The Egyptian Journal of Hospital Medicine (October 2022) Vol. 89 (2), Page 6410- 6418

Role of MRI in Evaluation of Injuries of Posterolateral Corner of the Knee

Eman Abd Elwahab Mosilhy*, Ayman Fathy Zaid, Rania Mostafa Almolla, Ahmed Mostafa Elmaghraby
Radiodiagnosis Department, Faculty of Medicine, Zagazig University, Egypt
***Corresponding author:** Eman Abd Elwahab Mosilhy, **Mobile:** (+20) 01024396651, **E-Mail:** emanmosilhy99@gmail.com

ABSTRACT

Background: In particular during extension, the posterolateral corner of the knee (PLC) acts as a substantial rotational and transitional stress resistor. The interplay of numerous overlapping structures creates the multi-compartment complicated sector known as the posterolateral corner.

Objective: Assessment of conventional MRI role in posterolateral corner of the knee.

Patients and Methods: The study was a cross-sectional study. It was conducted at the Radiodiagnosis Department, Zagazig University Hospitals during six months. It included 36 symptomatic patients with knee trauma before the MR examination. Their ages ranged from 21 to 53 years.

Results: According to LCL pathology among the studied cases there were 16.7% intact, 33.3% with sprain, 25% with partial tear and 25% with compete tear. According to PT pathology there were 19.4% intact, 66.7% with sprain, 5.6% with partial tear and 8.3% with compete tear. According to BF pathology there were 94.4% intact and 5.6% with compete tear. According to ITB pathology; 94.4% intact and 5.6% with ITB friction syndrome. According to PFL pathology, 50% intact, 25% with sprain, 16.7% with partial tear and 3 (8.3%) with compete tear. There was remarkable variation between patients and healthy persons in LCL, PT, BF, ITB, and PFL lesions.

Conclusion: We came to the conclusion that MRI offers a superb, in-depth assessment of the knee's posterolateral corner structures and lesions. Chronic posterolateral instability can be caused by an unsuspected posterolateral corner injury. To improve surgical care, suggestive imaging results should be quickly communicated with the orthopedic surgeon.

Keywords: MRI, Posterolateral Corner, Lateral collateral ligament, Popletius tendon, Biceps femoris, Iliotibial band, Popliteofibular ligament.

INTRODUCTION

An important rotational and transitional stress resistor, particularly in extension, is the posterolateral corner of the knee (PLC). PLC is made up of several overlapping components that interact to generate a multi-compartment complex sector. In post-traumatic MRI evaluation, it is critical to identify these injuries because missing untreated injuries in this area can have long-term weakening effects [(1,2)]. The majority of PLC injuries happen along with damage to other significant knee stabilising tissues, like the anterior cruciate ligament (ACL) and posterior cruciate ligament (PCL). Recognition of PLC injuries is crucial since the diagnosis will frequently alter or require surgical therapy, and untreated PLC injury is one of the causes of ACL and PCL transplant failures [(3)].

Anatomically, the PLC's constituent structures are grouped in three layers. Iliotibial band (ITB) anteriorly and biceps femoris (BF) posteriorly combine to produce the superfacial layer. The patellofemoral ligament and lateral patellar retinaculum make up the intermediate layer. The popliteus muscle and its tendon (PT), which go through the popliteushaiatus, popliteus fibular ligament (PFL) and tendon (PFT), and fabellofibular ligament, make up the deep layer. These PLC stabilising elements could potentially be split into scaffolds that are static and dynamic [(4)].

Fibular collateral ligament, PT, and PFT are significant static stabilizers of the posterolateral knee [(5)].

On an MRI scan, injuries to these various PLC components might be seen as aberrant thickening, interrupted contours, and/or abnormally high signal intensities. Sprains are classified as injuries with fibular collateral ligament, popliteus muscle, patellofemoral ligament, fabellofibular ligament, or arcuate ligament thickening and hyperintensity signal alterations. Only when the structure is damaged and there is an obvious space should a tear be reported [(5-7)].

The aim of the work is to assessment of conventional MRI role in posterolateral corner of the knee.

PATIENTS AND METHODS

This study was conducted on (48) people at the Faculty of Medicine at Zagazig University Hospitals. It comprised 36 patients who were sent to the Radiology Department at Zagazig university hospitals from the Emergency Room and Orthopaedic Outpatient Clinic between October 2020 and July 2021.

The studied group included 10 females and 26 males; their age group ranged from 21 to 53 years. Twelve healthy volunteers of similar ages who had had no apparent stress and had no symptoms were included as a control group for comparison. This group contained persons chosen from this area to serve as the case subjects; the majority were friends or acquaintances of the case subjects; they were healthy, age-matched adults whose ages ranged from 21 to 50.

Ethical consent:

An approval of the study was obtained from Zagazig University Academic and Ethical Committee (IRB Approval of Research Ethics Committee was (ZU-IRB# 6087/5-10-2020)). Every

Received: 02/07/2022
Accepted: 08/09/2022

patient signed an informed written consent for acceptance of participation in the study. This work has been carried out in accordance with The Code of Ethics of the World Medical Association (Declaration of Helsinki) for studies involving humans.

