

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

Thesis

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بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

قَالُوا سُبْحَانَكَ لَا عِلْمَ لَنَا
إِلَّا مَا عَلَّمْتَنَا إِنَّكَ أَنْتَ 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.

List of content

Contents	Page
List of abbreviations	I
List of tables	III
List of figures	IV
Introduction and aim of the work	1
Review of literature	
Chapter (1): • Gross anatomy of the ACL	4
Chapter (2): • Normal anatomy of the ACL as seen on Magnetic Resonance Imaging	16
Chapter (3): • Injuries of ACL	27
Techniques of MRI of the knee	48
Patients and methods	59
Results	66
Case presentations	74
Discussion	94
Summary and conclusion	101
References	103
Arabic summary	

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.

List of tables

Table	Title	page
1	Imaging parameters for MRI	63
2	Patient's distribution by age groups	66
3	Number and percentage of positive and negative Lachman and anterior drawer tests.	67
4	Protocol A and protocol B findings of anterior cruciate ligament (ACL).	68
5	Protocol A and protocol B findings of partial rupture of anterior cruciate ligament (ACL).	70
6	Protocol A and protocol B findings of the position of partial rupture of anterior cruciate ligament (ACL).	72
7	Difference between standard protocol A and sagittal-oblique MR technique in term of number of tomograms that show the whole course of the ACL.	73

List of figures

Fig	Title	Page
1	Gross specimen of a left knee showing the ACL in the femoral intercondylar notch.	5
2	Gross specimen of a left knee showing that The cross sectional area varies in size and shape from the femur to the tibia.	5
3	Cadaveric model with the medial femoral condyle removed: The length and orientation of the ACL fibers have been reported to change throughout passive flexion and extension.	7
4	Schematic drawing of the ACL.	8
5	Gross specimen of the right knee joint from anterior.	9
6	Illustration shows femoral insertion of the ACL.	0
7	Arthroscopic view: Following careful arthroscopic dissection and removal of soft-tissue remnants, key insertion site anatomy was identified.	11
8	Illustration shows tibial insertion of the ACL.	12
9	Illustration shows tibial insertion sites of AM and PL bundles.	13
10	Arthroscopic view showing that the distribution of the ACL blood supply is not homogenous.	14
11	Sagittal T1-weighted MRI image showing intercondylar notch. Normal ACL.	18
12	Sagittal intermediate-weighted MRI image of the knee demonstrates a normal anterior cruciate ligament (ACL).	19
13	Coronal T1-weighted image at mid coronal plane showing normal ACL.	20
14	Axial T1-weighted MRI image at inferior patellofemoral compartment showing normal ACL.	21
15	Partial-volume inclusion of the lateral femoral condyle causing a false appearance of an ACL tear. T1-weighted sagittal MRI shows an ill-defined pseudomass about the proximal ACL that could be taken as evidence for ACL injury.	22

Fig	Title	Page
16	On standard orthogonal sagittal MRI, it is usually difficult to visualize the complet ACL on a single image. The ACL cannot be visualized throughout its entire length.	23
17	Normal ACL. Sagittal fat suppressed proton density MRI. Special orientation of the MRI slices allows better visualization of the ACL. Oblique sagittal slice revealing both the AM and PL bundles.	25
18	Normal ACL: Coronal fat suppressed proton density MR image (Oblique coronal slice). The AM and PL bundles are identified as originating from lateral femoral condyle.	26
19	A: Oblique intermediate-weighted axial imaging of ACL near the femoral insertion. B: Schematic drawing of the anteromedial and posterolateral bundles of the anterior cruciate ligament at the femoral origin on oblique axial image.	29
20	Avulsion fracture of tibial spine.A: Lateral radiograph of the knee. B: Reformatted sagittal computed tomography image of the same patient.	33
21	Segond fracture. A: Frontal radiograph of the right knee B: A coronal T2-weighted fat suppression magnetic resonance image of the same patient.	34
22	Osteochondral injury lateral femoral condyle.	35
23	CT arthrography of the knee showing moving of the contrast across the knee denoting ACL tear.	36
24	Primary signs of anterior cruciate ligament tear. Sagittal intermediate-weighted images of three different patients showing different patterns of ACL tear.	37
25	Normal ACL at arthroscopy. Sagittal (a) and coronal (b) proton density-weighted images of the knee show the hyperintense and thickened ACL. Observers diagnosed the ACL as partially torn based on orthogonal MRI images. Oblique coronal (c) and oblique sagittal (d) proton density-weighted images clearly show an intact ACL (arrows). The observers diagnosed the ACL as intact.	38
26	Partial tear of the anterior cruciate ligament. Sagittal intermediate weighted image of partial anterior cruciate ligament (ACL) tear.	39

