بسم الله الرحمن الرحيم

شبكة المعلومـــــات الجامعية

التوثيق الالكتروني والميكروفيلم

شبكة المعلومات الجامعية

جامعة عين شمس

التوثيق الالكتروني والميكروفيلم

﴿ قـــسـم ﴾

نقسم بالله العظيم أن المادة التي تم توثيقها وتسجيلها
علي هذه الأفلام قد اعدت دون آية تغيرات

يجب أن

تحفظ هذه الأفلام بعيداً عن الغبار

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To be kept away from dust in dry cool place of
15 – 25c and relative humidity 20-40 %

بعض الوثائق الأصلية تالفة

بالرسالة صفحات

لم ترد بالأصـــل

نتائج اللجنة قبول الرساله بتقدير ممتاز ١٩٠٥

RESULTS OF LATERAL DECOMPRESSION BY SAGITTAL INTERCALARY RESECTION OSTEOTOMY IN MAL-UNITED CALCANEAN FRACTURES

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Thesis

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To my
brother's
soul

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"Thanks to Allah for every thing done in this work and elsewhere"

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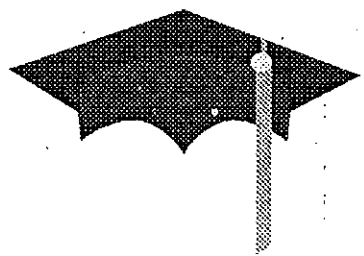

INTRODUCTION

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The Calcaneus, the largest tarsal bone, is relatively fragile, so, it is the most often fractured tarsal bone.[1] Its fracture reaches 60% of all tarsal injuries and 1-2% of all body fractures.[1]

Fractures of the calcaneus are potentially disabling injuries and have an economic impact,[2] so far as the future of those patients are concerned.[2,3] Fractures involving the subtalar joint with comminution, displacement or depression of the articular surfaces are troublesome and still have a controversial problem regarding their management.[4] Opinions vary from those who advocate no treatment, closed reduction, open reduction and internal fixation with or without bone graft to those who favour primary subtalar or triple arthrodesis.[5] Malunion of calcanean fractures may occur in varus, valgus, shortening or broadening with disturbed calcanean angles.[6] These are frequently encountered among the conservatively treated major fractures.[6] Complications related to calcanean malunion may present as: loss of heel height, widening or broadening of the heel, lateral impingement of the peroneal tendons,[7] impingement of sural nerve, hind foot mal-alignment, post-traumatic subtalar arthritis and calcaneo-fibular abutment.[8]

Options for treatment of malunited calcanean fractures with broadening vary from those who advocate distractional subtalar arthrodesis, triple fusion, lateral decompression by shaving of lateral

bony prominence (ostectomy) to those who favour lateral decompression by sagittal inter-calary resection osteotomy.[6-8]

GENERAL ANATOMY OF CALCANEUS

The bones of the foot are arranged in such a manner to give maximum flexibility and power in addition to their chief function of supporting the body weight. They are seven closely articulated tarsal bones interlocking firmly with five metatarsals which in turn articulate with the phalanges.[9]

The calcaneus is an irregular rectangular block of bone with its long axis directed forward, upward and some what laterally.[9] The enclosed pattern of cancellous bone trabeculae reflects the static and dynamic stresses to which the calcaneus is exposed.[4]

Traction trabeculae radiate from inferior cortex of the calcaneus, while compression trabeculae converge to support the posterior and anterior articular facets; to form the thalamic portion of the calcaneus.[10,11] (Fig.1)

The superior surface of the calcaneus can be divided into three parts: posterior, middle and anterior [12] (Fig. 2). The posterior third is completely non-articular and is perforated by multiple vascular foramina. The middle third consists of a large convex posterior articular facet.[4,12] The anterior third consists of the sulcus calcanei, the anterior and middle articular facets; they form a concavity that corresponds to the convexity of the talar head.[12]