Inclusion criteria:

Patients with knee trauma and varus instability combined with objective findings of significant adduction laxity and associated antrolateral rotational instability proved by clinical examination will undergo MR imaging. Age group (21-53) as the most active group.

Exclusion criteria:

Patients with implanted pacemaker and other cardiological devices or ocular implants or aneurysmal clips incompatible with MRI. Patients with metallic implants in the knee joint area (checked by complimentary x-ray examination or from history). Patients have claustrophobia (relative contraindication).

All patients were subjected to the following:

Proper clinical assessment including full clinical history taking: all patients were asked about type of trauma and its manifestations. A thorough clinical examination of the injured knee was performed for all patients by the referring physicians. Radiological examination including conventional MRI with dedicated protocol for PLC injury detection. All patients had MRI of the affected knee joints on a high field strong scanner MRI was performed using Philips scanner Achievia (1.5) Tesla with a dedicated knee coil in all cases.

MRI examination:

The afflicted knee was fully or almost fully extended in the knee coil and rested on the knee pad with just 150 degrees of flexion in the supine position for the patients. The MRI study included the following pulse sequences: Sagital T1WI, Sagital T2WI, Axial T2WI, and Axial PD-weighted imaging.

The following settings were used: a field of vision between 20 and 30 cm, a matrix of 512/224, and a slice thickness of 3.5 mm. The evaluation took place on average for roughly 15 minutes.

Diagnostic interpretation:

Images were reviewed by radiologists. Each case had diagnosis with radiologist findings evaluation for categorization according to pathology in a radiological correlation and clinical finding:

(1) Assessment of PLC components: we assessed ITB, LCL, biceps tendon, popliteal tendon and popliteofibular ligament in coronal view and asses biceps tendon, fibular head and associated injuries as menisci, ACL, PCL injuries at sagittal view.

(2) Injuries are assessed as: Tendon sprain was reported when we found abnormal signal at the substance of the tendon. Partial tear when we found partial interruption to the fibers of the tendon. Complete tear when we found complete interruption to the fibers of the tendon.

(3) We also assed all the above-mentioned items in controlled cases**.**

Statistical analysis

Data were statistically described in terms of frequencies (number of cases) and percentage when appropriate. Data were checked and analyzed by using SPSS version 20. Data were presented as follow: mean and median for quantitative variables. Number and percentage for categorical variables (different injury patterns of components of PLC). P value < 0.05 was considered significant.

RESULTS

This study included 36 symptomatic patients with knee trauma before the MR examination, 26 males and 10 females**.** The range of cases' ages was 21-53 years. All cases were known or suspected to have varus instability combined with objective findings of significant adduction laxity. Also, this study included 12 control cases with no symptoms or trauma history, 8 males and 4 females. Their age ranged from 21 to 50 years (Table **1**).

Table (1): Age and distribution comparison between symptomatic and controle cases:

Variable	Symptomatic cases (36)		control cases (12)	
	No.	**%**	**No.**	**%**
Age				
21-30 years	15	41.2%	5	41.2%
31-40	14	38.9%	4	33.3%
41-53	7	19.4%	3	25%
Gender				
Female	26	72.2	8	66.7
Male	10	27.8	4	33.3

Table (**2**) showed that according to mode of injury among the studied cases the commonest was traffic accident 17 (47.2%) followed by hyperextension and twisting 12 (33.3%) then unidentified trauma 4 (11.1%) and contact trauma 3 (8.3%). According to presentation among the studied cases the commonest presentation was pain 22 (61.1%) followed by move limitation7 (19.4%) then swelling 3 (8.3%) pain and 2 (5.6%) with pain and move limitation, and 2 (5.6%) with swelling and pain. lateral collateral ligament lesion is the commonest injury (83.3%) of the study group followed by poplities tendon injury (80.5%).

Table (2): Clinical examination parameters in symptomatic group:

Variable	Cases (n=36)	
	No.	**%**
Mode of injury		
Contact trauma	3	8.3
Hyperextension and twisting	12	33.3
Traffic accident	17	47.2
Unidentified	4	11.1
Presentation		
Move limitation	7	19.4
Pain	22	61.1
Pain and move limitation	2	5.6
Swelling	3	8.3
Swelling and pain	2	5.6
Injured strusture		
Lateral collateral ligament	30	83.3
Popletius tendon	29	80.5
Biceps femoris	2	5.6
Iliotibial band	2	5.6
Popliteofibular ligament	18	50

According to LCL pathology among the studied cases there were 6 (16.7%) intact, 12 (33.3%) with sprain, 9 (25%) with partial tear and 9 (25%) with compete tear. According to PT pathology among the studied cases there were 7 (19.4%) intact, 24 (66.7%) with sprain, 2 (5.6%) with partial tear and 3 (8.3%) with compete tear. According to BF pathology among the studied cases there were 34 (94.4%) intact and 2 (5.6%) with compete tear. According to ITB pathology among the studied cases there were 34 (94.4%) intact and 2 (5.6%) with ITB friction syndrome. According to PFT pathology among the studied cases there were 18 (50%) intact, 9 (25%) with sprain, 6 (16.7%) with partial tear and 3 (8.3%) with compete tear (Table **3**).

