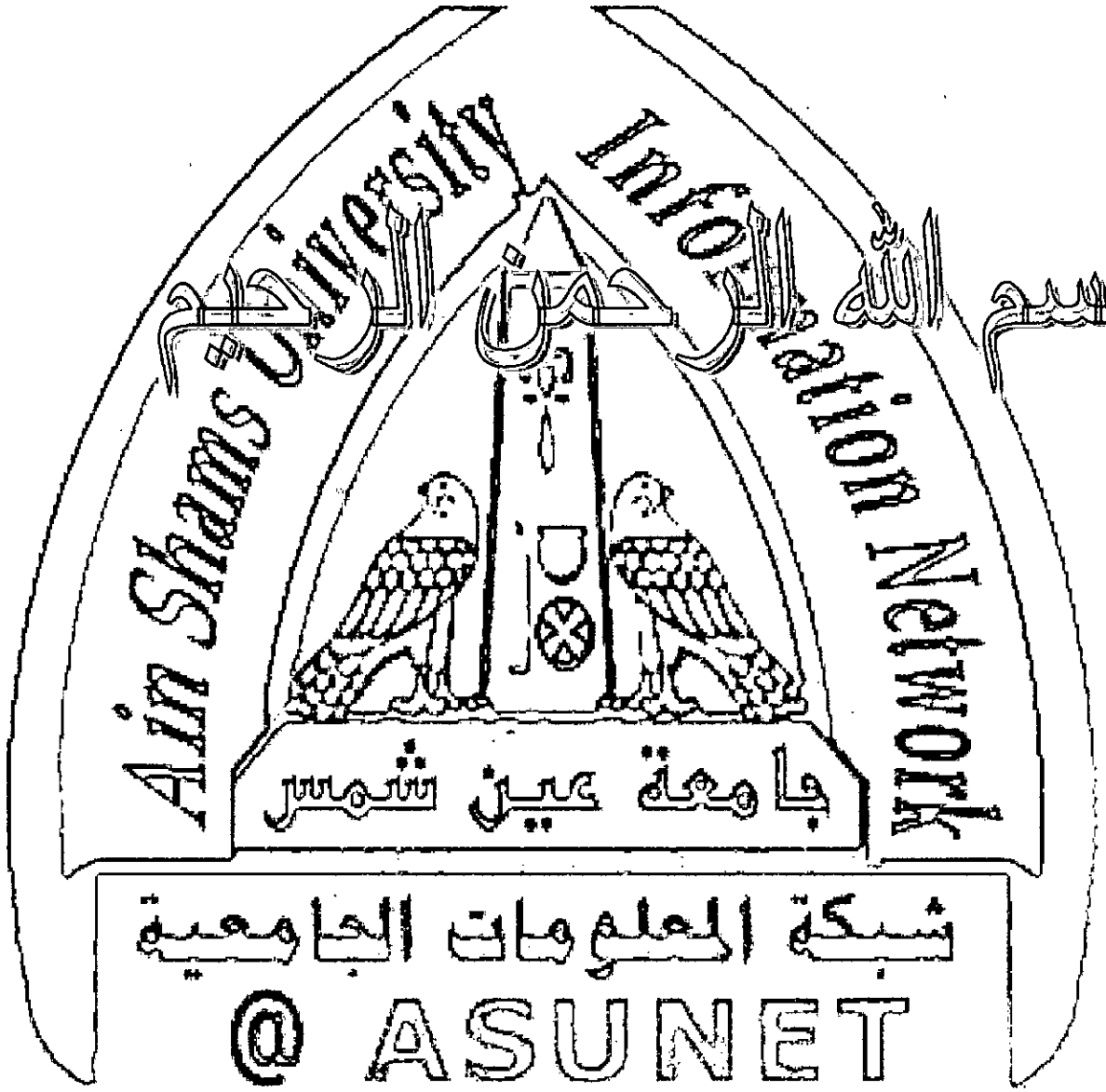
شبكة المعلومات الجامعية



شبكة المعلومات الجامعية

التوثيق الالكتروني والميكروفيلم

شبكة المعلومات الجامعية

