

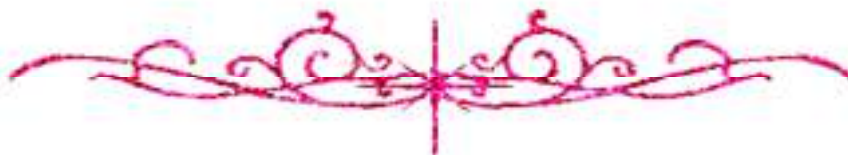
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بسم الله الرحمن الرحيم

مركز الشبكات وتكنولوجيا المعلومات

قسم التوثيق الإلكتروني



Safaa Mahmoud



جامعة عين شمس

التوثيق الإلكتروني والميكروفيلم

قسم

نقسم بالله العظيم أن المادة التي تم توثيقها وتسجيلها
على هذه الأقراص المدمجة قد أعدت دون أية تغييرات





**Role of Ultrasound in Assessment of
Menisco-Ligamentous Injury around Knee
Joint in Comparison with Magnetic
Resonance Imaging**

Thesis

*Submitted for Partial Fulfillment of Master Degree in
Radiology*

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بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

قَالَ

سَبِّحْ اِنَّكَ لَا تَعْلَمُ لَنَا
اِلَّا مَا عَلَّمْتَنَا اِنَّكَ اَنْتَ
الْعَلِيمُ الْحَكِيمُ

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List of Contents

Title	Page No.
List of Tables	i
List of Figures	ii
List of Abbreviations	vi
Introduction	1
Aim of the Work	10
Review of Literature	
📖 Anatomy	11
📖 Pathology	17
📖 Technique & Radiological Anatomy	23
Patients and Methods	48
Results	55
Illustrative Cases	68
Discussion	79
Summary and Conclusion	83
References	84
Arabic Summary	

List of Tables

Table No.	Title	Page No.
Table (1):	Comparison between results of MR and US of AHLM.....	57
Table (2):	Comparison between results of MR and US of PHLM.....	59
Table (3):	Comparison between results of MR and US of AHMM.....	60
Table (4):	Comparison between results of MR and US of PHMM.....	62
Table (5):	Comparison between results of MRI and US in detection of meniscal injury	63
Table (6):	Comparison between results of MR and US of collateral ligaments.....	65
Table (7):	Comparison between results of MR and US of cruciate ligaments	67

List of Figures

Fig. No.	Title	Page No.
Figure (1):	Left knee joint from behind, showing interior ligaments.....	12
Figure (2):	Head of right Tibia seen from above, showing menisci and attachments of ligaments.....	14
Figure (3):	The major morphological types of meniscal tears.....	20
Figure (4):	Sagittal T1-weighted image, Medialmeniscus: the posterior horn is always larger than anterior horn	42
Figure (5):	Sagittal T1-weighted image, Lateral meniscus	43
Figure (6):	Sagittal T1-weighted image.....	44
Figure (7):	Sagittal T1-weighted image.....	45
Figure (8):	Coronal T1-weighted image.....	45
Figure (9):	Anterior suprapatellar longitudinal approach showing longitudinal view of the quadriceps tendon and the suprapatellar bursa	26
Figure (10):	Anterior infrapatellar longitudinal approach showing patella, tibia, patellar tendon runs from the inferior pole of the patella to the tibial tuberosity between the subcutaneous fat and Hoffa's fat pad.....	27
Figure (11):	Anterior infrapatellar longitudinal approach showing the normal fluid-filled deep infrapatellar bursa.....	28

List of Figures (Cont...)

Fig. No.	Title	Page No.
Figure (12):	Anterior suprapatellar transverse approach showing transverse view image of the anechoic hyaline cartilage (o) of the femoral condyle	29
Figure (13):	Medial longitudinal approach showing the triangular, homogeneous, hyperechoic medial meniscus.....	31
Figure (14):	The LCL with the lateral meniscus	33
Figure (15):	Lateral longitudinal approach showing longitudinal view of the iliotibial band as it crosses over the lateral femoral condyle and inserts on Gerdy's tubercle of the tibia on the anterolateral surface of the proximal tibia	34
Figure (16):	Posteromedial longitudinal approach showing the posterior horn of the medial meniscus which is beautifully shown as a hyperechoic triangle in the posteromedial femorotibial joint space, Femur (F) and tibia (T)	35
Figure (17):	The posterior horn of the lateral meniscus which appears as a homogeneous hyperechoic triangular structure	36
Figure (18):	The popliteal vessels in TS and LS	37
Figure (19):	Pie chart demonstrating the gender distribution among the study population.	55
Figure (20):	Column chart demonstrating comparison between U/S and MRI regarding AHLMI injury.....	56

List of Figures (Cont...)

Fig. No.	Title	Page No.
Figure (21):	Column chart demonstrating comparison between U/S and MRI regarding PHLM injury.....	58
Figure (22):	Column chart demonstrating comparison between U/S and MRI regarding PHMM injury.....	61
Figure (23):	Column chart demonstrating comparison between U/S and MRI regarding collateral ligaments injury.	64
Figure (24):	Column chart demonstrating comparison between U/S and MRI regarding Cruciate ligaments injury.	66
Figure (25):	Ultrasonography of the right knee, PHMM shows hypoechoic horizontal line suggestive of meniscal tear.	68
Figure (26):	MRI of right knee, PDW-TSE –SPAIR sagittal image PHMM shows intrasubstance signal abnormality that not reaching the articular surface denoting degeneration or post traumatic meniscal contusion.	69
Figure (27):	Ultrasonography of left knee, medial menisci is seen macerated and extruded.	70
Figure (28):	MRI of left knee, PDW-TSE –SPAIR sagittal image, Medial meniscus is seen macerated.	71
Figure (29):	MRI of left knee, PDW-TSE –SPAIR coronal image, Medial meniscus is seen macerated.	72
Figure (30):	Ultrasonography of right knee, MCL shows shows abnormal swelling and hypo echoic pattern suggesting grade II-III sprain.	73

List of Figures (Cont...)