Table (3): MRI findings of injured structures in the studied group:

Variable	Cases (n=36)	
	No.	**%**
LCL pathology		
Intact	6	16.7
sprain (grade1)	12	33.3
partial tear (grade 2)	9	25.0
complete tear (grade 3)	9	25.0
PT pathology		
Intact	7	19.4
sprain (grade1)	24	66.7
partial tear (grade 2)	2	5.6
complete tear (grade 3)	3	8.3
BF pathology		
Intact	34	94.4
complete tear (grade 3)	2	5.6
ITP pathology		
Intact	34	94.4
ITB friction syndrome	2	5.6
PFL pathology		
Intact	18	50.0
sprain (grade1)	9	25.0
partial tear (grade 2)	6	16.7
complete tear (grade 3)	3	8.3

LCL: Lateral collateral ligament, PT: Popletius tendon, BF: Biceps femoris, ITB: Iliotibial band, PFL; Popliteofibular ligament

There was remarkable variation between patients and healthy persons in sex distribution where most males were diseased (86.7%) while only (55.6%) of females were patients. But regarding patients age, there was no obvious variation between patients and healthy persons (Table **4**).

Table (4): Comparison between normal and diseased persons regarding age and sex in the study group:

Variable	**Diseased person (36) Mean ±SD (Range)**	**Normal person (12) Mean ±SD (Range)**	**t-test**	**p-value**
Age (years)	34.2±6.2 (30-53)	31.1±5.4 (21-40)	1.9	0.6
Variable	Diseased person No (36) %	Normal person No (12) %	χ^2	p-value
Gender				
Male (30)	26 86.7	4 13.3	3.4	0.03*
Female (18)	10 55.6	8 44.4		

* Statistically significant difference (P ≤ 0.05)

There was marked difference between patients and healthy persons in LCL lesion where (83.3%) of diseased persons had LCL lesion while only (16.7%) of healthy persons had LCL lesion. there was statistically remarkable difference between groups in PT lesion where (80.6%) of diseased persons had PT lesion while only (33.3%) of healthy persons had PT lesion. There was statistically remarkable variation between cases and healthy persons in BF, ITB, and PFT lesions (Table **5**).

Table (5): Comparison between normal and diseased persons regarding LCL, PT, BF, ITB, and PFL lesions in the study group

	Total (48)	**Diseased person No (36) %**	**Normal person No (12) %**	χ^2	**p-value**
LCL lesion					
Intact	16	6 (16.7%)	10 (83.3%)	10.5	0.001
Sprain	14	12 (33.3%)	2 (16.7%)		
Partial tear	9	9 (25%)	0.0 (0%)		
Complete tear	9	9 (25%)	0.0 (0%)		
PT lesion					
Intact	15	7 (19.4%)	8 (66.7%)	10	0.001
Sprain	28	24 (66.7%)	4 (33.3%)		
Partial tear	2	2 (5.6%)	0.0 (0%)		
Complete tear	3	3 (8.3%)	0.0 (0%)		
BF lesion					
Intact	46	34 (94.4%)	12 (100%)	14	0.001
Complete tear	2	2 (5.6%)	0.0 (0%)		
ITB lesion					
Intact	46	34 (94.4%)	12 (100%)	14	0.001
Friction syndrome	2	2 (5.6%)	0.0 (0%)		
PFL lesion					
Intact	28	18 (50%)	10 (83.3%)	4.5	0.001
Sprain	11	9 (25%)	2 (16.7%)		
Partial tear	6	6 (16.7%)	0.0 (0%)		
Complete tear	3	3 (8.3%)	0.0 (0%)		

LCL: Lateral collateral ligament, PT: Popletius tendon, BF: Biceps femoris, ITB: Iliotibial band, PFL; Popliteofibular ligament.

