THE VALUE OF THE SAGITTAL-OBLIQUE MRI TECHNIQUE FOR INJURIES OF THE ANTERIOR CRUCIATE LIGAMENT IN THE KNEE

Thesis

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بسم الله الرحمن الرحيم

قَالُوا سُبْحَانَكَ لاَ عِلْمَ لَنَا
إِلاَّ مَا عَلَّمْتَنَا إِنَّكَ أَنتَ الْعَلِيمُ الْحَكِيمُ

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Abstract

This study was done to draw a comparison between oblique-sagittal MR technique of ACL imaging versus ACL imaging obtained with standard MR protocol of the knee. It included 51 patients with positive history for ACL lesion and/or positive one or two ACL lesion physical tests. After standard MRI protocol, additional sagittal oblique technique was performed in all patients. Results have shown that the lower accuracy of the standard MR protocol for partial rupture of the ACL can be improved by using oblique-sagittal technique.

Key words:

1. Knee MRI
2. Anterior cruciate ligament
3. Partial rupture
4. Sagittal-oblique technique.

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List of abbreviations

2D	**Two dimensional.**
ACL	**Anterior cruciate ligament.**
AM	**Anteromedial.**
art. cart	**Articular cartilage**
CT	**Computed tomography**
FCL	**Fibular collateral ligament.**
FOV	**Field of view.**
FS	**Fat suppression.**
L H	**Lateral head.**
Lat men	**Lateral meniscus**
Lat. Pat. Retin	**Lateral patellar retinacula.**
M H	**Medial head.**
M	**Muscle.**
MCL	**Medial collateral ligament.**
Med. Pat. Retin	**Medial patellar retinacula.**
MR	**Magnetic resonance**
MRI	**Magnetic resonance imaging.**
NEX	**Number of excitation.**
PCL	**Posterior cruciate ligament.**
PD	**Proton density.**
PL	**Posterolateral.**
SL	**Slice thickness.**
SPSS	**Statistical package for the social science.**

STIR	**Short time of inversion recovery.**
T	**Tesla.**
TE	**Time of echo.**
TR	**Time of repetition.**
TSE	**Turbo spin echo.**

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INTRODUCTION

The anterior cruciate ligament (ACL) is composed of the anteromedial and posterolateral bundles. Functionally, these two distinct bundles act in a complementary manner to limit excessive femorotibial movement at the end of flexion and extension. **[1]** ACL is the most frequently injured large ligament in the knee. As injured ACL recovery is very limited long-term consequences are frequent including cartilage loss, secondary meniscal injuries and degenerative changes. **[1]**

Most ACL tears are complete, with the tear involving all of the anteromedial and posterolateral bundle fibers. Partial ACL tears occur less frequently and may involve both bundles to a variable degree or one bundle completely. Arthroscopic-based studies may reflect an underestimation of true prevalence as patients with complete rather than partial tears are more likely to undergo arthroscopy.**[2]**

Partial tear recognition is clinically relevant and important because:

1. Partial tears, unlike complete ACL tears, may have the capacity to heal with conservative treatment.**[3]**
2. One may be more inclined to opt for a trial of conservative treatment.**[3]**
3. If surgery is undertaken, partial ACL tears primarily limited to only a single bundle may be amenable to isolated single