



## Pattern of Meniscal Tears in Stable Knee

Authors

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### Abstract

**Introduction:** Meniscal tears commonly occur in combination with ACL tears or other intra-articular or extra-articular lesions. Numerous studies have evaluated the occurrence of these injuries. However, there is little information on isolated meniscal tears. The main purpose of this study was to register the characteristics of isolated meniscal tears (type and location) with intact cruciate ligaments.

**Materials and Methods:** This study was in government bone and joint surgery hospital, Government medical college srinagar. This study consisted of a total 300 case, over a period of three years. All patients had undergone clinical examination, MRI knee and subsequent diagnostic knee arthroscopy.

**Results:** In our study 27% were horizontal tear, 16% bucket handle tear, 12% longitudinal tear, 19% oblique tear, 18% radial tear and 8% complex tear.

**Conclusion:** In patients with isolated meniscal tears horizontal appears to be more prominent. Tear in peripheral areas have better results. Longitudinal tears and bucket handle are better treated with arthroscopy. Thus type and location of meniscal tears are useful for predicting the most likely surgical procedures.

### Introduction

Although initially thought to be a functionless, vestigial remnant of a leg muscle, the meniscus is now recognized as an integral component of the complex function of the knee<sup>1,2</sup>. The menisci act as a joint filler, compensating for gross incongruity between femoral and tibial articulating surfaces. The menisci have an important role in load bearing and shock absorption within the joint<sup>3</sup>. They have a proprioceptive role and aid in the lubrication and nutrition of the articular cartilage. Menisci provides secondary restraint for knee stability<sup>5</sup> and increases area of contact<sup>4</sup>. Medial meniscus stabilizes against anterior translation of the tibia (particularly in ACL deficient knee), thus subject to greater shear forces in ACL deficient knee<sup>4</sup>.

Lateral meniscus more mobile and less likely to experience shear forces.

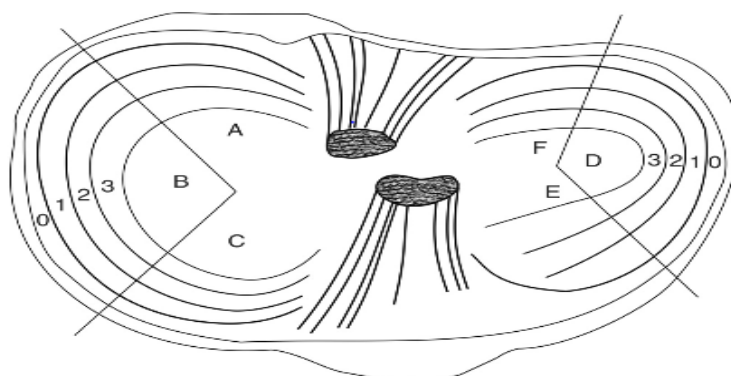
Meniscal tears commonly occur in combination with ACL tears or other intra-articular or extra-articular lesions. Numerous studies have evaluated the occurrence of these injuries<sup>6,7,8,9</sup>. However, there is little information on isolated meniscal tears. The main purpose of this study was to register the characteristics of isolated meniscal tears (type and location) with intact cruciate ligaments.

### Material and Method

This study was in government bone and joint surgery hospital, Government medical college srinagar. This study consisted of a total 300 case, over a period of three years. All patients had

undergone clinical examination, MRI knee and subsequent diagnostic knee arthroscopy. Physical examination include joint line tenderness, McMurray’s test, Apley’s test, squat test and thessaly’s test. Each meniscal tear was prospectively examined according to type and location using Cooper’s classification<sup>10</sup> (Figure 1). This system divides the meniscus into 3 radial and

4 circumferential zones. The radial zones are denoted as A, B, and C for the medial and D, E, and F for the lateral meniscus. Each zone refers to one third of the meniscus, with A and F being the posterior third for the medial and lateral meniscus, respectively. The 4 circumferential zones are 0, meniscocapsular junction; 1, outer third; 2, middle third; and 3, inner third



**Figure 1.** Meniscal zones of the knee according to Cooper’s classification system. The radial (A–F) and circumferential (0–3) zones of the medial and lateral meniscus.