Fig	Title	Page
27	Magnetic resonance knee in partial flexion. Sagittal intermediate weighted magnetic resonance image in full extension ; (A) and 30 degree of knee flexion; (B).	40
28	Bone bruises. Sagittal T2-weighted fat suppression magnetic resonance knee image shows that there are bone rises (asterisks) present in the mid-lateral femoral condyle and posterolateral tibial plateau.	41
29	Patellar buckling sign and lateral femoral notch sign.	41
30	Uncovered posterior horn lateral meniscus and anterior tibial translation. Sagittal intermediate weighted magnetic resonance image of complete anterior cruciate ligament tear patient.	43
31	Posterior cruciate ligament buckling and Posterior cruciate ligament line sign.	43
32	Coronal whole posterior cruciate ligament and lateral collateral ligament sign. Coronal T2-weighted fat suppression magnetic resonance knee images of two different patients with complete anterior cruciate ligament tear.	44
33	Shearing of fat pad. Sagittal T2-weighted fat suppression magnetic resonance image shows a fracture of Hoffa's fat.	44
34	Peripheral vertical tear in a patient with complete anterior cruciate ligament tear. Sagittal intermediate-weighted magnetic resonance image demonstrates a peripheral vertical tear extending of the posterior horn of lateral meniscus.	45
35	O' Donoghue's triad. Magnetic resonance images of a patient with complete anterior cruciate ligament (ACL) tear showing O'Donoghue's triad.	46
36	Posterolateral corner injury. A: Axial intermediate-weighted; B: Coronal T2- weighted fat suppression images of a patient with acute ACL tear (white arrowhead).	47
37	Extremity" or "knee" coil.	48
38	The patient is positioned supine with the affected knee completely or nearly completely extended in the coil.	49
39	Planning of the coronal and sagittal images on axial scout image.	51
40	Example of prescribed coronal images on axial and sagittal scout images.	51

Fig	Title	Page
41	Example of prescribed sagittal images on axial and coronal scout images.	52
42	(A) Oblique intermediate-weighted axial imaging at the midportion of the ACL.(B) Schematic drawing of the anteromedial and posterolateral bundles of the anterior cruciate ligament at the mid-portion on oblique axial mage.	53
43	Oblique coronal and sagittal MRI images of a normal ACL. Bony land marks were used to prescribe the oblique views along the expected long axis of the ligament.	55
44	Sagittal image of standard MRI examination as a topogram for planning the para-coronal oblique T2 image.	61
45	Anterior cruciate ligament (ACL) paracoronal oblique image.	62
46	Anterior cruciate ligament (ACL) sagittal-oblique T2 image.	62
47	percentage of positive and negative Lachman and anterior drawer tests.	67
48	Protocol A and protocol B findings of anterior cruciate ligament (ACL).	69
49	Protocol A and protocol B findings of partial rupture of anterior cruciate ligament (ACL).	71
50	Protocol A and protocol B findings of the position of partial rupture of anterior cruciate ligament (ACL).	72
51	Difference between standard protocol A and sagittal-oblique MR technique in term of number of tomograms that show the whole course of the ACL.	73
52	(a) Axial T2, (b) Coronal T2 fat suppression, (c) Sagittal PD and (d) Sagittal STIR MRI of right knee, revealed an intact ACL.	74
53	(a,b) Oblique coronal PD fat suppression and (c,d) Oblique sagittal T2 fat suppression of the same patient show normal appearances of the ACL.	75
54	(a) Axial T2, (b) Coronal T2 fat suppression, (c) Sagittal PD and (d) Sagitta STIR MRI of left knee, revealed an intact ACL.	76
55	(a) Oblique coronal PD and (b,c,d) Oblique sagittal T2 MRI of the same patient show normal appearances of the ACL.	77