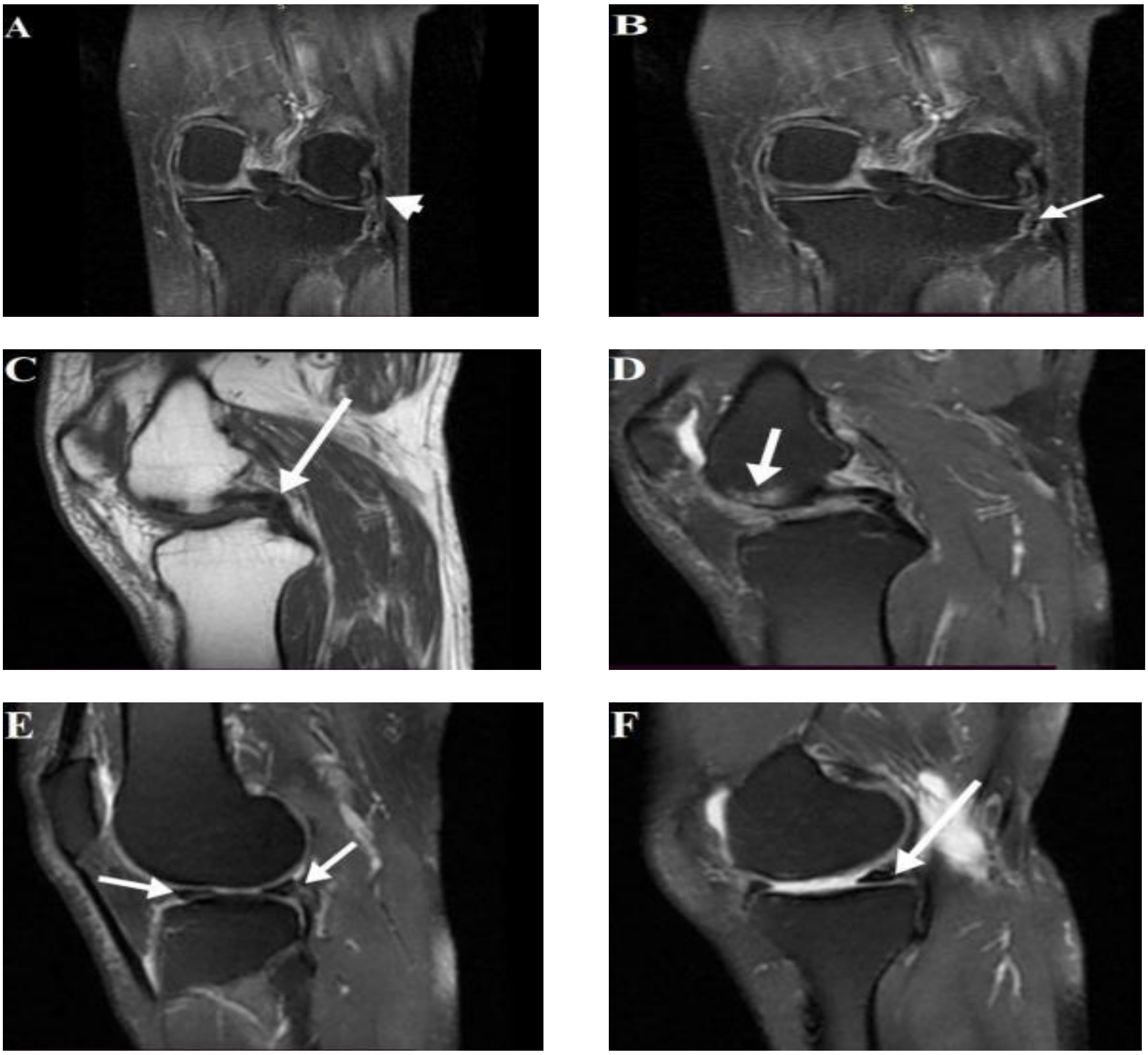

Fig. (1): Male patient 26 years old complains of massive trauma (car accident), followed by severe pain, instability and swelling of the left knee. **A:** Coronal STIR image showing laxity of the LCL which is not seen along its normal course with mild edematous tissue around it (arrow) suggesting complete tear tear of the LCL (grade 3). **B:** Coronal STIR image showing interrubtion to PFT which is not seen along its normal course with mild edematous tissue around it (arrow) suggesting tear of the PFT (grade3). **C** Sagittal T2 WI showing abnormal thickened PCL with abnormal signal intensity within (fuzzy PCL with partial tear) (arrow). **D** sagital STIR WI showing bright signals at the lateral femoral condyle (arrow) denoting bone bruises cal tear (arrow). A sagittal STIR WI shows abnormal internal bright signals in the anterior and posterior horns of the lateral meniscus reaching the articular surface denoting lateral meniscal tear(arrows). **F** A sagittal STIR WI shows abnormal internal bright signals in the posterior horn of the medial meniscus not reaching the articular surface denoting degenerative changes (arrow).

