

ACCURACY OF CLINICAL EVALUATION AND MRI REPORTING COMPARED TO KNEE ARTHROSCOPIC FINDINGS

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ABSTRACT

Background: Intra-articular knee injuries are diagnosed using multiple modalities including Magnetic Resonance Imaging (MRI) or arthrography and various clinical tests. However, there is a high incidence of false negative and false positive findings in MRI assessment. The deeper intra articular structures such as the medial meniscus brings about the high incidence of false positives and false negatives in MRI assessment. The clinical tests also have benefits in diagnosing these injuries but its sensitivity and specificity is also under question. Arthroscopy has quickly become the “gold standard” but diagnostic arthroscopy on its own is rarely done and is only done before a treatment procedure. No regional studies have been done and only a few handful studies done worldwide especially after recent advances in 3 tesla MRI apparatus.

Objectives: The aim of this study was to assess the diagnostic accuracy based on various clinical tests and validity of MRI in our populace in association with arthroscopic findings.

Design: This was a multi-center prospective cross-sectional study conducted at Aga Khan University Hospital Nairobi (AKUHN), Kikuyu Hospital, M.P. Shah Hospital and Kijabe Hospital over a six-month period.

Methodology: Preoperative clinical diagnosis based on various specific tests and preoperative MRI was compared with operative diagnostic arthroscopic outcomes separately to ascertain the accuracy of each using arthroscopy as the “gold standard”. The study population categorical variables was described and summarized as percentages and counts by use of frequency tables and continuous variables was summarized using central tendency and dispersion (minimum, maximum, range, IQR, mean, standard deviation, median). Sensitivity, specificity, positive and negative predictive values, and finally accuracy was then tabulated.

Results: One hundred and forty patients were recruited with 85 males and 55 females undergoing knee arthroscopy. One hundred and forty six knees were evaluated with the right knee (53.1%) more injured than the left (49%). Lateral meniscus (53.1%) was found to be more injured than the medial meniscus (46.8%) with the posterior horn (medial-73.3%; lateral-60%) of the meniscus being the commonest part of the meniscus injured. Anterior Cruciate Ligament (ACL) injury (39 patients) was more common than PCL injury (9 patients). Among the clinical tests, joint-line tenderness was the most sensitive test (medial-69.1%; lateral-64.4%) and the McMurrays test most specific (medial-92.2%; lateral-91.9%). Thessalys test was not found to be more sensitive (medial-58.8%; lateral-50.8%) or specific (medial-89.6%; lateral-88.4%) as reported previously. For ACL tears, Lachman test was specific (96.4%) and the anterior drawer test was more sensitive (81.8%). Accuracy for medial meniscus tear (47%) on MRI was more than lateral meniscus (41%). MRI did poorly in diagnosing ACL tears due to over-reporting of partial ACL tears (complete ACL tear-23%; partial ACL tear-4%).

Conclusion: The diagnosis of intra-articular injuries is still a challenge and both clinical examination and MRI has its limitations. MRI reporting is no better than clinical examination in diagnosing meniscal tears and clinical examination is better at diagnosing cruciate ligament injuries than MRI reporting. Overall the accuracy of MRI reporting is poor in our set-up.

Key words: Knee Arthroscopy, Knee MRI, 3 Tesla, Accuracy, Knee examination

INTRODUCTION

Orthopaedic surgery has moved leaps and bounds over the last century like all other fields in medicine. There is better understanding of biomechanics, cellular and molecular biology of the musculoskeletal system than it has ever been. Arthroplasty and arthroscopic surgery are also two of the most important innovations in this field and is certainly growing in Kenya. The demand for arthroscopy has increased from the surgeon and most importantly the patient. Since its introduction in the 1970s the usage of arthroscopy has been growing

for both diagnosis and operative intervention. It is minimally invasive, has fewer complications and faster recovery times than open procedures (1). Arthroscopy of the knee started to be used in the 1960s and 70's. Before then surgeons relied on clinical examination in the diagnosis and treatment of knee pathologies (2).

In a casualty department out of 400,000 patients, 500 had significant knee injuries in an American set up and out of these ACL injury is the commonest among the soft tissue knee injuries (3). It is important to do a clinical examination to aid in the diagnosis of knee

injuries in the acute phase, however, pain may affect the accuracy of the various tests.