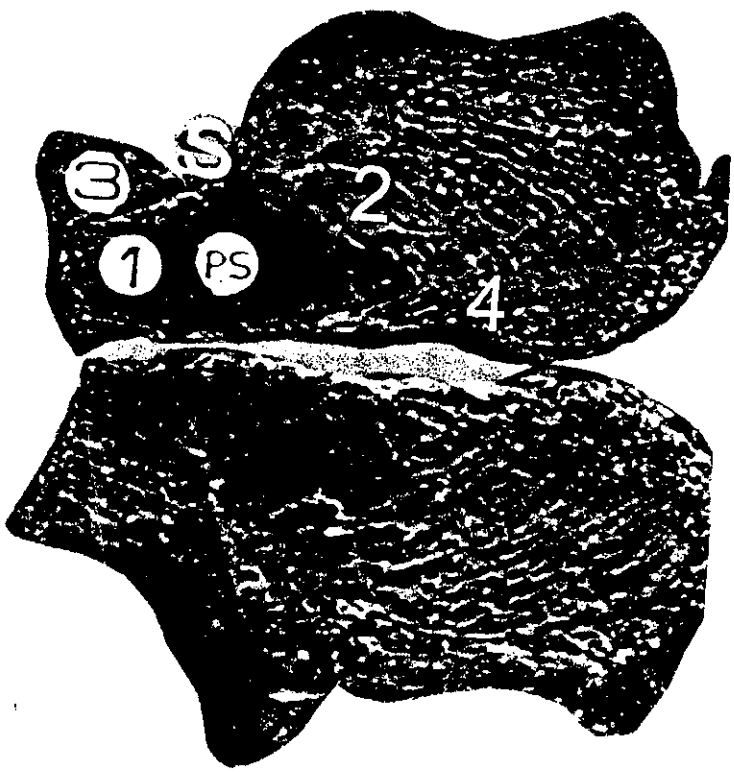

Fig.(1): A photograph of a sectioned calcaneus shows bone trabeculae diverging anteriorly (1) and posteriorly (2) from a point at the middle of sinus tarsi (S) enclosing the pseudocystic traingle (P.S) in between. Other trabeculae (3) passing from anteromedial talar facet inwards. The fourth series of trabeculae (4) are seen parallel to the middle of posterior surface of calcaneus.[1]

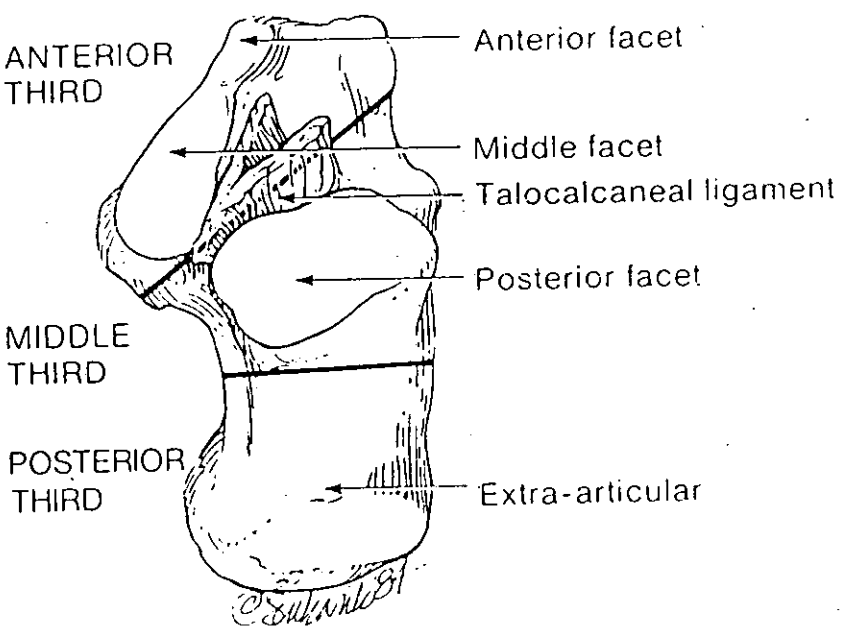

Fig.(2): Superior surface of calcaneus is divided into thirds. The posterior one is extra-articular, the middle one contains the posterior facet and the anterior one contains the articular surface of middle and anterior facets.[4]

The oblique tarsal canal separates the middle and posterior facets. The interosseous talocalcanean ligament inserts in the floor of the canal and serves to separate the posterior facet from others.[2,3,5] Although the anterior, middle and posterior talocalcaneal articular facets have a separate synovial cavities and are curved in opposite directions, they function as a single reciprocal unit.[9]

The triangular inferior surface of the calcaneus expresses two tuberosities.[4,12,13] The medial tuberosity is the main weight-bearing structure and gives origin to the abductor hallucis fmuscle. The lateral tuberosity gives origin to the abductor digiti minimi.

The medial calcanean surface is determined by the sustentaculum tali, whose superior surface carries the middle articular facet and its inferior surface is grooved by the flexor hallucis longus.[4,12] The triangular posterior surface of the calcaneus is convex and gives insertion to the Achilles tendon.[4] The anterior surface of the calcaneus is entirely articular and share in the articulation with the cuboid[4,9,12,13]

The subtalar joint:

The anterior and posterior talocalcanean joints form a single functional unit; called the subtalar joint.[13]

a- The posterior talocalcanean joint: The convex posterior calcanean facet articulates with the concave talar one. Both are connected by a fibrous capsule and interosseous ligaments. The fibrous capsule is lined with synovial membrane, and the joint cavity does not communicate with any of other tarsal joints.[13]