

A Study to Find out the Prevalence Rate of Meniscal Injuries in Patients Presenting with Mild and Moderate Grade (Kellgren Lawrence Grade 2 and 3) Knee Osteoarthritis

Arjun Jagadish Bhoomraddi¹, Jagadish V. Bhoomraddi², Mahantesh Patil³

¹Fellowship in Ganga Hospital, Dept. of Orthopaedics, Coimbatore, Tamil Nadu, India

²Assistant Professor, Dept. of Orthopaedics, KHPIMS, Gadag, Karnataka, India

³Professor & Head, Dept. of Orthopaedics, KHPIMS, Gadag, Karnataka, India

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Corresponding Author: Dr. Arjun Jagadish Bhoomraddi

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Abstract:

However, there may be sparse data concerning the consequences of diverse sorts of meniscal changes as visible in MRI, on cartilage loss in subregional area in topics with and with-out osteoarthritis. Most of the research have focussed on the impact of various sorts of damage to the meniscal area on loss of the cartilage post arthroscopic meniscectomy. Also, we've a totally scarce data concerning the area of damage to the meniscus on loss of the cartilage withinside the equal compartment. MRI has excessive sensitivity and specificity in detecting the meniscal damages. MRI is precise and extensively utilized in evaluation of the articular cartilage for the measurement of the cartilage loss longitudinally in the knee joint. Hence, the aim of this study was to evaluate the prevalence of degenerative meniscal injuries in knee osteoarthritis by Magnetic Resonance Imaging

Keywords: Meniscectomy, MRI, Knee Osteoarthritis.

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Introduction

The major causes of morbidity worldwide is ageing and the obesity. The highly prevalent amongst the treated medical condition globally is Osteoarthritis. (for example, 3532 per 100 000 people in the United States) [1]. Clinical examination and radiographs plays a pivotal role in diagnosing osteoarthritis. The studies being conducted in the US and UK⁴ shows that increased age is the significant risk factor and obese people are at more risk. The literature also states that middle age and older aged people are more prone to develop osteoarthritis [2, 3]

Radiographs plays an amazing role in identifying the hard tissue structures like osteophytes, bony outgrowths at the margins of the joints and also narrowed joint space. However soft tissues pathology cannot be identified by the radiographs [4]. MRI performs a pivotal function in analysing the tender tissues which are clinically applicable and performs a critical function in structural development that isn't visualized in radiographs. Additional benefits of MRI includes the recognition of incidental findings in asymptomatic people [5]. With respect to studying about the structure of the knee on MRI, it visualises the most important joint additives like articular cartilage, intra-articular ligaments, synovium, intra articular cartilage, bone marrow, subchondral cysts etc which are not at all

detected by radiographs [6]. Even in the absence of radiographic osteoarthritis, there will be the presence of meniscal pathology. The weight bearing capacity of the knee is hampered when the meniscus is impaired mechanically and this in-turn will create damage in the chondral-articular zone of the same compartment and the subchondral bone.

Methodology

A cross sectional study was performed on the patients visiting the Outpatient Department of orthopaedics at a tertiary care and medical centre, Belagavi. We included a total of 84 symptomatic osteoarthritis patients

Statistical Analysis: The data was subjected to statistical analysis using a Stata 10 software We applied ANOVA or a chi square test. A $P > 0.05$ was considered to give a statistical significance

Inclusion Criteria

- Skeletally mature individuals
- Those presenting with Kellgren and Lawrence grade 2 and 3 knee osteoarthritis
- Those signing the informed consent

