

External Oblique Intercostal plane block for chest and sternal pain in a cross-country athlete.

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Introduction: External oblique plane block has been utilized in obese patients undergoing upper abdominal surgery. This technique has been suggested due to difficulties associated with more traditional neuraxial or regional anesthesia techniques in obese patients due to the depth of the anatomical target site and proximity to the operative field. We were not able to identify a case report in the current literature utilizing the external oblique intercostal plane block for refractory chest, sternum, and rib pain in an athlete.

Case Presentation: We present a case of a 16-year-old male who was a high-level cross-country runner. He was referred to our clinic for bilateral chest pain, duration of 10 months. The pain was located at his chest and sternum with radiation into bilateral ribs. It was a constant dull pain with intermittent radiating sharp and cramping sensations. At its best it was a 4/10, at its worst it was 10/10. Heat, Meloxicam 7.5 mg, Ibuprofen 400 mg helped alleviate the pain, physical therapy aggravated the pain, and the pain was interfering with sleep. He denied any bowel or bladder incontinence.

The patient denied any trauma weeks or months prior, and there was no inciting event. Patient had no other significant medical history, surgical history, and no pertinent family history.

His pain began gradually while he was cross-country running, typically 1-2 miles into the workout, and was left sided. Initially it was attributed to deconditioning. The pain returned with every single run, and began impacting his athletic performance. He was evaluated in an urgent care clinic with EKG that ruled out a cardiac component, and he was prescribed antibiotics with no symptom improvement. Gastroenterology also evaluated him, and did not believe that there was an abdominal organ component. The patient's CT chest revealed no abnormality. X-rays demonstrated abnormal distance between the right 2nd, 3rd, 4th and 5th ribs, however, the location of these ribs was cephalad to his pain. He was referred to Neurology, however, they denied the consult because they did not believe this to be a neurological issue.

Five months after the start of his symptoms he was no longer able to compete in cross-country due to the severity of the pain, which had now spread to include bilateral lower chest wall with sternal radiation. Naproxen gave him no relief, Meloxicam 7.5 mg decreased his pain to a tolerable level to attempt cross country competitions, however, his performance was severely impacted. He completed physical therapy which did not decrease his constant chronic pain. We want to note that his physical therapist thought it was a fascial pain issue.

Physical exam was notable for severe bilateral chest wall pain with palpation starting just below the 12th rib at the mid-axillary line bilaterally ascending to about the sixth rib and the sternum.

The patient experienced paresthesias to light touch at the aforementioned levels. There were no deformities of the chest wall. No allodynia was present. There were no rashes or lesions evident. There was no focal neurological deficit, no motor weakness and the patient exhibited normal gait. The patient's mood and affect were normal and appropriate, and he exhibited normal behavior.

We suspected the patient had irritation of the fascia between the external oblique and the ribs. Since he had failed conservative therapy including medications and physical therapy, we scheduled him for a bilateral external oblique fascial plane block with ultrasound and fluoroscopy. We discussed with the patient and his mother the risks of the procedure which included pneumothorax. They elected to proceed.

During the procedure, the patient was placed supine. The c-arm was brought into the field and the areas over the bilateral 5th ribs in the midclavicular lines were identified and marked. Then using a sterile ultrasound probe in the short axis the 5th rib on the right was identified. The skin was anesthetized with 1% lidocaine. Then a 22-gauge needle was advanced under direct ultrasound guidance to the rib. Omnipaque 240 was injected after negative aspiration and showed separation of the fascial planes on ultrasound. Then fluoroscopy was brought back into the field and Omnipaque was injected again after negative aspiration and showed spread in the correct fascial plane. After this, 5 cc of 0.25% bupivacaine was injected through the needle after negative aspiration. The same procedure was then completed on the left side. We used the techniques described by Elsharkawy et al.¹ and White et al.²

After the procedure, a chest x-ray was taken to rule out pneumothorax. It was negative for pneumothorax. The patient was evaluated in the recovery area, and his anterior chest wall pain was 100% improved. He reported numbness with palpation over his anterior chest wall bilaterally. However, bilateral mid-axillary line pain was still at its baseline and was not numb. Overall, he reported his total pain was 50% better.

The patient followed up in the clinic 5 weeks post-procedure. He reported 95% pain relief and was doing very well. He reported once a week "twinges" in his chest wall, duration 1 minute that would resolve completely. He was able to complete the track season without any setbacks and only had one incidence of chest wall pain after running an 800-meter event. We were unable to reproduce his pain at the follow-up visit and he reported his pain scores to be 0/10. At this time, we offered to repeat the blocks should the pain ever arise. It has now been 6 months post-procedure and the patient has not returned to the clinic.

Discussion: This case illustrates the success of an external oblique intercostal plane block for chest and sternal pain in a cross-country athlete.

1. Elsharkawy, Pain Med, 2021
2. White, British Journal of Anaesthesia, 2022