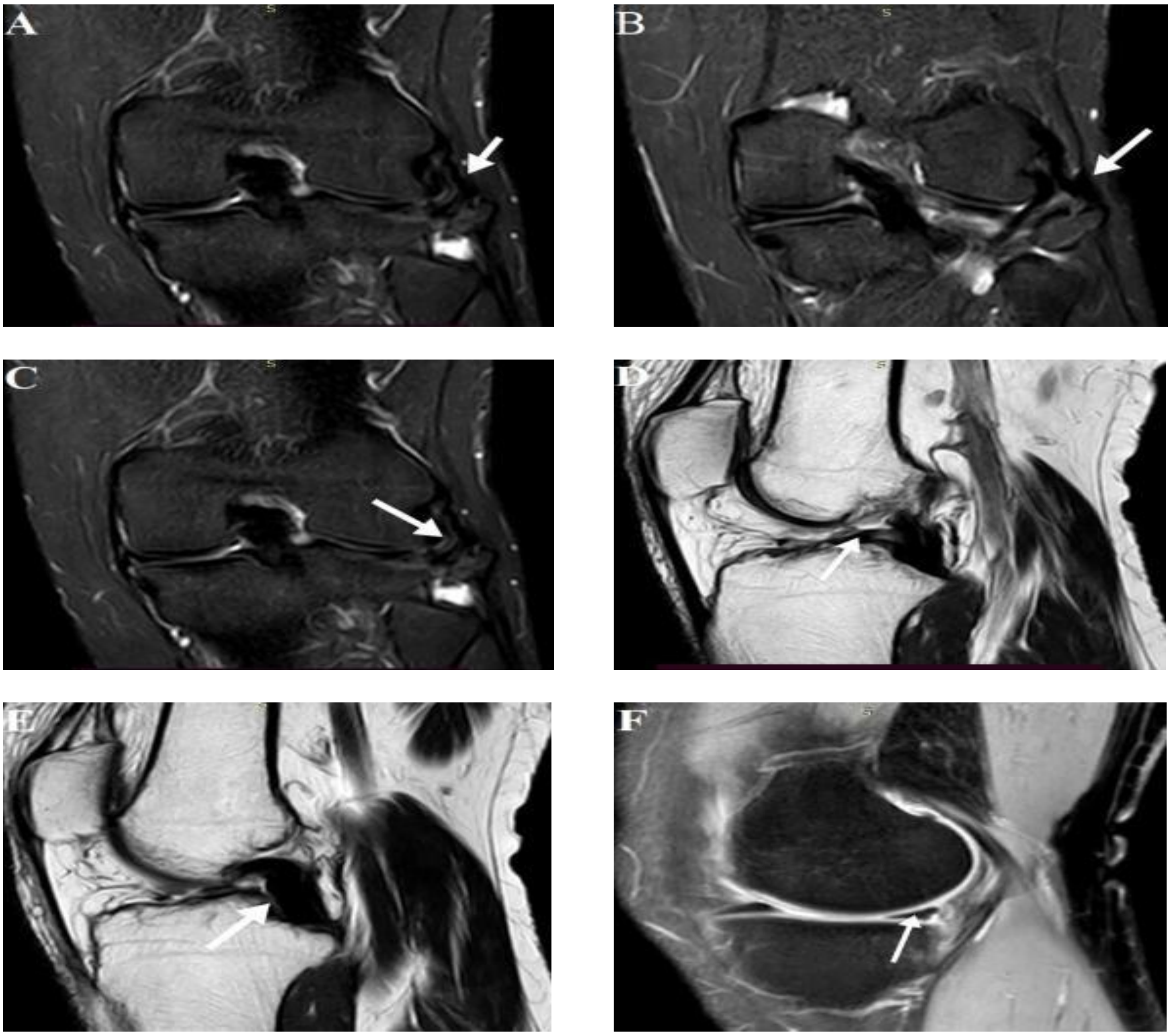

Fig. (2): Male patient 33 years old complains of massive trauma (car accident), followed by severe pain, instability and swelling of the left knee. **A** Coronal STIR WI in which traction of the fibular attachment of LCL due to fibular head avulsion fracture (arrow). **B** Coronal STIR WI in which traction of the fibular attachment of Bicebs tendon due to fibular head avulsion fracture (arrow). **C** Coronal STIR WI PT showing thickening and abnormal increased signal denoting PT sprain (grade1). **D** Sagittal T2 WI show the ACL as fuzzy indistinct with internal abnormal signals (arrow) consistent with post traumatic complete ACL tear (grade 3). **F** Sagittal PD SPIR WI showing abnormal increased signal intensity in the posterior horn of the medial meniscus reaching the articular surface (arrow) Grade III tear**.**

