

ROLE OF MAGNETIC RESONANCE IMAGING IN INJURIES OF ANKLE JOINT

ESSAY

*Submitted In Partial Fulfilment For the Degree of
M.Sc.
In Radiodiagnosis*

By

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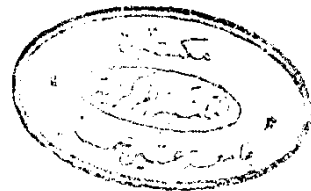
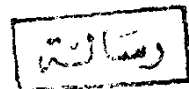
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TO MY PARENTS



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ALLAH,
The Beneficient and The Merciful.**

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CONTENTS

	Page
Introduction and aim of the work.....	1
Anatomy of Ankle joint.....	2
Pathology of injuries of ankle joint.....	27
Physical Principles and Technique of MRI.....	54
MRI Manifestation of normal ankle joint.....	70
MRI manifestation of ankle trauma and illustrating cases.....	88
Summary and Conclusions	123
References.....	127
Arabic Summary.....	

LIST OF ABBREVIATIONS

T.	= Tibia
TAL	= Talus
CA	= Calcaneus
PF	= Posterior facet of subtalar joint.
EHL	= Extensor digitorum longus tendon.
FHL	= Flwxor hallucis longus tendon.
PTA	= Posterior tibial artery
AT	= Achilles tendon
F	= Preachilles fat pad
ST	= Sustentaculum Tali
FL	= fibula
DL	= Deltoid ligament
TP	= tibialis posterior tendon
FDL	= Flexor digitorum longus tendon
AHL	= Abductor hallucis longus muscle.
FDB/QP	= Flexor digitorum brevis muscle, Quadratus plantae muscle.
ADV	= Abductor digiti V muscle.
PB	= Peroneus brevis tendon
PL	= Peroneus longus tendon
MM	= Medial malleolus
IOL	= Interosseous ligament
LM	= Lateral malleolus
PTFL	= Posterior tibiofibular ligament
ATFL	= Anterior tibiofibular ligament
PNVB	= Posterior neurovascular bundle (posterior tibial artery, veins, and tibial nerve).
ANVB	= Anterior neurovascular bundle (Anterior tibial artery, veins, and deep peroneal nerve).
FR	= Flexor retinuculum.
TA	= Tibiali, anterior tendon
PT	= Peroneus tertius tendon

BIBLIOGRAPHY OF LISTED FIGURES

Fig. No.	Quoted From	Page
1	Anderson, 1978	3
2	Last, 1984	5
3	Grey, 1973	8
4-7	Anderson, 1978	14
5	Anderson, 1978	14
6	Anderson, 1978	19
7	Anderson, 1978	21
8-18	Colton, 1976	28
9	Colton, 1976	31
10	Colton, 1976	31
11	Colton, 1976	31
12	Colton, 1976	35
13	Colton, 1976	38
14	Colton, 1976	41
15	Colton, 1976	41
16	Colton, 1976	45
17	Colton, 1976	48
18	Colton, 1976	49
19	Maffe , 1989	56
20	Makow , 1989	65
21	Harms et al., 1988	67
22	Beltran et al., 1986	71
23	Beltran et al., 1986	71
24	Beltran et al., 1986	72
25	Beltran et al., 1986	72
26	Erickson et al.,1991	74
27	Erickson et al.,1991	74
28	Erickson et al.,1991	74
29	Erickson et al.,1991	76
30	Erickson et al.,1991	76

Fig. No.	Quoted From	Page
31	Wolf et al., 1990	78
32	Rosenberg et al., 1988	78
33	Canoso et al., 1988	80
34	Noto et al., 1989	82
35	Noto et al., 1989	82
36	Noto et al., 1989	84
37	Noto et al., 1989	84
38	Noto et al., 1989	86
39	Kerr et al., 1990	89
40	Erickson et al., 1991	89
41	Erickson et al., 1991	90
42	Erickson et al., 1991	90
43	Kerr et al., 1990	94
44	Kerr et al., 1990	94
45	Kerr et al., 1990	96
46	Kerr et al., 1990	96
47	Rosenberg et al., 1988	99
48	Rosenberg et al., 1988	99
49	Rosenberg et al., 1988	101
50	Rosenberg et al., 1988	101
51	Rosenberg et al., 1988	101
52	Wolf et al., 1990	104
53	Kerr et al., 1990	107
54	Kerr et al., 1990	107
55	Kerr et al., 1990	109
56	Lee et al., 1988	112
57	Lee et al., 1988	112
58	Kerr et al., 1990	114
59	Kerr et al., 1990	116
60	Kerr et al., 1990	116
61	Wolf et al., 1990	118
62	Kerr et al., 1990	121

INTRODUCTION AND AIM OF THE WORK

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The ankle is one of the most frequently injured joints, accounting for 10% of all Emergency Department visits. Inversion injuries are one of the most common ankle lesions, often involving the ligamentous structures of the lateral aspect of the ankle.

