Bony ankle impingement with and without ankle osteoarthritis (OA) is a common condition. Bony impingement between the distal tibia and talus aggravated by dorsiflexion has been well described. Anterior ankle impingement syndrome presents with pain during ankle dorsiflexion. This is thought to be due to hypertrophy of soft tissues or bone surrounding the tibiotalar joint\(^1\). The etiology of these impingement lesions remains controversial. Although ankle impingement has been a well described condition, there is an incidence of failure and recurrence with current surgical treatment of anterior impingement. This may be in part to the surgical removal of osteophytes only without addressing the bony deformity. This form of cam impingement and ankle deformity has been observed by the senior author (AA) in numerous cases.

We feel that the impingement we describe in this paper is a unique form of bony ankle impingement which has not previously been identified and have termed it cam-type impingement. This study attempts to identify a cam-type impingement of the ankle, similar to what has been described in the hip femoral neck\(^9\), in which the talar dome is less spherical, causing pathologic contact with the anterior aspect of the tibial plafond in dorsiflexion, and abnormal loading of the talar dome cartilage. (fig.1) This anatomic relationship could also lead to the formation of reactive osteophytes and soft tissue hypertrophy but specifically differs from anterior impingement syndrome in that there appears to be an underlying anatomical bony deformity of the talar body-neck junction. (fig. 2)
This study describes a cam-type impingement of the ankle, in which the talar dome is non-spherical, causing pathologic contact with the anterior aspect of the tibial plafond during dorsiflexion, leading to abnormal ankle joint mechanics by limiting dorsiflexion. A group of 269 consecutive adult patients from the University of Iowa Hospitals and Clinics with an operative diagnosis of posttraumatic arthritis, idiopathic osteoarthritis, or anterior bony impingement syndrome were evaluated as the study population. As a control group, 41 patients without any evidence of impingement or arthrosis were evaluated. Standardized standing lateral ankle radiographs were evaluated to determine the contour of the head/neck relationship in the talus. Two investigators made all the radiographic measures and intra- and inter-observer reliability were measured. 34% of these patients were found to have some anterior extension of the talar dome creating a thickening of the normal concavity at the dorsal medial talar neck. A group of 36 patients (13%) were identified as having the most severe cam deformity in order to assess any correlation to any coexisting radiographic abnormalities. In these patients, a cavovarus foot type was also more commonly observed. Comparison with a control group showed much lower rates of anterior-medial cam-type deformity of the talus. Cam type impingement of the ankle is likely a distinct form of bony impingement of the ankle likely secondary to a morphological talar bony abnormality. Based on the findings of this study, this form of impingement may be related to a cavovarus foot type. In addition, there may be long term implications in the development of ankle OA, but this requires further investigation.

References