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## Objectives

- To describe a case of hemodynamic compromise in a patient with pectus excavatum (PE)
- To highlight the importance of preoperative imaging and cardiac studies in patients with PE undergoing other surgeries

## Background

- Pectus excavatum (PE) is a benign congenital anterior chest wall deformity. In many cases, the presence of PE does not increase an individual's morbidity or mortality, and is primarily repaired for cosmetic reasons.
- The prevalence of scoliosis in PE patients is about 23% and these patients may present for scoliosis repair (1).
- We describe a case of hemodynamic compromise in a patient with unrepaired PE during a posterior spinal fusion surgery. While previous case reports have described hemodynamic compromise with prone positioning in these patients (2-4), we encountered hemodynamic instability during rod placement for surgical correction.

## Case Presentation

- **History:** A 15 year old boy with a history of PE, Marfan's syndrome, aortic root replacement, AICD placement for episodes of ventricular tachycardia, and scoliosis presented for posterior spinal instrumentation and fusion (PSIF).
- **Induction:** Uncomplicated intubation, arterial line, and central line placement. Positioned prone with no external pressure on PE.
- **Intraoperative Events:**
  - During placement of surgical screws and osteotomies at T6-L3 levels, the mean arterial pressure (MAP) was maintained above 70 mmHg with phenylephrine boluses and infusion.
  - During rod placement, the MAPs acutely dropped to the 30s and improved when surgical manipulation was stopped. Once the MAP was stabilized with fluid and vasopressors, spinal correction was reattempted, but again resulted in hemodynamic instability.
  - Hemodynamic instability was thought to be due to compression of the heart and/or greater vessels. The procedure was aborted with the decision to reattempt after pectus repair.

## Postoperative Events:

- CT chest showed severe PE deformity causing compression of the right heart and overall leftward shift [Figure 1].
- The patient underwent an uncomplicated open PE repair with significant improvement in cardiac compression [Figure 2].
- PSIF was done two weeks later. He tolerated the procedure well without any hemodynamic instability, and had an unremarkable postoperative course.

## Discussion

- Physicians may not consider the potential hemodynamic effects in patients with PE because it is considered a benign condition. A few case reports have described hemodynamic compromise with prone positioning in these patients (2-4). Using echocardiography, these reports identified right ventricular compression that led to a decrease in preload.
- In our case, CT chest performed after initial surgery revealed severe deformity that caused right ventricular compression in the supine position, which was exacerbated by prone positioning, and particularly with spinal manipulation.
- We add to the growing body of proof that pectus patients should have preoperative imaging, including a CT chest and cardiac studies, to assess compromise and possible repair prior to other surgeries that can add additional stress.

## References

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Figure 1



Figure 2

