

# Incidence and Location of Osteochondral Lesion of the Talus Associated with Ankle Fractures as Evaluated by Magnetic Resonance Imaging.

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**INTRODUCTION:** Osteochondral lesions of the talus (OLTs) are known to be one of the causes for residual pain after ankle fractures. Although magnetic resonance imaging (MRI) is the most reliable for the diagnosis of OLTs, there are few reports to investigate the incidence and location of OLTs associated with ankle fractures as evaluated by MRI. The purpose of this study is to clarify the incidence and location of OLTs associated with ankle fractures as evaluated by MRI.

**METHODS:** Consecutive 84 patients with the diagnosis of ankle fracture who had MRI available within 1 week of injuries between October 2021 and May 2023 were included in this study. The exclusions were patients younger than 18 years or older than 70 years and patients with a previous history of systemic inflammatory disease or chronic lateral ankle instability. The diagnosis of ankle fracture in all patients was performed with plain radiographs and computed tomography. Also, OLTs in all patients was evaluated by MRI within 1 week after injuries.

**RESULTS SECTION:** Among the initially enrolled 84 patients, 14 patients were younger than 18 years or older than 70 years, 3 patients with a previous history of systemic inflammatory disease or chronic lateral ankle instability were excluded, the remaining 67 patients were analyzed. The 67 patients comprised 33 male and 34 female with a mean age at the time of injury of  $52.1 \pm 15.9$  years. The fracture types were isolated malleolar fracture in 29 cases, bimalleolar fracture in 17 cases, and trimalleolar fracture in 21 cases (Table. 1). OLTs were found in 18 of 67 patients (26.9%). All OLTs were isolated talar lesions, the posterolateral aspect of the talus occurred most frequently in 7 of 18 patients (38.9%), followed by the posteromedial aspect in 6 of 18 cases (33.4%) (Figure 1). In addition, OLTs occurred in 12 of 29 patients (41.4%) of isolated malleolar fracture, which was significantly higher than the combined incidence of bimalleolar and trimalleolar cases (6/38: 15.8%) (Table. 2) ( $P = .027$ ).

**DISCUSSION:** Previous studies have reported the varying incidences of OLTs associated with ankle fracture. The cause of these varying incidences is considered that the diagnosis was made through various imaging examinations, such as plain radiograph, computed tomography, and arthroscopy. There are two previous reports investigating the incidence of OLTs associated with ankle fractures using MRI. Although these previous reports have suggested the incidences of OLTs is 17 to 33 %, they have not investigated the location of OLTs and included only patients requiring operative treatment. In our study, OLTs were detected using MRI in 18 of 67 patients (26.9%) and occurred more frequently on the posterolateral and posteromedial of the talus. Additionally, the incidence of OLTs was significantly higher in patients with isolated malleolar fracture.

**SIGNIFICANCE/CLINICAL RELEVANCE:** The incidence of OLT occurring at the time of ankle fracture injury, which had not been previously revealed, was 26.9%.

Table 1. Patient Demographics. (n=67)

|                |           |
|----------------|-----------|
| Gender         |           |
| Male           | 33 (49%)  |
| Female         | 34 (51%)  |
| Median age, y  | 52.1±15.9 |
| BMI            | 23.8±3.4  |
| Side injured   |           |
| Left           | 36 (54%)  |
| Right          | 31 (46%)  |
| Treatment type |           |
| Operative      | 10 (15%)  |
| Nonoperative   | 57 (85%)  |
| Fracture type  |           |
| Isolated       | 29 (43%)  |
| Bimalleolar    | 17 (25%)  |
| Trimalleolar   | 21 (32%)  |

Table 2. Cross-Table between Fracture type and OLT

|          | OLT (+),<br>n=18 | OLT (-),<br>n=49 | Total |
|----------|------------------|------------------|-------|
| Isolated | 12               | 17               | 29    |
| Bi +Tri  | 6                | 32               | 38    |
| Total    | 18               | 49               | 67    |

$P = 0.027$

Figure 1. Location of OLTs designated as nine-grid schematic diagram.

