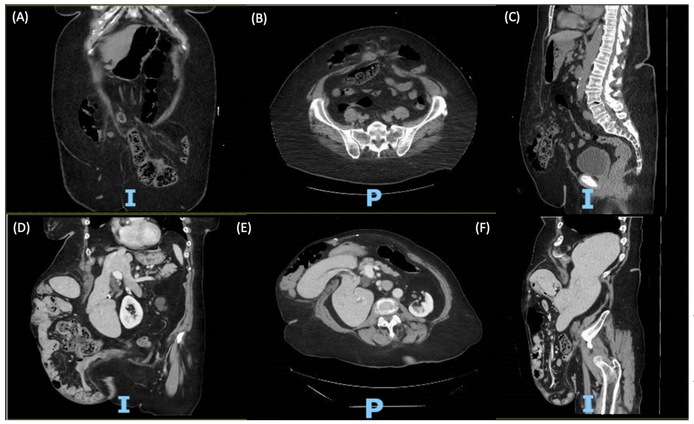
CASE PRESENTATIONS

Patient A

- 67YF with PMH HTN, HLD; PSHx umbilical hernia repair, cholecystectomy, hysterectomy
- Presents with **neck pain and b/l UE numbness**
- S/p C3 laminectomy and C4-C6 laminoplasty in prone positioning
- Had ***ventral hernia with multiple anterior abdominal wall defects*** with non-obstructed small and large bowel
- **POD6** – AMS, constipation, leukocytosis (WBC 25), cecum distention (9cm), incarcerated large bowel
- Underwent **exploratory laparotomy, extended right hemicolectomy, and end ileostomy**
- D/c to rehab when ileostomy output decreased

Patient B

- 70YF with PMH pseudotumor cerebri, HTN, HLD, DM, GERD
- Presents with **back pain and LLE weakness**
- S/p lumbar spondylolisthesis repair with L4-L5 laminectomy and L5-S1 microlumbar discectomy in prone positioning
- Had ***large ventral hernia with loss of domain*** on CT; non-obstructed stomach, left hepatic lobe, and large and small bowel contents
- Wound revision and washout x1 for spinal incision
- **Result:** Uneventful postoperative recovery with hernia monitoring , d/c to rehab



(Left to right) Coronal, axial, and sagittal views of patients' respective hernias.

A-C: Patient A
D-F: Patient B

COMPARISON

- Two similar presentations resulted in dramatically variable outcomes
- Had different operative sites in prone positioning (cervical vs lumbar) for different localized complaints
- Patient B's abdominal contents were propped up, but Patient A's were not
- Patient B was also successfully treated with a bowel regimen after receiving high dose opioids

CONCLUSIONS

- To our knowledge, this is the first case study that directly discusses the correlation of ventral hernias and prone positioning
- Intra-abdominal pressure may be reduced with proper padding, chest rolls, and jack-knife positioning
- Risk factors like prior abdominal wall hernia, prior abdominal surgery, constipation, and obesity can contribute to hernia exacerbation
- Intraoperative monitoring of intra-abdominal pressure and existing hernias can be pursued to reduce risk of incarceration, which increases risk of intestinal resection
  - Essential to monitor blood pressure, blood gases, urine output for potential subsequent multi-organ failure

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