جامعة عين شمس

التوثيق الالكتروني والميكروفيلم

قسم

نقسم بالله العظيم أن المادة التي تم توثيقها وتسجيلها

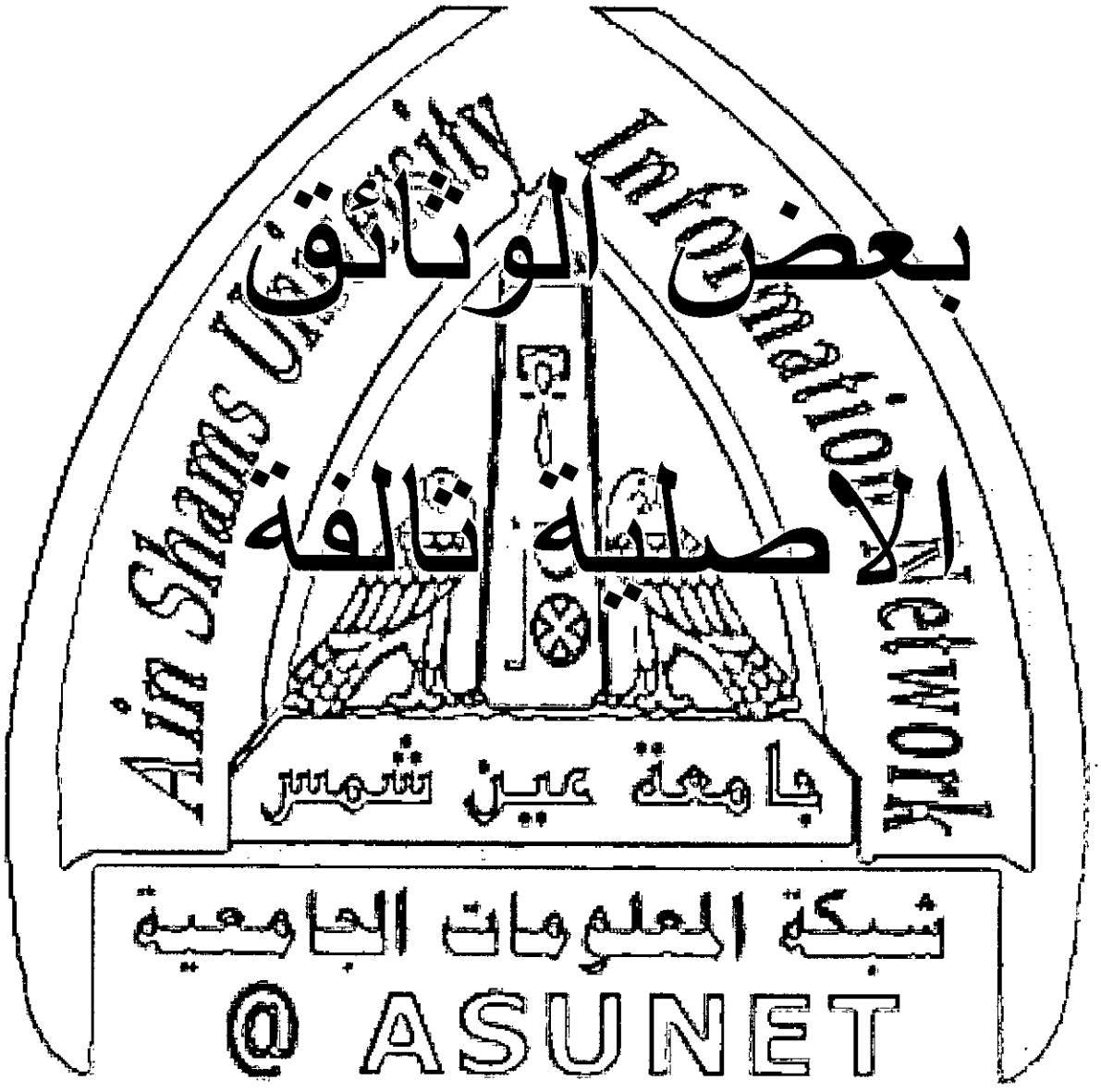