Pitfalls of diagnostic physical tests:

- (i) Inherent ligamentous laxity and mobility
- (ii) Patients body build
- (iii) Pain sensitivity (tolerance)
- (iv) Edema/haematoma
- (v) Muscle spasm
- (vi) Appreciation by the examiner i.e. translation, sound, end point

The degree of ligamentous injury can also affect the sensitivity of the test when there is an incomplete ligamentous tear and anatomic variations are present e.g. discoid meniscus. Physical examination tests sensitivity is affected by the size, site and orientation of the tear as only lateralization of the torn meniscus gives the mechanical symptoms like clicks and blocks. Comparing both clinical examination and MRI with a diagnostic arthroscopy is important for us to diagnose and treat knee lesions accurately (2).

MATERIALS AND METHODS

This was a cross-sectional multi-centre study conducted at AKUHN, Kikuyu Hospital, M.P. Shah Hospital and Kijabe Hospital over a six-month period. These are various private and faith-based hospitals within and out of Nairobi. They are also external rotation centers for the postgraduate orthopaedic programme. Data was collected in the operating rooms in these facilities.

Study population: Patients aged 18-45 years with intra-articular knee pathology scheduled for arthroscopic surgery and had a 3T MRI done were included. The ones excluded were those with known ligamentous injury, revision arthroscopy, associated bony injury or fractures, psychiatric disorder, acutely injured patients (those seen less than 4 weeks after the injury) and patients without MRI or contraindication to MRI like intracerebral aneurysmal clips, cardiac pacemaker, metallic foreign body in eye, implants in middle ear.

Sampling of patients: Consecutive sampling to enroll eligible patients into the study was used. All consenting patients scheduled for an arthroscopic surgery were recruited. The number of patients recruited in this study was 140. Patients already with MRI done and were scheduled for arthroscopy were enrolled for this study. Clinical tests were done pre-operatively by an examiner blinded from the MRI results then documentation done, MRI findings were then documented followed by arthroscopy findings. Clinical tests done were compared with arthroscopy for accuracy separately from MRI findings which were also compared with diagnostic knee arthroscopy which is regarded as the "gold standard"(4,5-8).

The study was carried out in the various hospital operating rooms. Examination of the patient was done in the theatre waiting area before the patient was operated, MRI reporting documented thereafter and arthroscopic findings was finally documented after the procedure.

On clinical examination, various tests were done after taking thorough history. In case of suspicion of meniscal tears, McMurray test, Thesally test, joint-line tenderness and Apley grinding test were done. In case of ACL and PCL tear suspicion, Lachman test and drawer test were done. In case of collateral ligament injury varus or valgus stress test was done to evaluate it. The injury was at least 4 weeks old (non-acute) injury so that pain free examination could be carried out. Examination was done by the principal investigator to achieve consistency in findings. The above tests were done on the normal side first followed by the affected side to compare.

Each MRI was performed using the MR protocol of 3 Tesla on PHILIPS GYROSCAN ACHIEVA 3T MRI. T1 and T2 weighed sequences were done on coronal and sagittal planes. MR films were read by a consultant radiologist but not the same radiologist. The status of menisci, cruciate ligament, cartilage and subchondral bone was registered. A meniscal tear is classified according to MAYO 2000 classification.

Grade I tear: Meniscal lesion globular in nature, not communicating with articular surface.

Grade II tear: Linear in nature and remain within the substance of meniscus, there is no evidence of communication with the articular surface of meniscus.

Grade III tear: Increased signal intensity within the meniscus that extends to the articular surface.

Grade IV tear: Distorted tears in addition to findings of grade III tears.

Arthroscopy was performed under regional or general anaesthesia with patient in supine position with a lateral post around proximal thigh. Proximal thigh tourniquet was used in each case. Diagnosis was confirmed by a general orthopaedic surgeon with arthroscopy expertise but not by the same surgeon in every case and in agreement with the assistant surgeon/ registrar.

To classify the location of meniscal tear arthroscopically each meniscus is divided into three equal segments:

- (i) The anterior 1/3 or anterior horn
- (ii) The middle 1/3 or body
- (iii) Posterior 1/3 or posterior horn

The collateral ligaments, ACL and PCL injuries were classified as partial disruption or complete ligament

injury. The results were compared and analyzed using various statistical tests. Other intra-articular knee pathologies was also documented.

Statistical analysis of data: Exploratory data analysis was carried out to identify inconsistencies and extreme values. The study population categorical variables was described and summarized as percentages and counts by use of frequency tables. Continuous variables were summarized using central tendency and dispersion (minimum, maximum, range, IQR, mean, standard deviation, median).