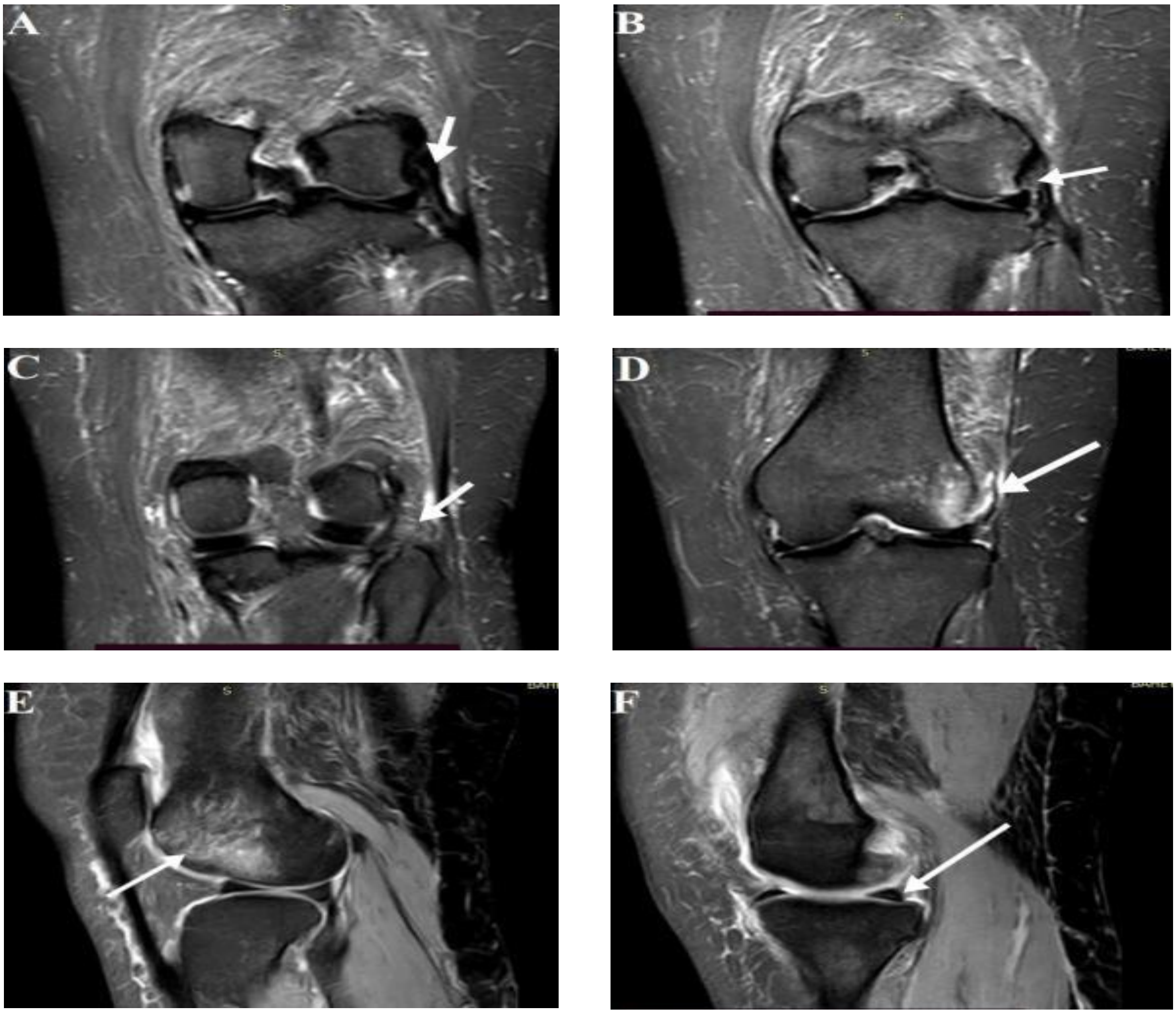

Fig. (3): Female patient 48 years old complains of direct trauma to her knee, followed by severe pain, instability and swelling of the knee. **A** A coronal STIR WI shows edema superficial and deep to the LCL The LCL itself appears normal (arrow) denoting LCL sprain (grade 1). **B** A coronal STIR WI shows thickening and abnormal increased signal at PT (arrow) denoting PT sprain (grade 1)**. C** A coronal STIR WI shows thickening and abnormal increased signal at PFT (arrow) denoting PFT sprain (grade 1). **D** A coronal STIR WI shows ill-defined signal abnormality within the fatty soft tissue interposed between the iliotibial band and the bone (arrow). **E** sagittal PD SPIR WI showing bright signals at the lateral femoral condyle (arrow) denoting bone bruises**. F** sagittal PD SPIR WI showing abnormal increased signal intensity inside posterior horn of medial meniscus reaching the articular surface denoting posttraumatic meniscal tear.

DISCUSSION

It was only recently that the intricate anatomical makeup of the posterolateral knee corner was fully understood, and as a result, diagnostic and therapeutic attention has shifted more toward this area. It is made up of the popliteus complex and the lateral collateral ligament (LCL). The PLT and the AC, which are made up of the PFL, the fabellofibular ligament, and the popliteomeniscal fibres, respectively, make up the popliteus complex [8]. The posterolateral corner, despite its intricacy, is crucial for stabilizing the knee under diverse stresses. PFL, The most conspicuous part of the arcuate complex, it serves primarily as a static stabilizer against external tibial rotation. The arcuate complex inhibits posterior tibial translation along with the popliteus muscle tendon unit, which also serves as a dynamic stabilizer against external rotation [9].

Our study was aiming to highlight the role of conventional MRI in detecting different posterolateral corner injuries of the knee. This study included 36 symptomatic patients with knee trauma before the MR examination, 26 males and 10 females. The range of cases' age was 21-53 years. All patients were known or suspected to have varus instability combined with objective findings of significant adduction laxity.

