26 Freibergs disease

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### 26.1 Introduction

Freiberg's disease is a rare condition first reported in 1914 by Albert Freiberg. It is an osteochondrosis of the metatarsal head, most commonly occurring in young athletes older than age 12 years who perform on their toes in either sprinting or jumping activities.

### 26.2 Anatomy

This condition is found in the 2nd and 3rd metatarsal heads, situated in the dorsal part of the articular surface of the metatarsal head. The 2nd metatarsal is the longest and least mobile, making it more prone to repeated trauma, although this has not been firmly correlated to the pathogenesis of the condition.

### 26.3 Pathogenesis

Freiberg's disease is considered to be a trabecular stress injury caused by excessive pressure on the metatarsal head during weight-bearing, leading to repeated microfractures, loss of blood supply to subchondral bone, collapse of cancellous bone, and cartilage deformation.¹

### 26.4 Natural History

Little is known about the natural history of this disease. There are reports of patients who were treated conservatively and whose symptoms ameliorated, while symptoms in other patients remained the same or worsened. Another report described finding a deformed metatarsal head incidentally while the foot was being X-rayed for another reason, and the patient then admitting to having had forefoot pain years earlier.
26.5 Clinical Presentation

The patient generally presents with pain and tenderness over the affected metatarsophalangeal joint. This pain increases when moving the joint and on weight-bearing. The joint’s range of motion is limited.

Swelling may be present in cases of synovitis. In some long-standing cases, the deformed metatarsal head can be palpated.

26.6 Imaging and Diagnostic Studies

Smillie\(^2\) described a classification for this condition based on anteroposterior and oblique radiographs.

<table>
<thead>
<tr>
<th>Stage</th>
<th>Description</th>
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<tbody>
<tr>
<td>I</td>
<td>Fissure fracture of the ischemic epiphysis</td>
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<tr>
<td>II</td>
<td>Central depression of the head from bone resorption</td>
</tr>
<tr>
<td>III</td>
<td>Further collapse of the head with residual projections of the sides</td>
</tr>
<tr>
<td>IV</td>
<td>A portion of articular cartilage separates into a loose body</td>
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<tr>
<td>V</td>
<td>Arthritis, deformity, and flattening of the metatarsal head</td>
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26.7 Treatment

Non-operative management of Freiberg’s disease includes:

- Modification of shoe wear
- Rest
- Modulation of activities
- Use of non-steroidal anti-inflammatory drugs

In case of failed conservative management, surgical management includes:

- Resection of the metatarsal head
- Elevation of the depressed segment of the head and bone grafting of the defect
- Joint debridement
- Excision of the base of the proximal phalanx
- Replacement of the metatarsal head
- Metatarsal head remodeling
- Dorsal closing wedge osteotomy of the metatarsal neck\(^1\)

Dorsal closing wedge osteotomy of the metatarsal neck was first described by Gauthier and Elbaz in 1979\(^3\) and has since been reported with success by other authors.\(^4-7\)

26.8 References