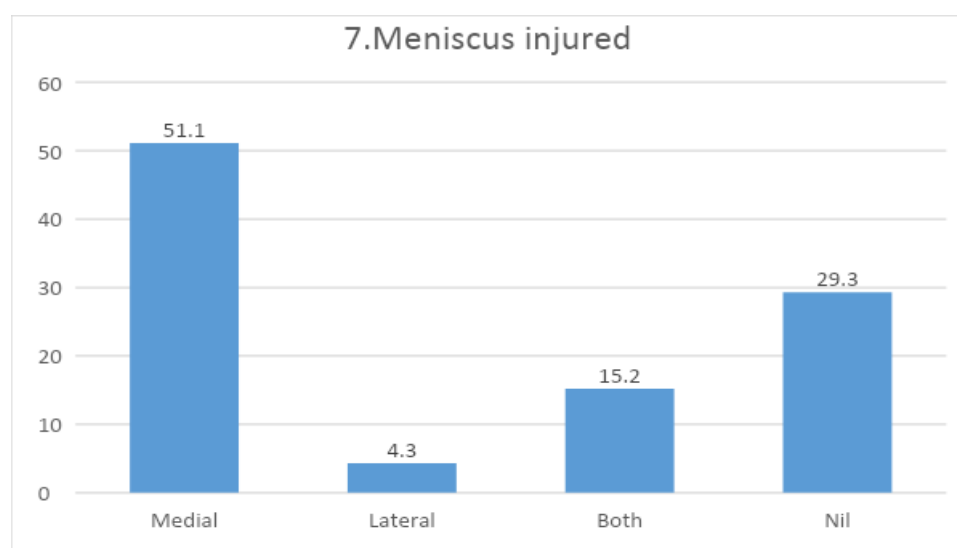
Exclusion Criteria

- Rheumatoid arthritis patients
- Knee pain due to past traumatic history
- Those with a past history of intra-articular steroidal injections

- Previous knee surgery history
- Patients where MRI is contra-indicated

Results**Meniscus injured**

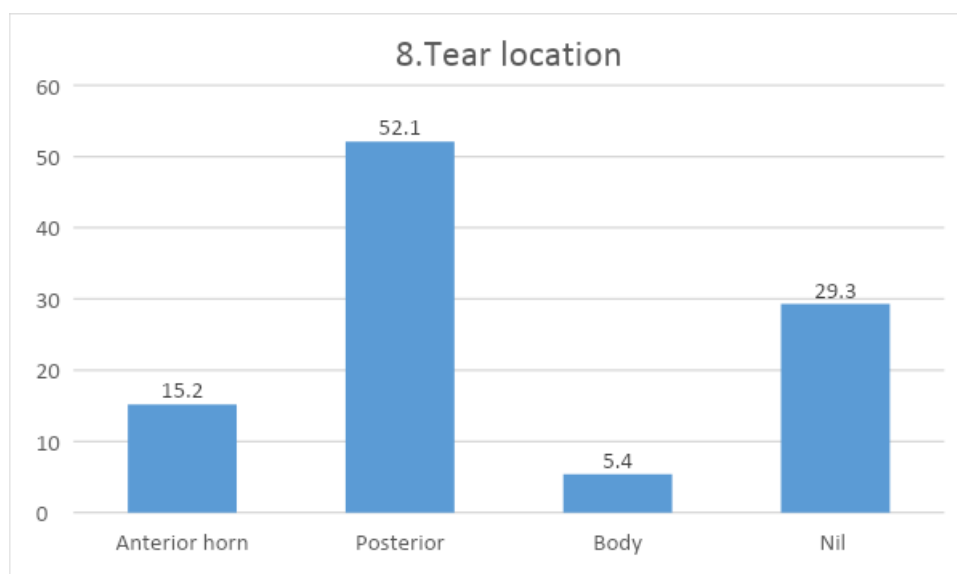
Meniscus	Frequency	Percentage
Medial	47	51.1
Lateral	4	4.3
Both	14	15.2
Nil	27	29.3



Majority 51.1% had medial meniscal injury, 15.2% had both medial and lateral and 4.3% had only lateral meniscal tear.

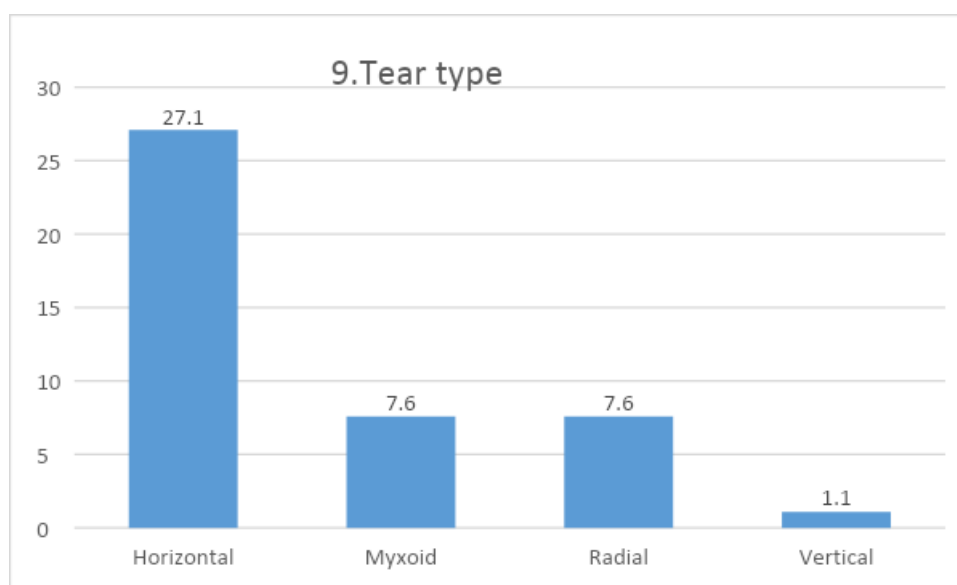
Tear location

Location	Frequency	Percentage
Anterior horn	14	15.2
Posterior	48	52.1
Body	5	5.4
Nil	27	29.3