Assessment of the extent of injury has classically relied on clinical evaluation, plain radiographs (including stress views), and in some acute situations, ankle arthrography and/or peroneal tenography.

Radionuclide bone scan and less commonly CT may be used. In the past few years, magnetic resonance imaging (MRI) has revolutionized the imaging approach to a broad range of musculoskeletal disorders. In many instances, it has superseded CT by virtue of its direct multiplanar imaging capability and superior contrast resolution for soft tissues that provided excellent delineation of ligaments, tendons, muscles, fat, synovium, fibrocartilage, hyaline cartilage, cortical bone and bone marrow.

The aim of this work is to study the value of the MRI in acute and chronic foot and ankle problems.

ANATOMY OF ANKLE JOINT

ANATOMY

The ankle joint is a synovial joint of hinge variety, but its movements are not quite as those of a simple hinge, as the axis of rotation changes between the extremes of plantar flexion and dorsiflexion [Last, 1978].

The lower end of the tibia and its projecting medial malleolus, the fibular malleolus and the inferior transverse tibiofibular ligament form a mortise, the moving component projecting into the mortise is the talus, which fits very tightly [Gray, 1973].

Articular Surfaces:

They are recovered by hyaline cartilage and are divided into weight bearing surfaces and supporting surfaces. The weight bearing surfaces are the trochlear surface of the talus and the inferior facet of the tibia which is called the tibial plafond. The supporting surfaces are those of the medial and lateral malleoli which grip the sides of the talus [Gray, 1973].

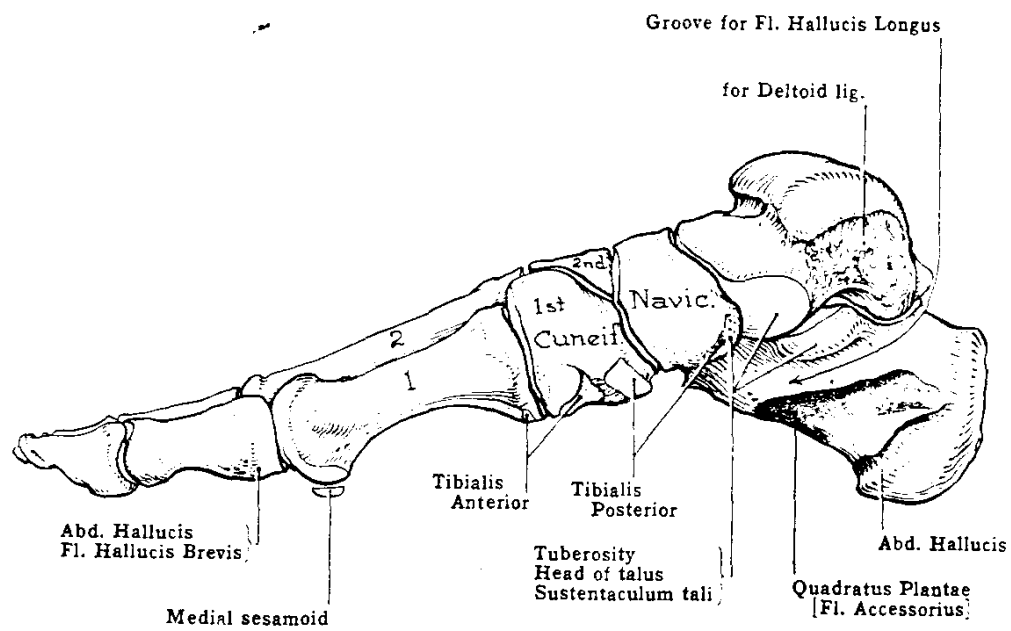


Fig. 1a: Bones of the foot, Medial aspect.