Fig	Title	Page
56	(a) Axial T2, (b) Coronal T2 fat suppression, (c) Sagittal PD and (d) Sagittal STIR MRI of the left knee, revealed an intact ACL (white arrows).	78
57	(a) Oblique coronal T2 and (b,c,d) Oblique sagittal T2 MRI of the same patient. It shows an area of increased MRI signal intensity at the femoral insertion of ACL (blue arrows), but with some fibres still intact (white arrows), which is compatible with partial tear of ACL.	79
58	(a) Axial T2, (b) Coronal T2 fat suppression, (c) Sagittal PD and (d) Sagittal STIR MRI of the right knee, revealed an intact ACL (white arrows).	80
59	(a) Oblique coronal PD, (b) Oblique sagittal T2 and (c) Oblique sagittal PD MRI of the same patient. There is an area of increased MRI signal intensity with in proximal substance of the ACL near its femoral insertion (white arrows), but some fibres still intact which is compatible with partial tear of ACL.	81
60	(a) Axial T2, (b) Coronal T2 fat suppression, (c) Sagittal PD and (d) Sagittal T2 MRI of the right knee, revealed an intact ACL (white arrows).	82
61	MR imaging of the ACL of the same patient. (a) Oblique coronal T2, (b) Oblique sagittal PD and (c,d) Oblique sagittal T2 MRI of right knee. There is an intraligamentous areas of intermediate signal intensity along the distal and mid-substance of the ACL (white arrows), yet some fibres are still intact which is compatible with partial tear of the ACL.	83
62	(a) Axial T2, (b) Coronal T2 fat suppression, (c) Sagittal T2 and (d) Sagittal STIR MRI of the left knee, revealed an intact ACL (white arrows).	84
63	MR imaging of the ACL of the same patient. (a) Oblique coronal PD with fat suppression, (b,c) Oblique sagittal PD with fat suppression MRI, shows an intraligamentous hyperintense MRI signal along the proximal and mid-substance of the ACL (white arrows), but with some fibres intact, compatible with partial tear of the ACL.	85
64	(a) Axial T2, (b) Coronal T2 fat suppression, (c) Sagittal PD and (d) Sagittal STIR MRI of the left knee, revealed an intact ACL (white arrows).	86

Fig	Title	Page
65	MR imaging of the ACL of the same patient. (a) Oblique coronal T2 and (b,c,d) Oblique sagittal T2 MRI. It shows partial fibres discontinuity and an area of increased MRI signal intensity with in proximal substance of the ACL near its femoral insertion (white arrows), but som fibres still intact (blue arrow) which is compatible with partial tear of the ACL.	87
66	(a) Axial T2, (b) Coronal T2 fat suppression, (c) Sagittal PD and (d) Sagittal STIR MRI. It shows acute intrasubstance tear of the ACL as characterized by thickening and oedematous change of its fibres which show increased signal intensity (white arrows). The fibres are still in continuity suggestive of partial ACL tear.	88
67	MR imaging of the ACL of the same patient. (a) Oblique coronal T2, (b,c) Oblique sagittal PD and (d,e) Oblique sagittal T2 MRI. It shows partial discontinuity of ACL fibres with an area of high signal intensity (blue arrows) at the mid-substance in all pulse sequences, but with some fibres still intact (white arrows), indicating partial tear of the ACL.	89
68	(a) Axial T2, (b) Coronal T2 fat suppression, (c) Sagittal PD and (d) Sagittal STIR MRI of left knee of a male patient, 24 years old who suffered from injury of the knee. MR images show fuzzy outline of the ACL with total discontinuity and an area of increased signal intensity extending completely across the ACL in all pulse sequences (white arrows), compatible with complete tear of the ACL.	90
69	MR imaging of the ACL of the same patient.(a) Oblique coronal PD with fat suppression, (b,c,d) Oblique sagittal PD with fat suppression MRI, shows a total discontinuity with an area of increased signal intensity extending completely across the mid-substance of ACL (blue arrows), which is compatible with complete tear of ACL.	91
70	(a) Axial T2, (b) Coronal T2 fat suppression, (c) Sagittal T2 and (d) Sagittal STIR MRI. There are intra-substance areas of increased signal intensity with fibres discontinuity of ACL at the mid-substance in all pulse sequences (white arrows), compatible with complete tear of the ACL.	92
71	(a) Oblique coronal T2, and (b,c) Oblique sagittal T2 MRI of the same patient. MR images show fibres discontinuity with intra substance areas of high signal intensity (white arrows) extending completely across the mid-substance of ACL, which is compatible with complete tear of the ACL.	93



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