علي هذه الأفلام قد أعدت دون أية تغيرات

يجب أن

تحفظ هذه الأفلام بعيدا عن الغبار

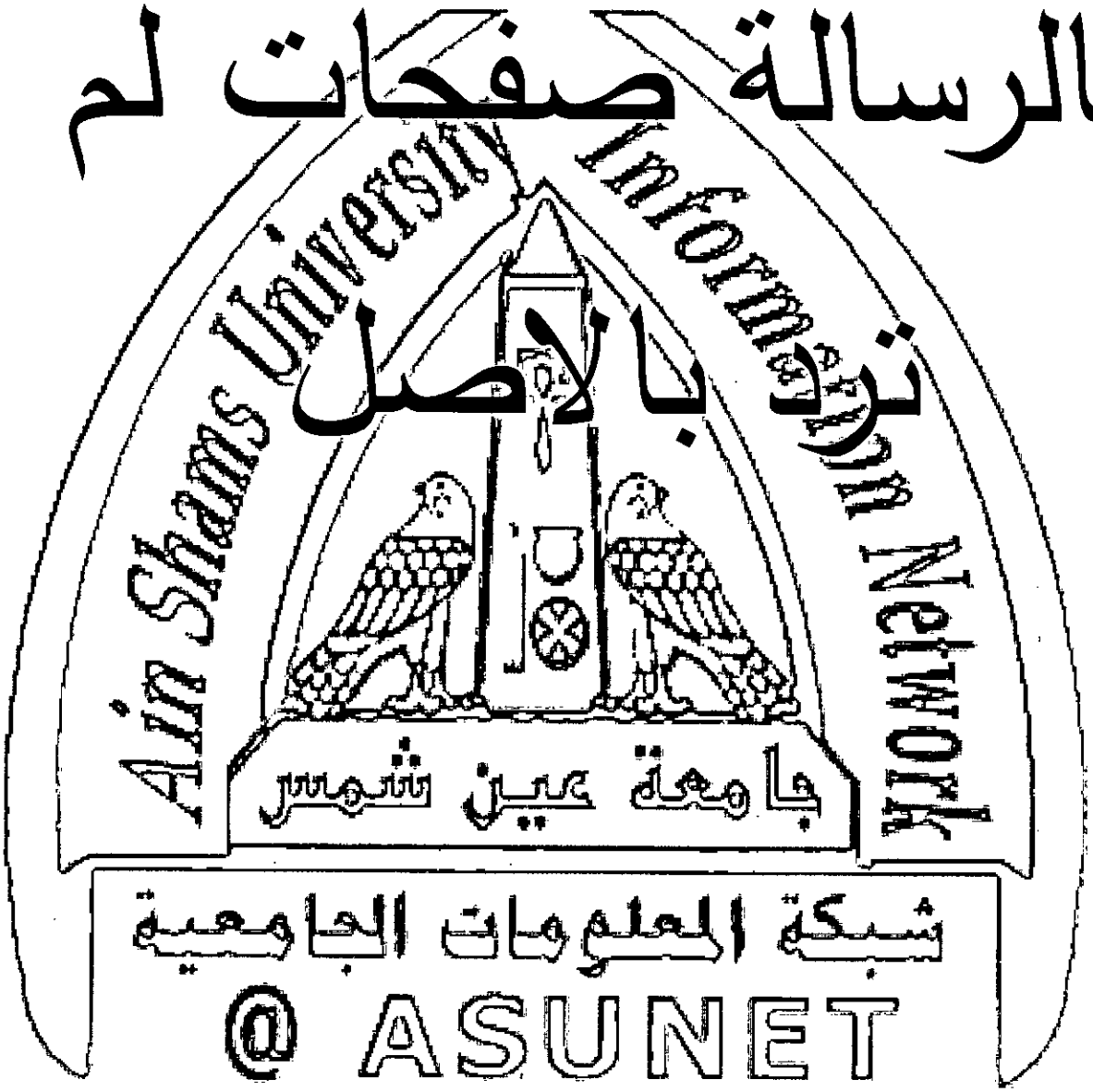
في درجة حرارة من ١٥-٢٥ مئوية ورطوبة نسبية من ٢٠-٤٠%