Formulae used were as follows:

Sensitivity = True Positives x 100 / (True Positives + False Negatives)

Specificity = True Negatives x 100 / (True Negatives + False Positives)

Positive Predictive Value = True Positives x 100 / (True Positives + False Positives)

Negative Predictive Value = True Negatives x 100 / (True Negatives + False Negatives)

Accuracy = (True Positives + False Negatives) x 100 / (True Positives + True Negatives + False Positives + False Negatives)

Missed diagnoses = False Negatives x 100 / (False Negatives + True Positives).

Results are presented using tables, graphs, charts and text narratives. Data was analyzed using SPSS Ver. 21.

RESULTS

Sample characteristics: Over a period of 6 months (December 2017-May 2018) 140 patients were recruited. The mean age of the patients was 30 years old and a total number of 146 knees were evaluated. There were more males and the right knee was slightly more injured than the left in this sample population.

Table 1 shows that the mean age distribution was of 30 years old and a standard deviation of 10. There were more males sustaining knee injuries at a total of 85 (60.7%) and females at 55 (39.3%). More right knees were injured at 76 (53.1%) than left knees at 70 (49.0%)

Table 1
Demographics

Mean age	30
Standard deviation	10
Median age	30
Sex	Male 85(60.7%) Female 55(39.3%)
Knee injured	Right 76(53.1%) Left 70(49%)

Clinical examination: Joint-line tenderness was positive on the medial side 64 times and laterally was at 55. Among the tests to analyze meniscal tears, joint line tenderness was found to be frequently positive compared to the other tests and this was consistent on both medial (36.1%) and lateral sides (25.9%). The Thesally test was second at 27.1% for the medial meniscus and 26.1% for the lateral meniscus. Table 2 depicts the tests that were positive for each side.

Table 2

Frequency of tests positive on each side of the knee for meniscal tears

	Medial		Lateral	
	No.	(%)	No.	(%)
Joint-line tenderness	64	36.1	55	35.9
McMurrays test	41	23.1	33	21.5
Apleys test	24	13.5	25	16.3
Thessalys test at 20 degrees	48	27.1	40	26.1

Table 3 analyses the tests administered for cruciate ligament injury. The drawer tests and Lachman tests were close in diagnosing the injury in terms of frequently positive test. For ACL injury the anterior drawer test was frequently positive (54.2%) compared to Lachman test (45.7%). For PCL injury the posterior drawer test was also found to be positive (55.5%) more frequently than the Lachman test (44.4%). However the number of PCL injuries diagnosed on clinical examination were much lower than ACL injury as depicted in the table.

Table 3

Frequency of tests positive for cruciate ligament injury

	ACL		PCL	
	No.	(%)	No.	(%)
Anterior/Posterior drawer	32	54.2	10	55.5
Lachman	27	45.7	8	44.4

MRI reporting: The most common injury in the medial compartment reported on 3T MRI was posterior horn medial meniscus tears (67.1%) followed by body tears (21.9%). For the lateral compartment it was similar whereby, the posterior horn injury was the commonest (50%) followed by the body (25.6%) and anterior horn tears (24.3%).

Table 4 shows the details of the meniscal injuries reported on MRI by the radiologist. The least common meniscal part reported injured was the anterior horn whereby only 10.9% and 24.3% were reported injured in the medial and lateral compartment of the knees respectively.

Table 4
Injuries shown on 3T MRI

	No.	(%)
Medial meniscus		
Anterior horn	9	10.9
Body	18	21.9
Posterior horn	55	67.1
Lateral meniscus		
Anterior horn	20	24.3
Body	21	25.6
Posterior horn	41	50
ACL		
Complete tear	31	64.5
Partial tear	17	35.4
PCL		
Complete tear	5	71.4
Partial tear	2	28.5

Table 4 shows the number of times ACL and PCL injuries were reported injured in this study. PCL injury was the least reported positive finding on MRI especially partial tears of PCL. ACL tears were frequently noted especially complete ACL tears (64.5%) with partial tears also commonly reported (35.4%).

Arthroscopy reporting (Gold Standard)/Pattern of intra-articular injuries: In this study diagnostic arthroscopy of the knee was the “gold standard” to which clinical examination and MRI was compared to. Table 5 shows the pattern of intra-articular injuries of the knee.

