Os Trigonum Syndrome in a Classical Ballet Dancer

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The os trigonum commonly can be seen in a human ankle, and it is usually asymptomatic. However, in classic ballet dancers, who must frequently stand on the tips of their toes, sometimes os trigonum causes pain at the back of the ankle.

We have observed a case of a classical ballet dancer with pain at the back of both ankles, who could not assume the en pointe position.

Case Report

A 17-year-old female ballet dancer presented herself complaining of pain at the back of both ankles. She started dancing at 8 years old. When she was 12-year-old, she felt pain for the first time at the back of both ankles. The pain started gradually, and there was no episode of trauma. After that the pain continued to get more severe, and it was unbearable when on pointe. Sometimes she could not walk after strenuous dancing.

Physical examination revealed localized tenderness on the posteromedial and posterolateral aspects of the ankles. The sharp pain arose when the ankles were in plantar flexion. X-rays revealed an os trigonum behind the talus on each side, and it was trapped between the back of the lower tibia and the upper surface of the calcaneum when the foot was in the en pointe position (Fig. 1). Lateral
tomograms clearly demonstrated the size and shape of os trigonum (Fig. 2). A Tc-99 m bone scan showed a localized increase in tracer concentration at the same places as that on the X-ray (Fig. 3). The symptom was completely but only temporarily relieved by an injection of 2 cc of Lidocaine.

After four months of conservative treatment had produced no relief, it was decided to excise both fragments. First, the left side was operated on, and after 15 days duration the right side was operated on. In each foot, the fragment was mobile against the talus, and it was trapped between the tibia and talus when the ankle was forced in plantar flexion. There was no deformity or sign of inflammation on the flexor hallucis longus tendon. The fragment was removed quite easily by using small scissors. Histologically, the fragment was connected by fibrous connective tissue with the talus (Fig. 4).

A pressure dressing was applied, and the leg was elevated. Soon after the operation and with the lessening of incision pain active movements were begun, but full weight bearing was delayed until the 14th day. She returned to dancing after 6 weeks postoperatively, but it required a further 7 weeks for full activity.

Discussion

Various studies estimate the incidence of os trigonum at 3% to 12.7% in the general public. Symptoms arising from the os trigonum in the general public are rare. The symptoms are produced when the os trigonum is caught between the back of the lower tibia and upper surface of the calcaneum when the ankle is forced in plantar flexion. Some authors suggest that this painful condition could be seen in classical ballet dancers and footballers. The symptoms seem to arise only in the situation when the ankles are frequently forced in plantar flexion.

Fig. 4 Photomicrograph: the inferior surface of the os trigonum articulated with the calcaneum (A), and the space between the os trigonum and the talus was filled with fibrous connective tissue (B).
In our case, operative findings revealed the mobility between the os trigonum and the talus, and histologically, the anterior surface of the os trigonum connected with the posterolateral tubercle by fibrous connective tissue.

The source of the pain is considered to be capsule and synovium, that are squeezed between the tibia and the calcaneum when the ankle is forced in planter flexion. And we speculate that the abnormal mobility of the os trigonum against the talus may increase the degree of the squeezing of those soft tissues, or the abnormal mobility may cause the pain by itself.

When os trigonum syndrome is accurately diagnosed, conservative treatment such as restrictive motions that cause pain may not be sufficient. If conservative treatment fails, the pain can be readily relieved by excision of the fragment.

Conclusions

A case of os trigonum syndrome in a classical ballet dancer is reported. Treatment by excision of the fragment was successful.

References