To be Kept away from Dust in Dry Cool place of 15-25- c and relative humidity 20-40%



بعض الوثائق الأصلية تالفة

بالرسالة صفحات لم ترد بالأصل



EARLY MANAGEMENT OF TALIPES EQUINOVARUS DURING THE FIRST YEAR AFTER BIRTH

Thesis

Submitted in partial Fulfillment for

The M.D degree in Orthopaedics

By

Khaled Mohammed Abd – Allah

Supervisors

Prof. Dr.

Hatem Ashour

Professor of orthopaedic

Benha Faculty of Medicine

Prof. Dr.

Mohsen Mashhour

Professor of orthopaedic

Benha Faculty of Medicine

BENHA FACULTY OF MEDICINE

ZAGAZIG UNIVERSITY

2000

LIST OF CONTENTS

INTRODUCTION

Congenital talipes equinovarus is the commonest congenital abnormality of the foot. Congenital idiopathic club foot comprises about 25% of all feet deformities in any major orthopaedic center, ***" Turco, 1981"***

The word talipes derived from the Latin, *talus* (ankle bone) and *pes* (Foot), is a term properly describing any congenital foot deformity. Deformities are correctly designated talipes, followed by a descriptive term for the morbid anatomy. A plantar flexed hind foot therefore is talipes equinus. If inverted, talipes varus and so, talipes equinovarus is the appropriate descriptive term. ***(Roger, 1978)***

Talipes equinovarus has been extensively reported. However, controversy still exists regarding the cause, mechanism of the deformity and treatment . ***(Grant et al., 1995)***

Most European orthopaedic surgeons start conservative treatment at birth with manipulation and cast, few use physiotherapy and splints. Operation is usually indicated at an age ranging from 4 to 15 months. Some perform extensive procedures. Others perform limited operations. While others propose a classification system in an attempt to standardize procedures. ***(Bensahel et al., 1990)***

Good Results after very early operative treatment of club foot had been reported by some investigators. Most have recommended early conservative treatment and later surgical procedure in resistant cases because operation immediately after birth is demanding and the operative

team must master all problems of neonatal surgery, anaesthesiology, and postoperative care. ***(Osterman et al., 1996)***

For neglected club feet or club feet resistant to conservative treatment, there's an increasing tendency towards early surgical release with a high rate of success. ***(Chang et al., 1991)***

Some authors stated that, early surgery for treatment of talipes equinovarus is preferred and the operation should be undertaken as soon as possible after the age six months. ***(Wang, et al., 1999)***

ANATOMY OF THE FOOT

The foot has 26 bones through which it transmits the weight of the body to the ground. These bones are conveniently divided into three segments: the tarsus, the metatarsus, and the phalanges. The tarsus consists of seven strong closely articulated bones whose structure suggests their important weight bearing function. The metatarsus consists of five metatarsals. The phalanges are the 14 bones of the toes. The plantar surfaces of the tarsus and proximal metatarsus form a transverse arch, allowing space serving to absorb some of the stress and strain of weight bearing. This arch is responsible for the convexity of the dorsum of the foot. The longitudinal arch is formed by the tarsal and tarsometatarsal articulations but is primarily maintained by the aponeurosis and ligaments. ***(JaHss. 1982)***