The commonest intra-articular injuries were tears of the posterior horn of the medial (73.3%) and lateral (60%) meniscus. The posterior cruciate ligament was the least injured whether with partial or complete tears.

Table 5
Pattern of meniscal injuries/arthroscopic meniscal injury findings

	Medial		Lateral	
	No.	(%)	No.	(%)
Anterior horn	3	4	13	15.2
Body	17	22.6	21	24.7
Posterior horn	55	73.3	51	60
Total	75 (46.8%)		85 (53.1%)	

Table 6
Pattern of cruciate ligament injuries/arthroscopic cruciate ligament injury findings

	ACL		PCL	
	No.	(%)	No.	(%)
Complete tear	33	84.6	8	88.8
Partial tear	6	15.3	1	11.1
Total	39 (81.2%)		9 (18.7%)	

Anterior horn injuries were not very common. The anterior horn of the lateral meniscus (15.2%) is more often injured than the medial meniscus (4%). However, posterior horn of the medial meniscus (73.3%) was more often injured than the posterior horn of the lateral meniscus (60%). Meniscal body tears were common laterally (22.6%) than medially (24.7%). Comparing lateral and medial meniscus tears on its own, lateral meniscus injuries (53.1%) were more than medial meniscus injuries (46.8%) in this study population. Overall meniscal injury was common than cruciate ligament injuries.

ACL injuries (39 knees) were noted to be more common compared to PCL injuries (9 knees). It is also noted that partial ACL injuries was highly reported on MRI (35.4%) compared to knee arthroscopy (15.3%). Only 2 complete ACL tears were missed on MRI i.e. 31 complete ACL tears on MRI and 33 complete tears on arthroscopy.

PCL injuries were not very common in this study population whereby only 8 patients were found to have a complete tear and only 1 patient had a partial tear.

Sensitivity analysis of clinical examination: The True positive, True negative, False positive and False negative were then tabulated using SPSS using the appropriate software principles. The clinical examination data was compared with the arthroscopy findings and the sensitivity analysis was done. The total numbers and percentages are shown in Table 7.

Table 7
Sensitivity analysis of clinical examination

	True positive		True negative		False positive		False negative	
	No.	(%)	No.	(%)	No.	(%)	No.	(%)
Medial joint-line tenderness	47	32.4	60	41.4	17	11.7	21	14.5
Lateral joint-line tenderness	38	26.2	69	47.6	17	11.7	21	14.5
Medial McMurrays test	35	24.1	71	49	6	4.1	33	22.8
Lateral McMurrays test	26	17.9	79	54.5	7	4.8	33	22.8
Medial Apleys test	18	12.4	71	49	6	4.1	50	34.5
Lateral Apleys test	18	12.4	79	54.5	7	4.8	41	28.3
Medial Thessalys test	40	27.6	69	47.6	8	5.5	28	19.3
Lateral Thessalys test	30	20.7	76	52.4	10	6.9	29	20
Anterior drawer test	27	18.6	107	73.8	5	3.4	6	4.1
Posterior drawer test	7	4.8	134	92.4	3	2.1	1	0.7
Anterior Lachman test	23	15.9	108	74.5	4	2.8	10	6.9
Posterior Lachman test	7	4.8	136	93.8	1	0.7	1	0.7

	Sensitivity	Specificity	PPV	NPV	Accuracy	Missed diagnosis
Medial joint-line tenderness	69.1%	77.9%	73%	74%	47%	31%
Lateral joint-line tenderness	64.4%	80.2%	69%	77%	41%	36%
Medial McMurrays test	51.5%	92.2%	85%	68%	47%	49%
Lateral McMurrays test	44.1%	91.9%	79%	71%	41%	56%
Medial Apleys test	26.5%	92.2%	75%	59%	47%	74%
Lateral Apleys test	30.5%	91.9%	72%	66%	41%	69%
Medial Thessalys test	58.8%	89.6%	83%	71%	47%	41%
Lateral Thessalys test	50.8%	88.4%	75%	72%	41%	49%
Anterior drawer test	81.8%	95.5%	84%	95%	23%	18%
Posterior drawer test	87.5%	97.8%	70%	99%	6%	13%
Anterior Lachman test	69.7%	96.4%	85%	92%	23%	30%
Posterior Lachman test	87.5%	99.3%	88%	99%	6%	13%

Using the appropriate formulae as discussed earlier in the methodology section, the sensitivity, specificity, PPV, NPV, accuracy and missed diagnosis was calculated. It was noted that the most sensitive test for meniscal injury (whether medial or lateral) was joint-line tenderness (i.e. 69.1% and 64.4% respectively). The much talked about Thessaly test sensitivity was 58.8% and 50.8% respectively for medial and lateral menisci. McMurray's test sensitivity was at 51.5% and 44.1% respectively. The least sensitive test was the apleys test at 26.5% and 30.5% respectively.

