

Angiographic Slow/No Flow Predictors During Percutaneous Coronary Intervention For Acute Coronary Syndrome

Thesis

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List of Abbreviations

A1c	Glycosylated hemoglobin
ABC	Airway breathing circulation
ACC	American college of cardiology
ACE	Angiotensine converting enzyme
ACS	Acute coronary syndrom
AHA	American heart association
AMI	Acute myocardial infarction
aPTT	Activated partial thromboplastin time
ASA	Acetylsalicylic acid
ATP	Adenosine triphosphate
ATP	Adenosine triphosphate
AVM	Atriovenous malformation
BNP	B-Natriuretic peptide
CA++	Calcium
CABG	Coronary artery bypass graft
CAD	Coronary artery disease
CCU	Coronary care unit
CHF	Congestive heart failure
CK-MB	MB fraction of creatine kinase
CMR	Cardiac magnetic resonance
CPR	Cardiopulmonary resuscitation
CPU	Chest pain unit
CT	Computed tomography
cTFC	Corrected timi frame count
D	Diagonal artery
DBP	Diastolic blood pressure
ECG	Electrocardiogram
ED	Emergency department
EF	Ejection fraction
EMS	Emergency medical service
ESSENCE	Efficacy and safety of subcutaneous enoxaparin
ET	Endothelin
GIK	Glucose insulin potassium

List of Abbreviations (Cont.)

Gp	Glycoprotein receptors
GRACE	Global registry of acute coronary event
GREAT	Grampian region early anistreplase trial
H	Hydrogen
HMG COA	Hydroxyl-methylglutaryl coenzyme a
IABP	Intra aortic balloon counter pulsation
INR	International normalized ratio
IR	Ischemia-reperfusion
IRA	Infarct-related artery
ISIS	International study infarct survival
IV	Intravenous access
K+	Potassium
LAD	Left anterior descending artery
LBBS	Left bundle branch block
LCX	Left circumflex artery
LDL	Low density lipo protein
LM	Left main artery
LMWH	Low molecular weight heparin
LOE	Level of evidence
LV	Left ventricle
LVF	Left ventricular failure
MACCE	Major adverse cardiac and cerebrovascular events
MACE	Major adverse cardiac events
MBG	Myocardial blush grade
MCE	Myocardial contrast echocardiography
MDCT	Multi detector computed tomography
MPS	Myocardial perfusion scintigraphy
m-PTP	Mitochondrial permeability transition pore
m-PTP	Mitochondrial permeability tension pore
MR	Mitral regurge
Na+	Sodium

List of Abbreviations (Cont.)

NSAIDS	Non steroidal anti-inflammatory drugs
N-STEMI	Non ST-elevation myocardial infarction
NVP	Negative predictive value
PAPP-A	Pregnancy associated plasma protein a
PDE-5	Phosphodiesterase-5 inhibitors
PPCI	Primary percutaneous coronary intervention
RCA	Right coronary artery
RCT	Randomised controlled trial
rtPA	Tissue plasminogen activator
RVI	Right ventricular infarction
SBP	Systolic blood pressure
SC	Subcutaneous
SSA protein	Sulfosalicylic acid protein
STEMI	St-elevation myocardial infarction
STR	ST-segment elevation resolution
TIA	Transient ischemic attack
TIMI	Thrombolysis in myocardial infarction
TxA2	Thromboxane-A2
UA	Unstable angina
UFH	Unfractionated heparin
URL	Upper reference limit
VF	Ventricular fibrillation
VT	Ventricular tachycardia

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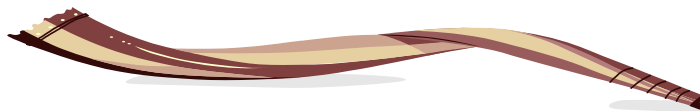
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Ahmed Badra

Introduction

Ankle impingement is defined as a painful mechanical limitation of full ankle range of motion secondary to an osseous or soft-tissue abnormality (*Sanders and Rathur, 2008*) (*Donovan and Rosenberg, 2010*).

From both an anatomical and a clinical point of view these syndromes are classified as bone impingement, soft tissue impingement and entrapment neuropathy depending on which joint portion impinges on the others (*Henderson and La Valette, 2004*).

Soft tissue and osseous impingement syndromes of the ankle can be an important cause of chronic pain particularly in the professional athlete (*Rosenberg et al., 2000*).

Depending on anatomical location and the structures involved, impingement syndromes are classified into anterolateral, anterior, posterior, posteromedial, and anteromedial types (*Robinson and White, 2002*) (*Donovan and Rosenberg, 2010*).

These conditions arise from initial ankle injuries which in the subacute or chronic situation lead to development of abnormal osseous and soft tissue thickening within the ankle joint (*Robinson and White, 2002*).

Despite conventional radiography being usually the first imaging technique performed to assess any potential bone abnormalities, soft tissue affection usually escape and it has

disadvantages of improper assessment of cartilaginous, ligamentous and tendinous lesions (*Dunfee et al., 2002*).