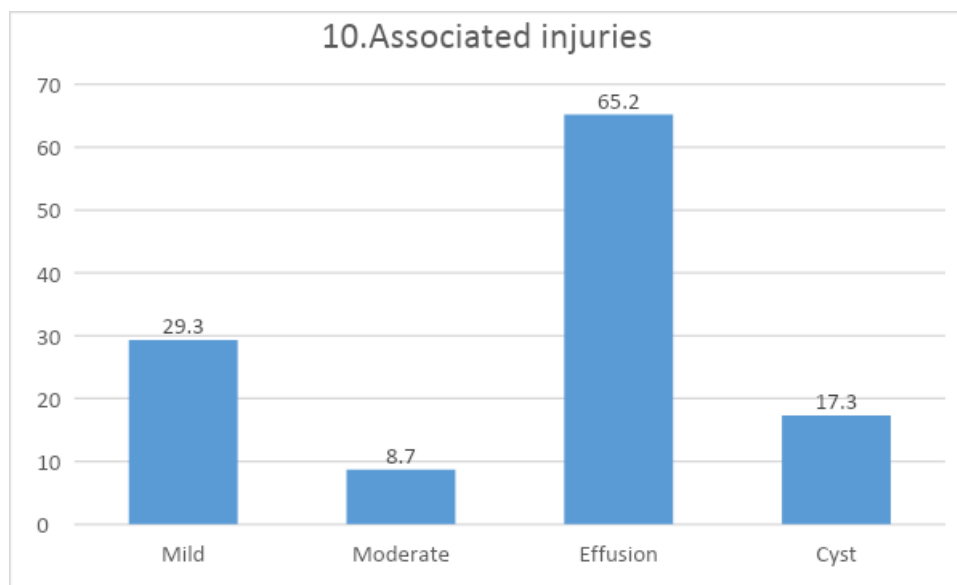
Majority 52.1% had posterior tear, 15.2% had anterior tear and 5.4% had body tear.

Tear type		
Type	Frequency	Percentage
Horizontal	25	27.1
Myxoid	7	7.6
Radial	7	7.6
Vertical	1	1.1



27.1% had horizontal tear type, 7.6% had myxoid and radial type and 1.1% had vertical tear type.

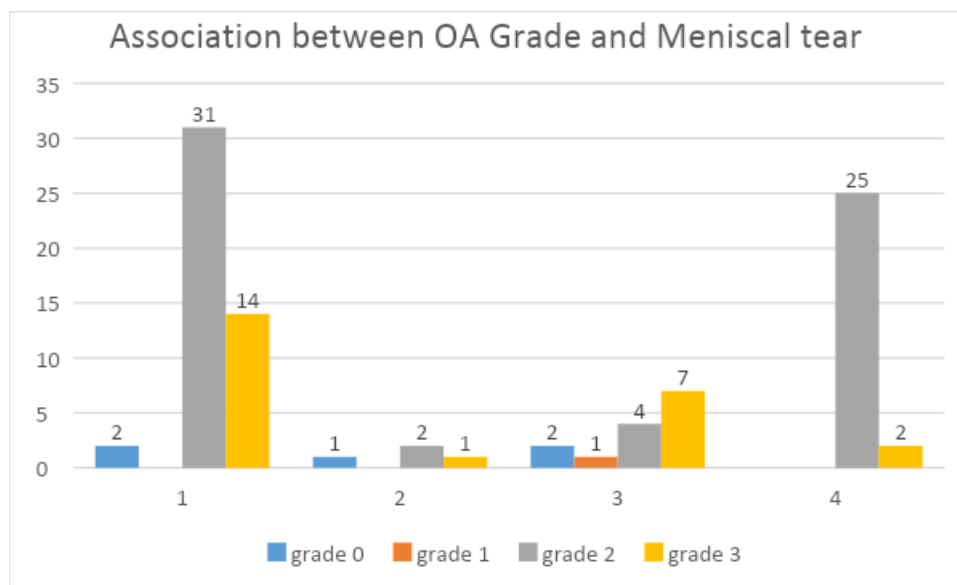
Associated injuries		
Injury	Frequency	Percentage
Mild	27	29.3
Moderate	8	8.7
Effusion	60	65.2
Cyst	16	17.3



65.2% had effusion, 29.3% had mild, 17.3% had cyst and 8.7% had moderate injuries.