Regarding the demographic data of our study, it included 12 control cases with no symptoms or trauma history, 8 males and 4 females. Their age group ranged from 21 to 50 years. The mean age of studied group was (34.2 ±10) with age range 21-53 years, the most dominant age group is 21-30 years. The most dominant age group was 21-30 years in both symptomatic and control cases. Among the studied cases there were 14 (70.8%) are males. 72.2% of symptomatic patients and 66.7% of control cases are males.

By analyzing these data, we found that there was a statistically remarkable difference between patients and healthy persons in sex distribution where most males were diseased (86.7%) while only (55.6%) of females were patients but regarding patients age, there was no statistically significant variation between groups.

In a similar study by **Temponi *et al.*** **[10],** 32 patients had concomitant PLC injuries that were confirmed by MRI. These patients were thoroughly assessed. 26 patients were men. The mean of age was 32 years.

Another similar study by **Mckean *et al.*** **[11]** revealed that 180 knees in total met the inclusion requirement of having experienced acute knee trauma within 4 weeks of the scan. There were 131 male cases and 49 female cases; the mean age was 25.7 years (9-65 years).

According to mode of injury among our studied cases, the commonest was traffic accident 17 (47.2%) followed by hyperextension and twisting 12 (33.3%) then unidentified trauma 4 (11.1%) and contact trauma 3 (8.3%). The commonest presentation was pain 22 (61.1%) followed by move limitation7 (19.4%) then swelling 3 (8.3%) pain and 2 (5.6%) with pain and move limitation, and 2 (5.6%) with swelling and pain. The lateral collateral ligament lesion was the commonest injury (83.3%) of the study group followed by popliteus tendon injury (80.5%).

Regarding the results of **Mckean *et al.*** **[11],** bone swelling was the most frequent single pathological finding in their series of severe knee injuries, occurring in 140 of 180 patients (77%), and it was found in just two cases (0.01%). Meniscal tears, ACL ruptures, and MCL ruptures represented the most common soft tissue injuries. 14.7% of the cases (14 instances) had no traumatic injury found.

Considering the suggested mechanism of action in the study of **Farahat *et al.*** **[12]**, it was discovered that there are two primary types of action suggested in patients with posterolateral lateral corner injury: a direct blow to the antero-medial tibia with hyperextension to the knee, which occurs in 60% and 40% of patients, respectively, and non-contact external rotation twisting injury.

In the same study, 12.5% of the patients had an isolated popliteus musculotendinous injury, while 87.5% of the patients had coupled popliteus muscle injuries with other posterolateral structures. 53.33% of cases had popliteus complex injuries. Injuries to the PFT were seen in five (33%) of the patients, and all of these patients also had related injuries to one or more structures in PLC [12].

However, our results were at accordance with those of **Brown *et al.*** **[13],** who examined 24 individuals but failed to identify any distinct mechanism of injury.

In agreement with our results, **Collins *et al.*** **[14]** showed that 100% of their patients had LCL injury, 95% had popliteus muscle injury, and 77.3% had biceps femoris injury.

Regarding MRI findings of the lateral collateral ligament (LCL) pathology among the studied cases, there were 6 (16.7%) intact, 12 (33.3%) with sprain, 9 (25%) with partial tear and 9 (25%) with compete tear. There was a statistically remarkable variation between patients and healthy persons in LCL lesion where (83.3%) of diseased persons had LCL lesion while only (16.7%) of healthy persons had LCL lesion.

Against our findings, the results of **Mckean *et al.*** **[11]** demonstrated that the LCL was injured in 36 cases (20 %).

We also analyzed the MRI findings of the popliteus tendon (PT) pathology among the studied cases. There were 7 (19.4%) intact, 24 (66.7%) with sprain, 2 (5.6%) with partial tear and 3 (8.3%) with compete tear. There was statistically marker variance between patients and healthy persons in PT lesion where (80.6%) of diseased persons had PT lesion while only (33.3%) of healthy persons had PT lesion.

Mutou *et al.* **[15]** cleared that one of the main stabilizers of PLC of the knee, the popliteus musculotendinous complex, has a particular structure and attachments that radiologists should be aware of.

This will improve treatment and functional outcomes for cases with damage was not clinically recognized.

Farahat *et al.* [12] showed that the popliteus muscle's belly and myotendinous junction make up around 50% of all injuries to this muscle, while the popliteus tendon is injured in 25% of cases and the popliteus tendon and muscle belly are both injured in 25% of instances.

On the other hand, **Brown *et al.*** [13] stated that in their investigation, a popliteus tear that implicated the muscular portion affected 23 of 24 individuals (96%).

According to the MRI findings of the Biceps tendon (BF) pathology among the studied cases there were 34 (94.4%) intact and 2 (5.6%) with compete tear. In addition, according to Iliotibial band (ITB) pathology among the studied cases there were 34 (94.4%) intact and 2 (5.6%) with ITB friction syndrome. According to popliteofibular tendon (PFT) pathology among the studied cases there were 18 (50%) intact, 9 (25%) with sprain, 6 (16.7%) with partial tear and 3 (8.3%) with compete tear. There was a remarkable variation between cases and healthy persons in BF, ITB and PFT lesions.