Tarsus:

Seven bones, the talus, the calcaneus, the navicular, three cuneiforms (medial, intermediate and lateral, or first, second and third), and the cuboid form the tarsus. They are arranged in two rows, with one bone between. In the posterior row the talus sits upon the calcaneus, in the distal row the cuneiforms and the cuboid lie side by side, and the navicular lies between the two rows on the medial side. Only one of these bones, the talus, enters into the articulation with the bones of the leg, and therefore all the weight on the foot is transmitted through this bone to the others and to the points of contact with the ground. Normally the calcaneus and the heads of the five metatarsals are the weight bearing points of the foot; between these points the skeleton of the foot is arched,

the arch being much higher on the medial side than it is laterally. (Fig.1) ***(Henry, 1982).***

Talus:

The talus carries the whole body weight. It lies on the calcaneus, below the tibia, and communicates thrust from the one to the other. The bone possesses a body, a neck and a head.

The upper surface of the body carries an articular area, the trochlea, which is convex from front to back but with a shallow central groove (concave from side to side), the trochlea is broad in front and narrow behind (Fig.2). The posterior end of its lateral border is bevelled by the posterior tibiofibular ligament.The trochlear surface is continued down over each side of the body for articulation with the stabilizing malleoli. On the medial surface the articular area is comma-shaped, in the concavity of the comma curve there are many vascular foramina. Behind these the deep lamina of the deltoid ligament is attached to a smooth area. (Fig. 3)

Behind the trochlea the talus is projected into a posterior process which is deeply grooved by the tendon of flexor hallucis longus. The posterior process projects as a pair of tubercles on either side of the flexor hallucis longus groove. The lateral tubercle gives attachment to the posterior tibiofibular ligament, and the medial tubercle gives attachment to the posterior fibres of deltoid ligament (Fig.4).

The capsule of the ankle joint is attached to the articular margin except in front, where its attachment encroaches forward on the neck of the talus.

The inferior surface of the body of the talus (Fig.5) has a large oblique facet, for articulation with calcaneus. In front of this the neck is grooved to fit over the corresponding groove on the calcaneus to make

the tarsal sinus. The groove gives attachment to the interosseus talocalcaneal ligament. Laterally the neck carries a smooth round facet for attachment of cervical ligament, and behind this the anterior talofibular ligament is attached. The neck of the talus is very short, and is directed forwards and medially.

The rounded head is capped by a large articular surface facing forwards and downwards. Anteriorly the surface is convex for articulation with the navicular. Inferiorly it is flattened for articulation with the sustentaculum tali and the body of the calcaneus; a low ridge commonly separates this calcaneal area into two flat facets. The navicular convexity and the calcaneal flattening are separated from each other by a triangular convexity (base of the triangle at the neck of the talus) for the spring ligament and the deltoid ligament. The convex navicular surface articulate, laterally with the bifurcate ligament.

The head of the talus is the ball of the ball and socket of the talocal caneonavicular joint, whose capsule and synovial membrane are attached around the neck of the talus to the articular margin of the head.

The talus has a good anastomotic blood supply within the bone from various sources; dorsalis pedis branches into the head and neck, posterior tibial into the medial side of the body and the sinus, and peroneal (fibular) branches into the lateral side of the body and the sinus.

(McMinn, 1994)

Navicular:

The navicular is distinguished by its concave posterior articular surface, for accomodation of the head of the talus, and its convex anterior articular surface for the three cuneiforms. Medially and inferiorly, the rough tuberosity of the navicular bone marks the attachment of the tibialis posterior tendon. ***(Henry, 1982)***

Cuboid:

The posterior surface of this bone articulates with the calcaneus and its anterior surface articulates with the fourth and fifth metatarsals. On its medial surface there is an articular facet for the lateral cuneiform. The tuberosity of the cuboid is largely on the inferior surface but extends also onto the lateral surface; in front of it is the groove for the tendon of the peroneus longus muscle.

