

**CASE REPORT**

# A Large Ankle Mass in a Figure Skater: A Case Report

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*Research performed at Brigham and Women's Hospital, Boston, MA, USA**Received: 9 August 2023**Accepted: 30 August 2023***Abstract**

A 19-year-old male competitive figure skater presented to clinic with a 3-year history of right ankle swelling. Exam demonstrated a ~6cm diameter mass over the medial malleolus. MRI revealed a well-circumscribed fluid-filled mass. After failing conservative management, the patient underwent surgical excision. Anatomic pathology revealed a pseudocyst with pseudosynovial metaplasia, consistent with malleolar bursitis. Competitive figure skaters can develop significant medial malleolar bursitis due to excessive shear forces from ill-fitting skates. If non-operative management is ineffective, patients can be managed successfully with surgical excision. The patient made a full recovery and has returned to competitive skating without recurrence.

**Level of evidence: IV****Keywords:** Ankle mass, Ankle pain, Ankle swelling, Figure skating, Medial malleolar bursitis**Introduction**

**A**natomic bursa is not normally present over the medial malleolus. Instead, an adventitious bursa develops in response to repetitive shear forces during activities like skiing<sup>1</sup> and figure skating.<sup>2-4</sup> Medial malleolar bursitis is uncommon in the general population and few case reports of medial malleolar bursitis in figure skaters exist.<sup>2-4</sup> This study reports the largest ever case of medial malleolar bursitis and the first report of it seen in a male figure skater.

**Case Presentation**

A 19-year-old male competitive figure skater presented to clinic with a 3-year history of intermittent and progressive right ankle pain and swelling [Figure 1A].

Only patients who had undergone arthroscopic soft-tissue His past medical history was notable for asthma and a 5-year history of enlarged lymph nodes. He denied any history of night sweats or unintentional weight loss. He denied infectious symptoms such as fevers, chills, nausea, vomiting, or significant erythema/drainage from the ankle. He had several episodes of medial malleolar bursitis in the past which were unsuccessfully treated with aspirations and

doxycycline injections. The patient attempted to modify his skates by making a cutout in his skate over the medial malleolus. However, this compromised the stability of the skate and made him unsteady during landings.

The patient presented with significant pain over his medial right ankle. He was unable to properly wear his ice skate due to the amount of ankle swelling. His symptoms were not controlled with rest, ice, compression, elevation, and NSAIDs. On exam, he had a large, firm, non-tender mass over his right medial malleolus.

Given the patient's history of enlarged lymph nodes, a right ankle MRI was obtained [Figure 1B]. This revealed a well-circumscribed fluid-filled mass with thin peripheral enhancement. The MRI showed that the mass did not involve any surrounding neurovascular structures.

After failure of non-operative management, surgical excision was performed [Figure 1C]. Anatomic pathology revealed a pseudocyst with fibrosis and pseudosynovial metaplasia, consistent with malleolar bursitis [Figures 2A and 2B].

The patient made a full recovery and after 7 months has returned to competitive skating without recurrence. He is

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currently an alternate for the US national figure skating team.

