

**CASE REPORT**

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***A Rheumatoid Nodule at the Sternoclavicular Joint: An Uncommon Presentation of a Common Problem*****Patrick M. Thomas<sup>1</sup>, Nathan J. Cockerill, MD<sup>1</sup>,  
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Mark H. Cooper, MD<sup>1</sup>****ABSTRACT**

Most rheumatoid nodules are found at joints or pressure points. They rarely require medical intervention or surgery. A 78-year-old female developed a 7.2 x 3.2 x 2.8 cm rheumatoid nodule originating at the right sternoclavicular joint, a novel site for a common pathology. Management involved a complex differential diagnosis, and surgical treatment was resection from adjacent vascular and neural structures. Following surgical excision, the patient maintained good mobility and sensation in the neck and surrounding areas. This case is especially unique in that it involves what is, to our knowledge, the first case of a rheumatoid nodule at the sternoclavicular joint. Though rheumatoid nodules are common, an uncommon presentation or location can present a challenge in managing a patient with a mass of unknown origin. This case demonstrates the need to consider uncommon presentations of common problems.

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**KEYWORDS**

rheumatoid arthritis, rheumatoid nodule, surgery, thoracic surgery, orthopedic surgery

**INTRODUCTION**

Rheumatoid nodules are a frequent manifestation of rheumatoid arthritis. Nearly half of all rheumatoid factor-positive patients will develop nodules during their disease.<sup>1</sup> They most commonly occur at pressure point locations or in areas of repeated trauma. The most frequently reported sites are the joints of the hands and feet. More rarely, they are found at extra-articular locations, particularly the sclera, lungs, and vocal cords. They are often asymptomatic but can cause pain or stiffness in joints. We present a case of a large rheumatoid nodule at the sternoclavicular joint presenting with symptoms confounding for avascular necrosis of the clavicular head.

**CASE PRESENTATION**

A 78-year-old female on chronic immunosuppression for rheumatoid arthritis presented to her primary care provider with a 4-month history of an enlarging right neck mass and 5-pound weight loss. On exam, she had a 4 cm non-tender, immobile, rubbery mass extending from the mandibular sternum into the right neck. Along with rheumatoid arthritis, her medical history was significant for recurrent dental abscesses. She was a lifelong non-smoker with no history of radiation exposure, animal exposure, cancer, or thyroid disease. Concerned for malignant or infectious etiology, she was admitted to the hospital for a diagnostic workup and treatment of the mass.



Imaging revealed a large mass with bony destruction of the manubrium extending into the sternocleidomastoid. MRI (figure 1) showed a mass measuring 7.2 x 3.2 x 2.8 cm with T1-weighted contrast enhancement. There was significant enhancement at the right sternoclavicular joint, suggesting involvement of the bony structures. Chest CT showed bony erosion of the sternoclavicular joint and the joint between the sternum and first rib. Ultrasound-guided aspiration of the mass was performed with the removal of thick, yellow, purulent-like material. Cytology revealed scattered acute and chronic inflammatory cells, but no visible bacteria, and a culture yielded no growth up to 6 weeks. Given the cystic nature of the mass and likely necrosis of the sternoclavicular joint, cardiothoracic and orthopedic surgery were consulted for cyst drainage and excision with an exploration of the sternoclavicular joint and possible reconstruction.

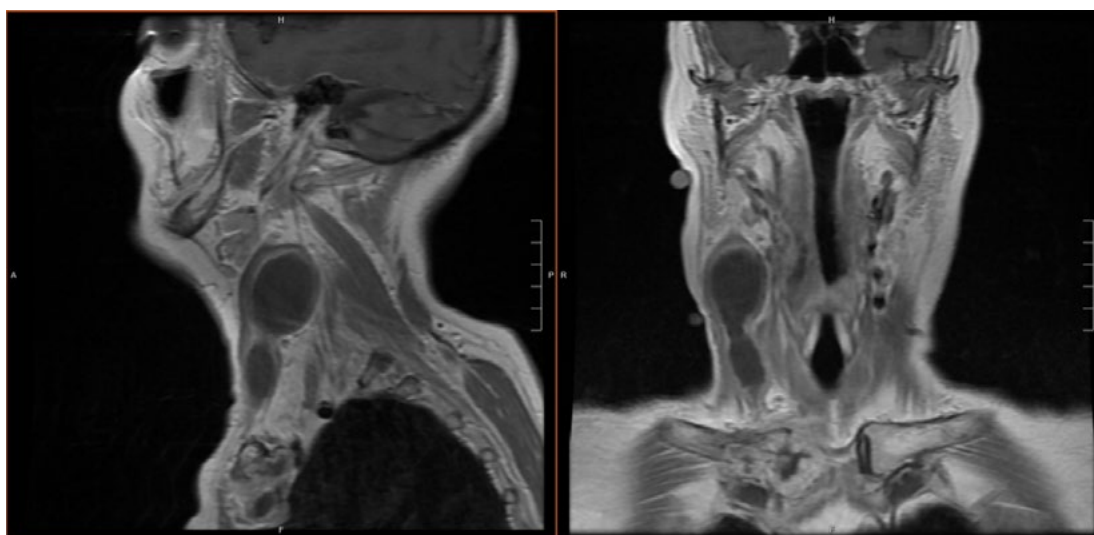
After induction of general anesthesia, a right longitudinal carotid incision was made. The cyst was exposed and mobilized in a superior to inferior manner. The sternoclavicular joint was