Fig. No.	Title	Page No.
Figure (31):	MRI of right knee, PDW-TSE –SPAIR coronal image, MCL shows periligamentous fluid signal denoting grade I sprain.....	74
Figure (32):	Ultrasonography of right knee, PHLM shows Vertical hypo echoic fissure seen interrupting the outer zone of the PHLM reaching the inferior articular margins suggestive of vertical tear.	75
Figure (33):	MRI of right knee, PDW-TSE –SPAIR sagittal image, PHLM shows a vertical band of high SI on STIRI disrupting its fibers from the superior to the inferior articular surfaces denoting vertical tear.	76
Figure (34):	Ultrasonography of right knee, ACL is thickened at its femoral attachment suggesting degeneration.....	77
Figure (35):	MRI of right knee PDW-TSE sagittal image, ACL shows mucoid degeneration with surrounding intra and peri ligamentous ganglion cysts.....	78

List of Abbreviations

<i>Abb.</i>	<i>Full term</i>
<i>ACL.....</i>	<i>Anterior cruciate ligament</i>
<i>AHLM.....</i>	<i>Anterior horn lateral meniscus</i>
<i>AHMM.....</i>	<i>Anterior horn medial meniscus</i>
<i>US.....</i>	<i>Ultrasound</i>
<i>MRI.....</i>	<i>Magnetic Resonance Imaging</i>
<i>LCL.....</i>	<i>Lateral collateral ligament</i>
<i>MCL.....</i>	<i>Medial collateral ligament</i>
<i>MRI.....</i>	<i>Magnetic resonance imaging</i>
<i>PCL.....</i>	<i>Posterior cruciate ligament</i>
<i>PHLM.....</i>	<i>Posterior horn lateral meniscus</i>
<i>PHMM.....</i>	<i>Posterior horn medial meniscus</i>
<i>ITB.....</i>	<i>Iliotibial Band</i>
<i>FOV.....</i>	<i>Field of View</i>

Abstract

The purpose of this study is to demonstrate the role of ultrasonography for diagnosis of meniscal and ligamentous injuries in patients with knee pain and compare its diagnostic accuracy to MRI.

The ultrasound results evaluated the presence of meniscal or ligamentous tear by the presence or absence of any hypo echoic band or stripe that can be seen within the meniscus or ligaments.

From our study the following conclusion can be derived:

US is highly sensitive and specific in detection of meniscal tear as well as the detection on collateral ligaments injury in correlation to MRI. While it is less sensitive but still specific in detection of cruciate ligament injury in correlation to MRI so, they can be used as non invasive method for screening of patients with knee pain for meniscoligamentous injuries.

Keywords: Magnetic Resonance Imaging - Anterior cruciate ligament - Ultrasound

INTRODUCTION

The knee joint is a type of compound synovial joints. The ligaments constitute the major supporting framework of the knee joint. Due to limited bony support, stability of the joint is highly dependent upon the ligaments, cartilages, tendons and menisci and the same are more prone to injuries (*Singh et al., 2016*).

Knee injuries are common, especially when taking part in sports. Injuries to soft tissues, such as ligaments, cartilage and tendons are commonly encountered. Damage to the bone also can occur. One of the most common mechanisms for knee injury is direct trauma, which is commonly seen in athletic injuries (*Kapur et al., 2009*).

Clinical examination even by the most experienced staff using the strictest of clinical methods is not always enough to diagnose knee injuries. Arthroscopy has been considered as the gold standard for the diagnosis of knee injuries, but is invasive, expensive and requires day surgery admission (*Singh et al., 2016*).

Magnetic resonance imaging (MRI) is now the non invasive gold standard for the diagnosis of knee injuries, a wide variety of MRI pulse sequences can be performed to produce diagnostic quality images. These include T1, proton density, T2, spin echo, fast (turbo) spin-echo, and gradient-echo sequences, which all have been proven suitable for knee imaging.

However, there are significant limitations of using MRI, such as the presence of cardiac pacemakers, metal implants, patient intolerance due to claustrophobia and delay in treatment due to long wait periods also it is of high cost (*Potter, 2012*).

Ultrasonography (US) is becoming a leading imaging modality in the evaluation of the musculoskeletal system as it is readily available and economical. US evaluates the fibrillar anatomy of muscles, tendons and ligaments. Other advantageous of US are ability to compress, dynamically assess structures and compare easily with the contralateral side. There have been studies done in the past that evaluated the accuracy of either US or MRI in detection of knee injuries and only few studies compared these two methods (*Amandeep et al., 2018*).

As a result, recent studies have demonstrated point-of-care ultrasound as an alternative, non-invasive and real-time imaging modality to evaluate the soft tissue pathology of the knee, including injuries to the menisci and ligaments (*Razek et al., 2009*).

There are also limitations to using ultrasound. There is a relatively steep learning curve and dependence on the training, skill, and experience of the operator (*Lee et al., 2001*).