# Cervical Ribs in a Teenaged Athlete

Sean Sims, PA-C[1] ▪ Matt Snow, MD[2]

An athletic 16-year-old boy presented to primary care with worsening bilateral neck pain for approximately 1 year.

## History

The patient had an athletic build and reported no prior injury from playing sports. He reported that the pain had worsened with heavy physical activity, particularly weightlifting. The only alleviating factor was rest. He denied loss of strength and numbness or tingling in his upper extremities, had no history of surgical procedures on his cervical spine or upper extremities, and had no known personal history of cervical or thoracic tumors. In addition, he had no prior diagnostic imaging of his shoulders or neck.

The patient did not have a family history of autoimmune arthritis, osteosarcomas, or neurological conditions. His personal history was significant for a benign lesion in his bladder, which was evaluated by a urologist and reported as normal by that patient's mother at the visit; left drop foot secondary to a peroneal injury; and hypertension for which he was taking amlodipine, 5 mg daily.

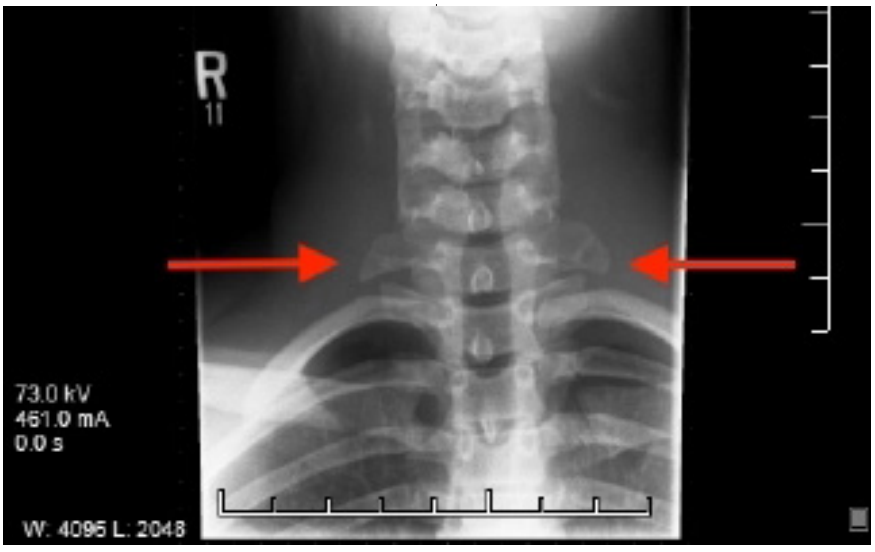


**Figure**. Two small, superfluous ribs were noted at the seventh cervical vertebrae on the radio-

## Diagnostic testing

After his office visit, a plain-film radiography scan of his cervical spine was conducted, and he was referred to physical therapy. One significant finding on the radiograph was 2 small, superfluous ribs at the seventh cervical vertebrae **(Figure)**. Because the patient did not report any neurological symptoms, the concern for a thoracic outlet syndrome was low. The patient was referred to a pediatric orthopedist for follow-up. Surgical intervention was not considered at this time, and he continued with physical therapy.

## Discussion

Cervical ribs are supernumerary ribs that originate from cervical vertebrae. They most often occur at the seventh cervical vertebrae, although cervical vertebrae originating from the sixth and, more rarely, the fifth cervical vertebrae have been found.[1] These ribs can present as different anatomical variants. For instance, cervical ribs may solely be anchored at the vertebrae of origin, other times forming arthroses or pseudoarthroses

**AFFILIATIONS:**
[1]Primary Care Provider, Boone Clinic Triad, Virginia Beach, VA
[2]Resident Physician, Psychiatry Department, US Navy, Portsmouth, MD

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**CORRESPONDENCE:**
Sean Sims, PA-C, Boone Clinic Triad, 1035 Nider Blvd #100, Virginia Beach, VA 23459

with the manubrium or the first thoracic rib.[1] Cervical ribs can also present with varying degrees of ossification, ranging from purely fibrous tissue to fully ossified bony appendages that are almost structurally identical to thoracic ribs. In many cases, cervical ribs go unnoticed or are recognized as incidental findings on imaging or physical examinations. The incidence of cervical ribs varies widely by region and population. They are generally more common in women, and the incidence in the United States appears to be between 0.5% and 1.0%, although it has been noted to be as high as 6.2% in Turkey.[1]

Cervical ribs can present pathologically, which increases the risk of the patient developing thoracic outlet syndrome (TOS) because of compression of nerves and vasculature in the region of brachial plexus.[2] The presence of a cervical rib can contribute to or cause neurogenic TOS, arterial TOS, and a possible venous TOS, depending on individual anatomy.[2] All classifications can be painful and often present with other clinical indicators that can allude to the affected structures. Nerve compression can present with numbness or weakness; arterial compression can present with cool, pale skin; and venous compression can present with discoloration and swelling.[3] In these cases, surgical removal of the cervical ribs, and sometimes the first thoracic rib simultaneously, may be the best means of long-term symptomatic resolution for patients with more severe symptoms than the aforementioned.[4]

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