opened with debridement of the joint capsule and removal of all inflammatory material. The joint was then reconstructed using a donor semitendinosus tendon. The incision was closed in standard fashion.

Cultures collected during the procedure were ultimately negative. Intraoperative frozen sections showed granulation tissue, macrophages, and multinucleated giant cells consistent with acute and chronic inflammation. A pathological examination of the surgical specimen revealed the mass to be a calcified rheumatoid nodule. The patient had an uncomplicated post-operative course and was discharged the next day. She was seen for follow-up with the cardiothoracic and orthopedic surgery clinics and had retained good mobility and sensation of her neck.

## DISCUSSION

Rheumatoid nodules are a common complication in patients with rheumatoid arthritis. Nodules are present at the diagnosis



**FIGURE 1:** T1 weighted MRI with gadolinium contrast. A) sagittal section showing the mass measuring 7.2 x 3.2 x 2.8 cm. B) coronal section showing the extension of the mass into the right sternoclavicular joint.



of many patients and occur in as many as 40% throughout the disease course.<sup>1</sup> Nodules are typically slow-growing, erythematous, mobile masses spontaneously occurring in patients with rheumatoid factor. They form as a result of antibody-mediated destruction of synovial joint linings, which can cause inflammation and destruction of surrounding tissues, but the majority are clinically silent. Paradoxically, the initiation of methotrexate has been associated with accelerated nodulosis.<sup>2</sup> Other recognized risk factors include smoking and drug use. None of these were present in our patient when she developed this neck mass.

Unlike in our patient, most rheumatoid nodules are found at articular joints in the hands and feet; however, they have been reported at joints throughout the body and at extra-articular locations, notably the lungs, liver, and heart.<sup>3</sup> Extra-articular manifestations tend to cause more serious sequela and are more likely to require surgical excision. Few reports exist for nodules in the neck and mediastinum.<sup>4</sup> This case is especially rare in that it involves the sternocleidomastoid joint. The sternoclavicular joint has been documented as a common site of synovitis in rheumatoid arthritis.<sup>5</sup> However, this is the first case to our knowledge of a rheumatoid nodule at the sternoclavicular joint.

Rheumatoid nodules can often be diagnosed clinically, given their frequency and propensity for joints of the hands and feet. The majority are subclinical and do not cause pain or interfere with surrounding structures. However, patients can find these nodules disfiguring and often complain of pain. In these cases, non-complicated nodules can be managed with corticosteroid injections.<sup>6</sup> Complicated or refractory rheumatoid nodules may be managed with surgical excision. The success rate of these procedures is high and reduces pain and stiffness in nearly every patient.<sup>7</sup>

## CONCLUSION

This case presented several confounding variables—location of the lesion, rapid growth, lack of previous nodules, and lack of associated symptoms—which made diagnosis and management more difficult. For this patient, multiple sources of the abscess were considered. Due to her extensive immunosuppression and recurrent dental abscesses, infectious etiologies were high on the differential and required a high degree of suspicion, given their potential complications.

Ultimately, rheumatoid nodules remain a common source of extra-articular masses in patients with rheumatoid arthritis. Though they are common, an uncommon presentation or location can present a challenge in managing a patient with a mass of unknown origin. This case demonstrates the need to consider uncommon presentations of common problems.

## CONFLICTS OF INTEREST

The authors declare that there is no conflict of interest.

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