On the contrary the specificity of joint-line tenderness was the least among all the tests at 77.9% and 80.2% for medial and lateral meniscus respectively. The specificity of McMurrays and Apleys test was above 90%. The specificity of

Thessalys test was at 89.6% and 88.4% respectively for medial and lateral meniscus.

For ACL tears the sensitivity and specificity of the anterior drawer test was at 81.8% and 95.5% respectively. The Lachman test for ACL tear had 69.7% sensitivity and 96.4% specificity. PCL tears had similar results with the posterior drawer test at 87.5% sensitive and 97.8% specific. The posterior Lachman test was 87.5% sensitive and 99.3% specific.

Sensitivity analysis of MRI reporting: MRI reporting was compared with diagnostic knee arthroscopy and the True positive, True negative, False positive and False negative were calculated using SPSS and Table 8 was generated. The sensitivity, specificity, PPV, NPV, accuracy and missed diagnosis was then calculated using the appropriate formulas discussed earlier.

Table 8
Sensitivity analysis of MRI reporting

	True positive		True negative		False positive		False negative	
	No.	(%)	No.	(%)	No.	(%)	No.	(%)
Medial meniscus tear	54	37.2	61	42.1	16	11	14	9.7
Lateral meniscus tear	41	28.3	64	44.1	22	15.2	18	12.4
Complete ACL injury	17	11.7	98	67.6	14	9.7	16	11
Complete PCL injury	5	3.4	137	94.5	0	0	3	2.1
Partial ACL injury	1	0.7	123	84.8	16	11	5	3.4
Partial PCL injury	0	0	142	97.9	2	1.4	1	0.7

	Sensitivity	Specificity	PPV	NPV	Accuracy	Missed diagnosis
Medial meniscus tear	79.4%	79.2%	77%	81%	47%	21%
Lateral meniscus tear	69.5%	74.4%	65%	78%	41%	31%
Complete ACL injury	51.5%	87.5%	55%	86%	23%	48%
Complete PCL injury	62.5%	100.0%	100%	98%	6%	38%
Partial ACL injury	16.7%	88.5%	6%	96%	4%	83%
Partial PCL injury	0.0%	98.6%	0%	99%	1%	100%

The sensitivity of MRI in diagnosing meniscal tears was 79.4% and 69.5% for medial and lateral meniscus respectively. The specificity was 79.2% for the medial meniscus and 74.4% for the lateral meniscus. Interestingly, the accuracy of medial and lateral meniscus tears on clinical examination and MRI was the same i.e. 47% for medial meniscus and 41% for lateral meniscus.

The sensitivity and specificity of reporting of a complete ACL tear on MRI was 51.5% and 87.5% respectively. For a partial ACL tear the sensitivity was 16.7% and specificity was 88.5%. For PCL injuries the sensitivity for complete tears was 62.5% and for partial tears was 16.7%. The specificity for complete PCL tears was 100% and partial PCL tears was 88.5%.

DISCUSSION

This study set out to establish the accuracy of physical examination and MRI reporting compared to diagnostic knee arthroscopy which is considered the "gold standard". Overall, the accuracy of both MRI and physical examination has shown mixed results compared to previous studies done elsewhere in the world. From the outset, the intentions of carrying out this study was to ascertain the effectiveness of physical tests and MRI reports in our setup where we do not have musculoskeletal radiologists. The strong points of this study were that the study population was larger than previous studies, use of 3 Tesla MRI and comparing the new Thessaly's test with the other knee examination tests. The mean age of

the patients recruited was 30 years old and this was expected as the patients who sustain this injury are mostly active young patients who mostly had sports related injuries. More males (60.7%) than females (39.3%) sustained these intra-articular knee injuries. The right knee (53.1%) was more injured compared to the left knee (49%). A study done in Mulago Hospital by Kajja *et al.* (4), had a mean patient age at 38.3 years. The classic paper by surgery *et al* (9) in Greece had an average patient age of 29.4 years and men were the majority. A similar study done in 2010 by Nickinson *et al.* (10) had more males (64%) than females (36%) and the right knee (53%) was affected more than the left (47%) with an average patient age of 40 years. Overall, this study population was younger and more males were affected.