Cuneiform bones :

These three bones form, with the cuboid, the distal row of tarsals. The medial or first cuneiform is the largest, the intermediate or second is the smallest. While all three bones are somewhat wedge-shaped in cross section, the medial one differs from the others in that its blunt apex is directed dorsally, while the apices of the other two bones are directed plantarwards. The slightly concave posterior surfaces of all three bones articulate with the navciular and the anterior surface of each articulates respectively with the bases of the three medial metatarsals. Their sides are partly roughened for attachments of the interosseous ligaments, but dorsally (except the medial side of the medial cuneiform) there are articular facets for articulation with each other and with the sides of the bases of the metatarsals, and on the lateral cuneiform, one for the cuboid bone ***(Henry, 1982).***

Ossification of the tarsus:

All ossify from one center except calcaneus which has a secondary center on its posterior surface (a thin plate of bone that appears about the tenth year and joins at 18 years). ***(McMinn, 1994)***

Centers begin to ossify :

Calcaneus ⟶ at the sixth fetal month

Talus ⟶ at the seventh fetal month

Cuboid ⟶ at the ninth fetal month

Third cuneiform ⟶ first year

First cuneiform ⟶ third year

Second cuneiform ⟶ fourth year

Navicular ⟶ Fourth year

Heel ⟶ tenth year ***(Pansky et al., 1975)***

Lateral tubercle of the talus, tubercle at the base of the fifth metatarsal and the tuberosity of the navicular sometimes ossify as separate centers.

Ankle joint :

Is a synovial hinge joint formed by the articulation of the talus with a three sided socket formed by the distal surface of the tibia and the articular surfaces of the tibial and fibular malleoli together with the inferior transverse tibiofibular ligament posteriorly.

The capsule is thin anteriorly and posteriorly but is thickened laterally to form the lateral ligament and medially to form the medial (deltoid) ligament (Fig.6).

These ligaments are very strong. The joint cavity passes upwards between the tibia and the fibula for few millimeters. There are fatty pads deep to the anterior and posterior parts of the capsule. The anterior part of the capsule is attached superiorly to the tibia close to its articular surface and inferiorly to neck of the talus near the articular surface of its head. The integrity of the joint depends partly on the shape of the lower ends of the tibia and fibula and partly on the strong medial and lateral ligaments. The medial ligament is thick and triangular and connects the medial

malleolus to several tarsal bones. It consists of a deep part passing from the malleolus to the medial rough surface of the talus, and a superficial part which is attached to; from infront backwards; the tuberosity of the navicular bone, the plantar calcaneonavicular (spring) ligament, the sustentaculum tali, and the side of the talus close to the medial tubercle.

The tendon of the tibialis posterior passes forwards between the deltoid ligament and the skin and the tendon of flexor digitorum longus, the posterior tibial vessels and nerve lie superficial to its posterior part.

The lateral ligament of the ankle joint consists of three separate parts (Fig.7).

Anterior talofibular ligament →connects the anterior margin of the lateral malleolus to the anterior aspect of the body of the talus at the junction of its neck with the fibular articular surface.

Calcaneofibular ligament → passes downwards and backwards from the tip of the lateral malleolus to the peroneal tubercle.

Posterior talofibular ligament → passes from the malleolar fossa to the lateral tubercle of the talus.

The tendons of the peronei pass forwards between the calcaneofibular ligament and the skin. ***(Hamilton, 1976)***

Talocalcaneal joints:

These joints include the articulation between the talus and the navicular bone; known as the talonavicular joint, as well as the anterior, middle and posterior talocalcaneal joints (Fig. 8).

The talonavicular and the anterior and middle talocalcaneal joints form one continuous joint cavity called the talocalcaneonavicular joint, which includes the anterior and inferior aspects of the head of the talus.