Background:
Pectus carinatum is a congenital deformity characterized by protrusion of the sternum and ribs. Children with this condition can experience chest-wall pain, the exact cause of which is poorly understood. Surgical repair, which may alleviate this pain, is often delayed until after the adolescent growth spurt in order to prevent possible recurrence during puberty.

We describe a case in which a child with pectus carinatum presented to our chronic pain clinic with severe sternal pain that had not responded to standard therapeutic approaches. We performed serial bilateral paravertebral blocks (PVBs) with a local anesthetic and corticosteroid solution using ultrasound guidance in an outpatient setting, after which our patient had complete relief of pain symptoms.

Case Report:
A 12-year-old boy with pectus carinatum presented to our pain clinic reporting a one-year history of persistent chest-wall pain (T2-T4 dermatomes). He described a throbbing and burning sensation over the sternum with significant allodynia. An extensive workup did not reveal any specific cause of his symptoms.

Surgical consultation was obtained and the patient was advised to delay surgical repair until after the pubertal growth spurt. Treatment with anti-convulsants, a selective serotonin reuptake inhibitor, and non-steroidal anti-inflammatory drugs were not helpful and, despite aggressive medical management, physical therapy, and desensitization exercises, he achieved no relief of his pain.

We performed ultrasound guided bilateral PVBs at T3-T4 using 5 mL of 0.25% Bupivacaine + 4mg dexamethasone for each injection. The patient’s pain disappeared for two weeks (VAS 0/0) and then gradually returned with decreased intensity (VAS 5/10). PVBs were then repeated on a bi-weekly basis with significant improvement. After the third block, the complaints of pain, allodynia, and hyperesthesia were successfully relieved for a 5-month follow-up period.

Discussion
Children with pectus carinatum can experience debilitating chest pain that often causes significant functional impairment. The etiology of this pain poorly described, which poses a challenge in management. Our patient’s symptoms and his response to local anesthetic administration in the paravertebral space leads us to suspect that the pectus deformity could have placed mechanical strain on the intercostal nerves, which subsequently caused a neuralgia.

The patient’s pain relief far outlasted the conduction blockade, which may be due to reduced central sensitization as well as an interruption of the established circuit between nociceptor, central nervous system, and motor unit. Concomitant corticosteroid administration likely contributed to this effect via anti-inflammatory action and by suppressing ectopic discharge in neural membranes. Our case demonstrates an instance in which a child with pectus carinatum deformity developed neuropathic chest pain that completely resolved after treatment with serial ultrasound guided PVBs.

References:
2. Anesthesiology 2011;112(6):1487-93