Association between OA Grade and Meniscal tear

O.A. GRADE	Meniscus tear				Total
	Medial	Lateral	Both	Nil	
0	2	1	2	0	5
1	0	0	1	0	1
2	31	2	4	25	62
3	14	1	7	2	24
Total	47	4	14	27	92



It shows that medial tear were more as compared to lateral tear. As OA grade increases tear rate also increases.

Applying chi square test, chi square value=24.7, degree of freedom 9 and p value is 0.003. as p value is <0.05, shows statistical significance.

Discussion

Age distribution: Mean age was 53.1 + 5.5 years, ranging from 41 to 65 years. Majority 63% were in age group of 50 to 60 years. Guermazi A et al [7] showed that mean age was 62.3 years. Study by P. Kaukinen et al [8] showed that mean age was 59.9 years. Study by Crema et al [9] showed that mean age was 57.3 years.

Gender Distribution: Majority 51% cases were females and 49% were males. Guermazi A et al [7] showed that 55% were females and 45% were males. Study by P.Kaukinen et al [8] showed that 61.3% were females and 38.7% were males. Study by Crema et al [9] showed that all 100% were females.

Side Affected: In majority of cases 52.2% right side was affected. Study by Crema et al⁹ showed that mainly right side was affected. Same results were seen in present study.

Chief complaints and type of injury: Only 3.3% cases had chief complaints. Among them pain and swelling, pain since 1 month and pain in 1 week was seen. 28.2% had Ac On Chronic Knee Pain, 47.8% had chronic knee pain, 8.7% occasional knee pain, 4.3% had trauma and 2.2% had twisting knee injury. Guermazi A et al [7] showed that 29% cases had knee pain. Study by P.Kaukinen et al [8] showed that 55% had knee pain.

OA grade: Majority 67.3% had OA grade 2, 23.2% had OA grade 3, 5.4% had grade 0 and 0.9 had grade 1. Study by P.Kaukinen et al [8] showed that 2.5% had grade 0, 26.3%, 25%, 25% and 21.3% had grade 1, 2,3,4 respectively. Study by Crema et al [9] showed that 30% had grade 2, and 28% had grade 3. Similar findings that as grading increases the severity of the disease also increase were seen.

Meniscal tear and type: Majority 51.1% had medial meniscal injury, 15.2% had both medial and lateral and 4.3% had only lateral meniscal tear. Majority 52.1% had posterior tear, 15.2% had anterior tear and 5.4% had body tear. 27.1% had horizontal tear type, 7.6% had myxoid and radial type and 1.1% had vertical tear type. Culvenor AG [10] showed that 24% had cartilage defect and 10% had meniscal tear. Guermazi A et al [7] showed that 33% had lateral side affected, 24% had medial meniscal injury. Study by P.Kaukinen et al [8] showed that 37.5% had knee injury, 27% had medial meniscal tear, 19% had lateral and 9% had anterior and 31% had posterior. Study by Crema et al [9] showed that 59% had medial meniscal injury, 9% had horizontal, 2% had vertical etc. majority 55% posterior injury. Horga, L.M., et al [11] showed that 30% had meniscal tear. 23% had horizontal, 2% had vertical etc.

Association between OA Grade and Meniscal tear: 65.2% had effusion, 29.3% had mild, 17.3% had cyst and 8.7% had moderate injuries. Guermazi A et al [7] showed that 32% had effusion of joint.

Present study shows that medial tear were more as compared to lateral tear. As OA grade increases tear rate also increases. Applying chi square test, chi square value=24.7, degree of freedom 9 and p value is 0.003. as p value is <0.05, shows statistical significance. Study by Crema et al [9] showed similar results as present study.

Conclusion

Present study showed that osteoarthritic changes are common in elderly age group. In these patients, radiological evidence of OA needs to be detected early. The OA grading investigated on MRI is necessary. Thus, every patient coming to OPD having knee pain and of elderly age group should be evaluated for OA knees on MRI.

Early diagnosis and treatment helps the patient to halt back the disease and avoid further complication. The main complication is immobilization leading to obesity further leading to increased knee pain, thus patient enters a vicious circle.

MRI being a good tool for investigating the disease, Orthopedician should advice the patients with knee pain for further workup on regular basis just to have a good prognosis of the disease.

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