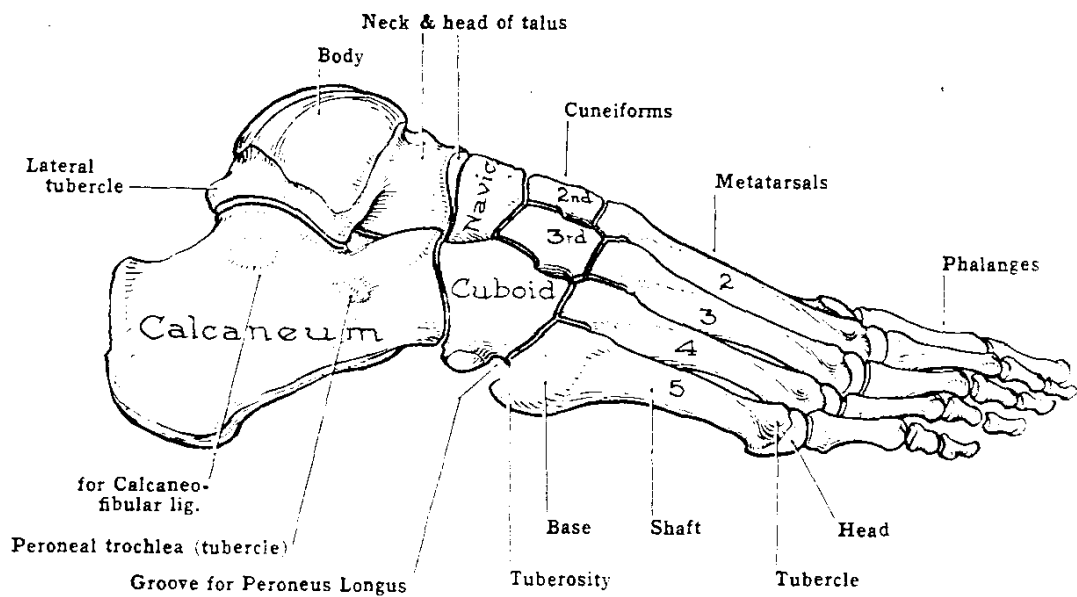


Fig. 1b: Bones of the foot, Lateral aspect.

The talus is composed of three parts (Fig. 1), the head, the neck and the body (trochlea). The talus has no muscle attachment and is covered by articular cartilage on most of its surface. The body (trochlea) is wider anteriorly than posteriorly by about twenty five per cent [Grath, 1960].

The articular surface of the talar trochlea is convex from front to back and from side to side, it continues medially and laterally to form facets that articulate with the malleoli. The medial surface of the talus has its anterior and upper part of a triangular articular facet which articulates with the medial malleolus. Below the posterior part of this facet there is a surface for the attachment of the deep posterior talotibial ligament [Gray, 1973].

The articular surface on the lateral side of the talus is triangular and concave from above downwards. It is in contact with the articular facet of the medial surface of the lateral malleolus. This facet is separated from the tibia by the line of inferior tibiofibular joint padded by synovial fluid. Posteriorly

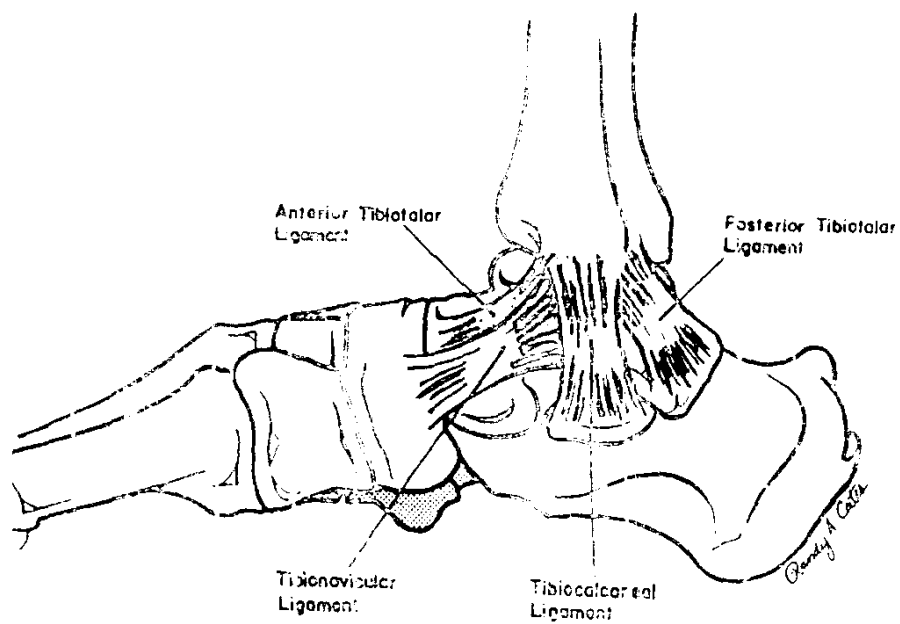


Fig. 2: *Medial ligamentous complex of the ankle (deltoid ligament).*