US is a rapid, widely available and inexpensive modality for evaluation of pathologic conditions of the ankle but it need familiarity with normal anatomic variants as well as with sonographic artifacts and common pitfalls to increase the diagnostic accuracy of ankle and foot sonography (*Fessel et al, 1999*).

CT and isotope bone scanning have been largely superseded by MR imaging (*Robinson and White, 2002*).

Magnetic resonance imaging has opened new horizon in diagnosis, hence treatment of most of ankle joint lesions. It enabled the detection of a wide varieties of bone changes and variety of soft tissue disorders such as ligaments, tendons and synovial membranes (*Rosenberg et al., 2000*).

MRI is particularly suited for evaluation of the complex bone and soft tissue anatomy of the foot and ankle because of its superior soft tissue contrast and the ability to image in multiple planes. In addition new fast scan techniques provide improved efficiency and allow dynamic studies to be performed. MR arthrography technique has improved significantly in recent years resulting in more routine use of this technique (*Rosenberg et al., 2000*).

Aim of the Work

The aim of this study is to evaluate the role of magnetic resonance imaging in assessment of impingement syndromes of the ankle.

Anatomy of the Ankle Joint

The ankle is approximately a uniaxial hinge joint. It is composed of the lower end of the tibia and its medial malleolus, together with the lateral malleolus of the fibula and inferior transverse tibiofibular ligament, form a deep recess (mortise) for the body of the talus (*Davies, 2005*).

Anatomy of the ankle joint consists of:

I. Osseous Anatomy, include:

1. The distal end of tibia.
2. The distal end of fibula.
3. The talus.

II. Soft Tissue Anatomy, include:

1. Fibrous capsule.
2. Ligaments.
3. Retinacula.
4. The tendons of the ankle joint.

I. Osseous Anatomy:

1. The Distal End of Tibia

The lower end of the tibia is rectangular in cross section. *Anteriorly*, the bone is crossed by (from medial to lateral) tibialis anterior, extensor hallucis longus and extensor digitorum longus tendons, as well as anterior tibial neurovascular bundle.

Posteriorly, there is a groove behind the medial malleolus for tendon of the tibialis posterior (Fig. 1) (*Sinnatamby, 2000*).

2. The Distal End of Fibula

The distal end of the fibula or lateral malleolus, projects distally and posteriorly relative to the medial malleolus (Fig. 1&2) (*Davies, 2005*).

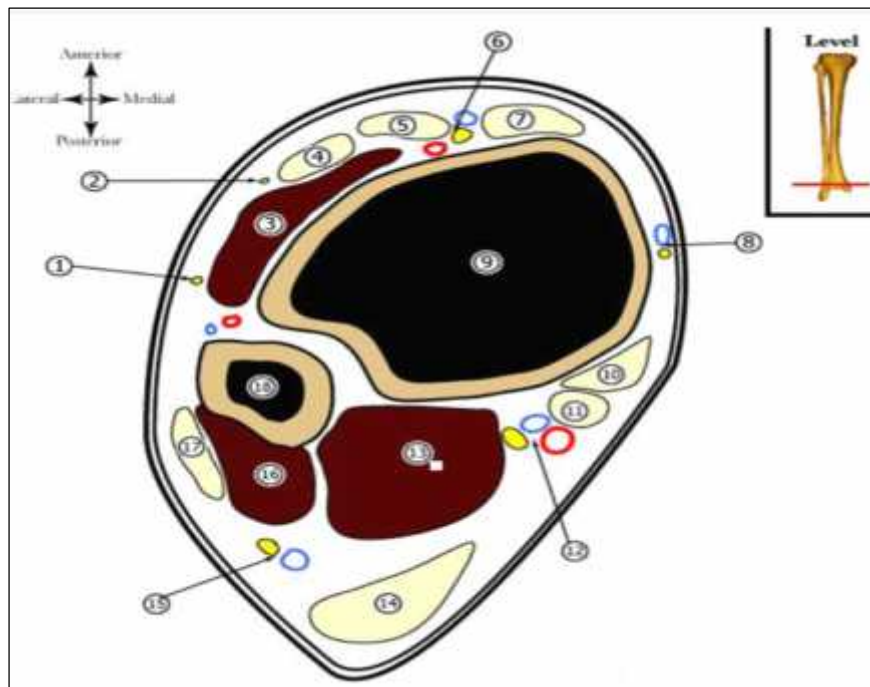


Fig. (1): Transverse section through the ankle joint (A) Intermediate Dorsal Cutaneous branch of superficial peroneal nerve 2. Medial Dorsal Cutaneous branch of superficial peroneal nerve 3. Peroneus tertius 4. Extensor Digitorum Longus 5. Extensor Hallucis Longus 6. Deep Peroneal Nerve and Anterior Tibial Vessels 7. Tibialis Anterior 8. Great saphenous vein and saphenous nerve 9. Tibia 10. Tibialis Posterior 11. Flexor digitorum longus (FDL) 12. Tibial Nerve and Posterior Tibial Vessels 13. Flexor Hallucis Longus 14. Achilles tendon 15. Sural Nerve and Lesser Saphenous Vein 16. Peroneus brevis 17. Peroneus longus 18. Fibula (*Davies, 2005*).