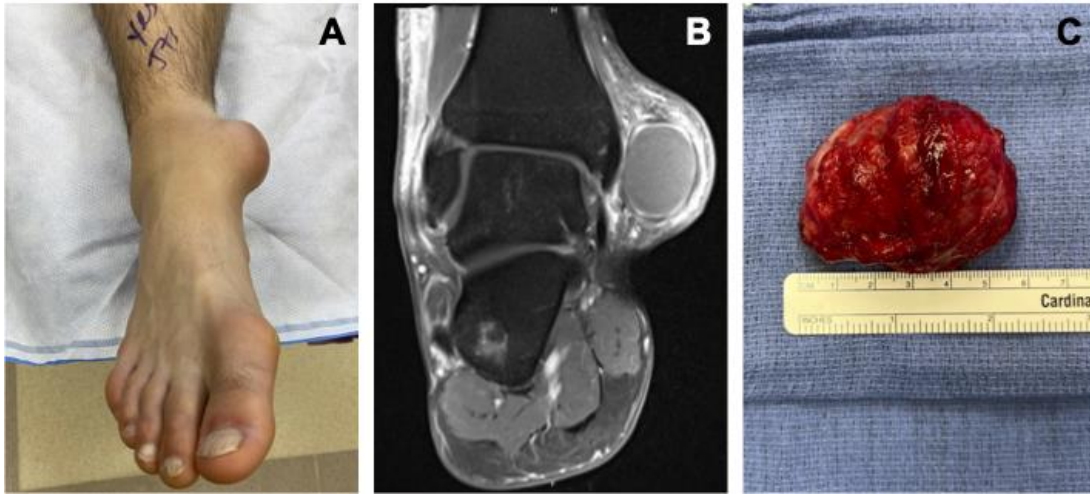


Figure 1. Clinical photo of patient's right foot and ankle (A), T2-weighted coronal right ankle MRI (B), and right ankle mass gross pathology specimen (C)

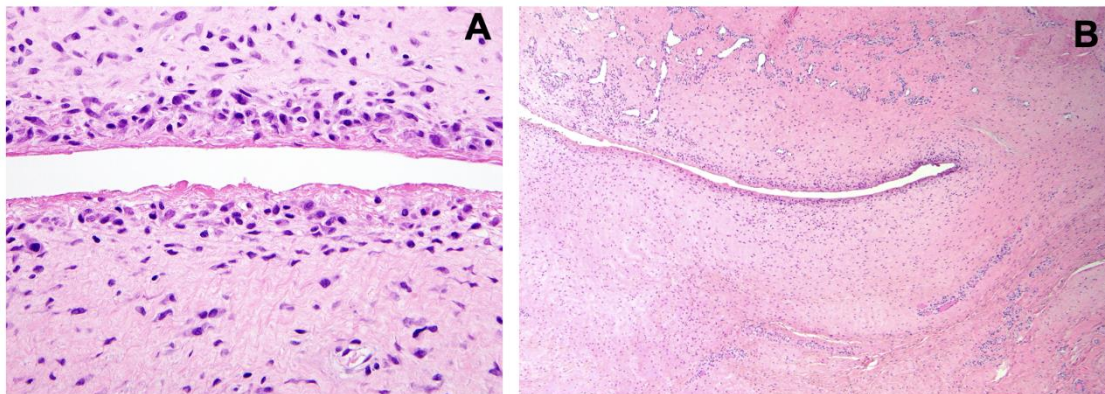


Figure 2. Low-power photomicrograph of cyst lining with pseudosynovial metaplasia and surrounding fibrosis (Hematoxylin & Eosin stain, 4x) (A) High-power photomicrograph of cyst wall highlighting haphazard multilayered lining cells mimicking normal synovium. Fibroblasts with surrounding wavy eosinophilic fibrosis are seen in surrounding tissue (Hematoxylin & Eosin stain, 40x) (B)

### Discussion/ Conclusion

Medial malleolar bursitis is uncommon in the general population. A native bursa is not normally present over medial malleolus. Instead, an adventitious bursa develops in response to repetitive shear forces over the medial ankle. Such forces are generated by the rigid footwear used in skiing<sup>1</sup> and figure skating.<sup>2-4</sup> This study reports the largest ever case of medial malleolar bursitis and the first report of it seen in a male figure skater.

Medial malleolar bursitis is a chronic inflammatory process. It can take months for the adventitious bursa to develop. This often happens in response to new skates or increasing skating frequency/intensity. Patients often report pain and swelling over the medial ankle. While the bursa develops to dissipate excessive shear forces, it may ironically worsen footwear fit and exacerbate the problem further. While most cases are aseptic, septic medial malleolar bursitis can

present, often with exquisite pain and erythema over the bursa.<sup>3</sup>

Initial treatment is conservative management with rest, ice, and NSAIDs, in addition to modifying activities and footwear. Failure of these measures can necessitate more invasive treatments such as aspiration, sclerotherapy,<sup>5-7</sup> and surgical excision.<sup>4,8</sup> Obtaining an MRI can assist surgical planning and evaluate for other etiologies, such as cancer. This case demonstrates that operative intervention can lead to a full recovery, enabling the patient to return to competitive figure skating.

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Not applicable

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