Chien *et al.* [16] revealed that On MRI, the popliteus tendon, biceps femoris tendon, and fibular collateral ligament are all clearly visible. The arcuate ligament and fabellofibular ligament are present to varying degrees, although the PFL is almost always present. Linear, low signal structures that appear to be connected between their origins and insertions are the fabellofibular ligament, PFL, biceps femoris tendon, and the fibular collateral ligament.

While some studies claim that the PFT is sporadically visible on MR exams, others claim that the PFT may be picked up in as many as 91% of MRI scans. On coronal and sagittal images, the ligament typically shows as a small, low-signal-intensity structure that can be tracked over multiple images in the axial imaging plane. Visualization may be enhanced by using a coronal oblique imaging plane [17].

CONCLUSION

We came to the conclusion that MRI offers a superb, in-depth assessment of the knee's posterolateral corner structures and lesions. Chronic posterolateral instability can be caused by an unsuspected posterolateral corner injury. To improve surgical care, suggestive imaging results should be quickly communicated with the orthopedic surgeon.

Conflict of interest: The authors declare no conflict of interest.

Sources of funding: This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

Author contribution: Authors contributed equally in the study.

REFERENCES

1. **Davies H, Unwin A, Aichroth P (2004):** The posterolateral corner of the knee. Anatomy, biomechanics and management of injuries. Injury, 35(1):68-75.
2. **Harner C, Vogrin T, Höher J *et al.* (2000):** Biomechanical analysis of a posterior cruciate ligament reconstruction. Deficiency of the posterolateral structures as a cause of graft failure. Am J Sports Med., 28(1):32-39.
3. **Crespo B, James E, Metsavaht L *et al.* (2015):** Injuries to posterolateral corner of the knee: a comprehensive review from anatomy to surgical treatment. Rev Bras Ortop., 50(4):363-370.
4. **Jadhav S, More S, Riascos R *et al.* (2014):** Comprehensive review of the anatomy, function, and imaging of the popliteus and associated pathologic conditions. Radiographics, 34(2):496-513.
5. **Helito C, Demange M, Bonadio M *et al.* (2013):** Anatomy and Histology of the Knee Anterolateral Ligament. Orthop J Sports Med., 1(7):2325967113513546. doi:10.1177/2325967113513546
6. **Raheem O, Philpott J, Ryan W *et al.* (2007):** Anatomical variations in the anatomy of the posterolateral corner of the knee. Knee Surg Sports Traumatol Arthrosc., 15(7):895-900.
7. **Lintin L, Chowdhury R, Yoong P *et al.* (2020):** The anterolateral ligament in acute knee trauma: patterns of injury on MR imaging. Skel Radiol., 49(11):1765-1772.
8. **Weiss S, Krause M, Frosch K (2020):** Posterolateral corner of the knee: a systematic literature review of current concepts of arthroscopic reconstruction. Arch Orthop Trauma Surg., 140(12):2003-2012.
9. **Domnick C, Frosch K, Raschke M *et al.* (2017):** Kinematics of Different Components of the Posterolateral Corner of the Knee in the Lateral Collateral Ligament-intact State: A Human Cadaveric Study. Arthroscopy, 33(10):1821-1830.
10. **Temponi E, de Carvalho Júnior L, Saithna A *et al.* (2017):** Incidence and MRI characterization of the spectrum of posterolateral corner injuries occurring in association with ACL rupture. Skel Radiol., 46(8):1063-1070.
11. **McKean D, Yoong P, Yanny S *et al.* (2015):** The popliteal fibular ligament in acute knee trauma: patterns of injury on MR imaging. Skel Radiol., 44(10):1413-1419.
12. **Farahat A, Elnekeidy A, Abdelgelil M (2018):** Role of magnetic resonance imaging in the evaluation of the popliteus musclotendinous injuries as a part of the posterolateral corner injuries of the knee. Alexandria Journal of Medicine, 54(4):353-360.
13. **Brown T, Quinn S, Wensel J *et al.* (1995):** Diagnosis of popliteus injuries with MR imaging. Skel Radiol., 24(7):511-514.
14. **Collins M, Bond J, Crush A *et al.* (2015):** MRI injury patterns in surgically confirmed and reconstructed posterolateral corner knee injuries. Knee Surg Sports Traumatol Arthrosc., 23(10):2943-2949.
15. **Mutou M, Abe Y, Kataoka H *et al.* (2022):** Anatomical reconstruction of the Posterolateral Corner of the knee preserving dynamic function of the popliteus tendon complex. Asia Pac J Sports Med Arthrosc Rehabil Technol., 28:1-5.
16. **Chien A, Weaver J, Kinne E *et al.* (2020):** Magnetic resonance imaging of the knee. Pol J Radiol., 85: 509-531.
17. **Rajeswaran G, Lee J, Healy J (2007):** MRI of the popliteofibular ligament: isotropic 3D WE-DESS versus coronal oblique fat-suppressed T2W MRI. Skel Radiol., 36(12):1141-1146.