The pattern of knee intra-articular injuries was also noted and meniscal injury was the commonest knee injury followed by anterior cruciate ligament injuries. In this study population lateral meniscus injury (53.1%) was more common than medial meniscus (46.8%) injury overall. The posterior horn was the commonest meniscal part injured at 73.3% for the medial meniscus and 60% for the lateral meniscus. Other studies had different results, whereby medial meniscal tears were more common than lateral meniscus (3,9,11). The high number of lateral meniscus injury compared to the medial meniscus would probably attribute to the large number of ACL injuries in this study population.

In this study the clinical tests done are showing better accuracy (47%) for the medial compartment of the knee compared to the lateral compartment (41%). Among the specific tests done in this study, joint-line tenderness test is the most sensitive test for both medial (69.1%) and lateral (64.4%) meniscus tears which is in keeping with previously done studies (9,12,13). The Apleys test was the least sensitive (26.5% medial; 30.5% lateral) but this could be attributed to improper examination technique. The classic Apleys test is done on an examination table that is 2 feet high and this test is rightfully abandoned by many orthopaedic surgeons (14). The Thessalys test at 20 degrees had better sensitivity (58.8% medial; 50.8% lateral) than McMurrays and Apleys test in this study. However, it is not as good as what was reported in the original article by Karachalios *et al.* (9) (89.2% medial; 91.9% lateral) but is in keeping with the study by Blyth *et al.* (15) and Eren (16) who reported sensitivity of 59.3% for medial meniscus and 31.6% for the lateral meniscus.

For the diagnosis of anterior cruciate ligament injury by clinical examination, the sensitivity and specificity of both anterior drawer test (81.8% sensitivity; 95.5% specificity) and Lachman test (69.7% sensitivity; 96.4% specificity) is similar to previously done studies (17,18). The number of patients reported to have posterior cruciate ligament

injury is significantly lower than the other injuries reported (9 patients). This number may be low because PCL injuries are mostly managed non-operatively unless it's a combined injury and since the inclusion criteria for this study was for patients who were being operated on, this may have missed out isolated PCL injuries.

In Kenya there is no registered musculoskeletal radiologist as per the 2018 Medical board retention register (<http://medicalboard.co.ke/online-services/retention/>), therefore, the MRI reporting was done by "general" radiologists and this reflects the sensitivity and specificity of knee MRI. Overall, the sensitivity and specificity of intra-articular knee injuries is lower than the studies done in a set-up with a dedicated musculoskeletal radiologist. The accuracy of meniscal tear of the medial and lateral meniscus is at 47% and 41% respectively and on the other hand the systematic review by Crawford *et al.* (5) show an accuracy of 86.3% for the medial meniscus and 88.8% for lateral meniscus. Interestingly, the accuracy of ACL in this systematic review was at 93.4% but in our study we find the accuracy of 23% for complete ACL tears and 4% for partial ACL tears. These numbers are significantly lower probably due to a large number of reports suggesting a partial ACL tear rather than a complete tear. The use of a 3 Tesla MRI did not improve the accuracy.

LIMITATIONS

- (i) MRI interpretation may vary in chronic and acute injuries.
- (ii) Difficulty in examination of an uncooperative patient or a painful knee.
- (iii) Unable to include patients those who do not have an MRI and/or not scheduled for arthroscopic surgery.
- (iv) MRI interpretation and diagnostic arthroscopy done by different radiologists and surgeons respectively.

CONCLUSION

This study indicates that the diagnosis for intra-articular knee injuries is still a challenge in our setup and both clinical examination and MRI reports have their limitations. Lateral meniscus tears are more common than medial meniscus tears and posterior horn is the part of the meniscus most commonly affected. Clinical tests and MRI reports are equally accurate in diagnosing meniscal tears. Clinical tests to diagnose cruciate ligament tears are more accurate than MRI reports. The Thessaly test is not more accurate than the other examination tests in diagnosing meniscal tear. This study guides improvement and will help us surgeons in responding to patients queries on accuracy of MRI reporting in an objective manner.

RECOMMENDATIONS

- (i) A combination of physical examination and MRI should be used to come to an accurate diagnosis.
- (ii) A larger study that is a randomized controlled diagnostic trial should be carried out to improve quality of data.

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