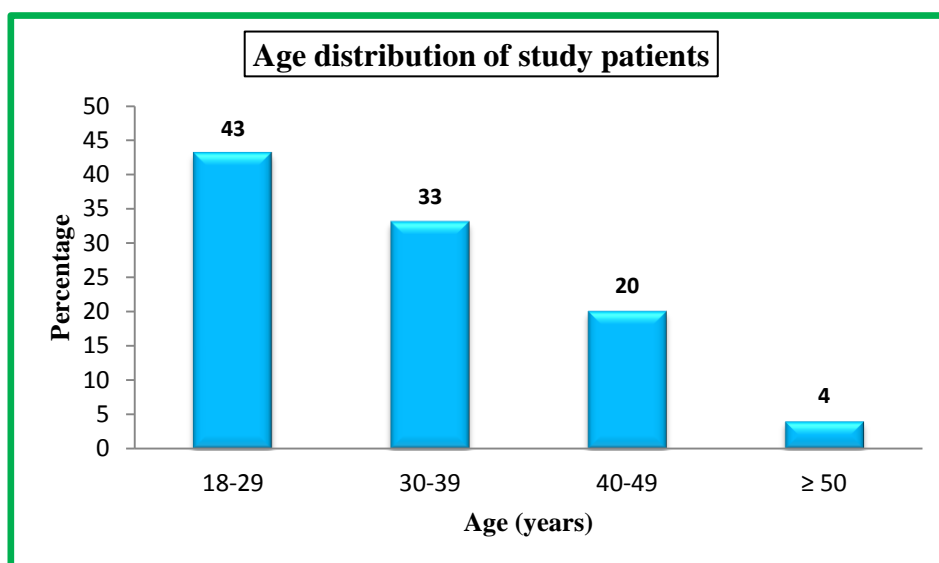
Meniscal tears were classified into different types e.g. Radial tear, longitudinal tear, horizontal tear, complex tear

**Results**

**Table 1:** Age distribution of study patients

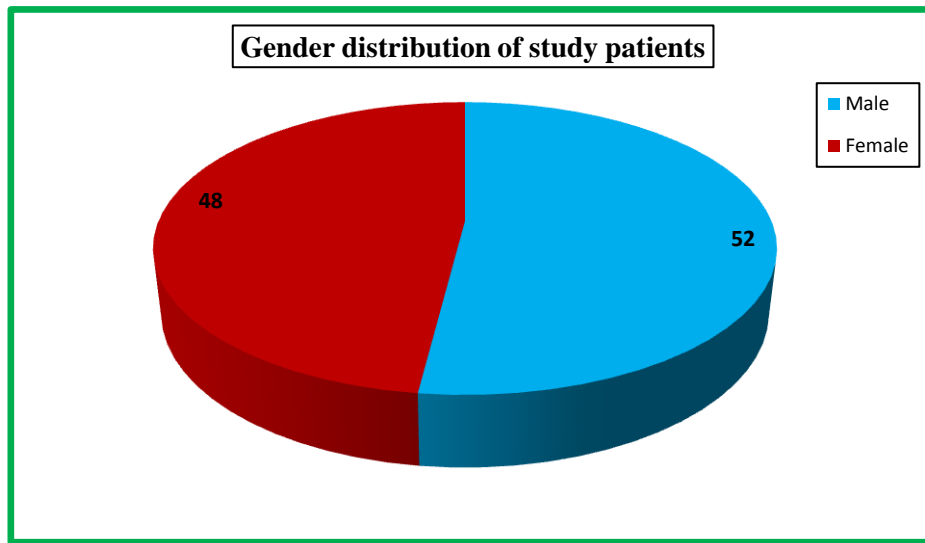
Age (years)	Frequency	Percentage
18-29	129	43
30-39	99	33
40-49	60	20
≥ 50	12	4
Total	300	100

Mean±SD=33.0±8.17



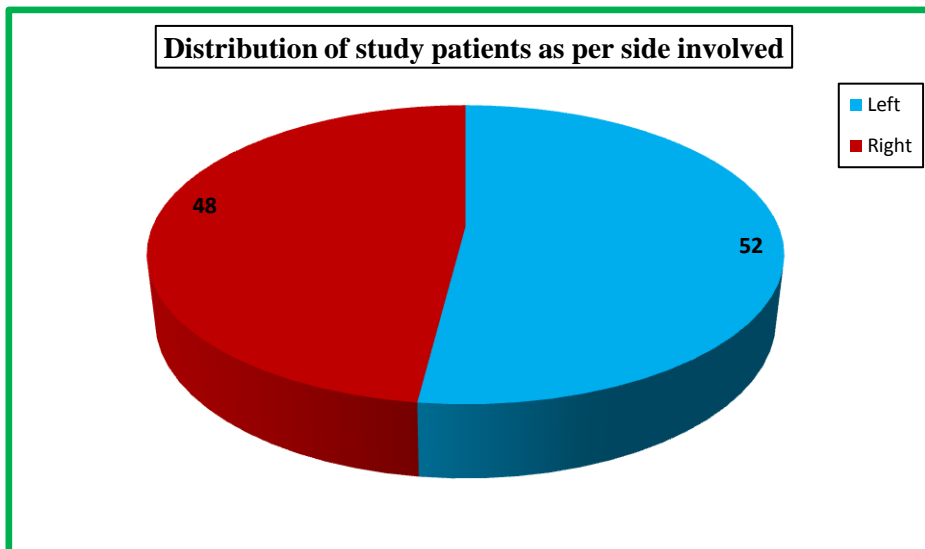
**Table 2:** Gender distribution of study patients

Gender	Frequency	Percentage
Male	156	52
Female	144	48
Total	300	100



**Table 3:** Distribution of study patients as per side involved

Side Involved	Frequency	Percentage
Left	156	52
Right	144	48
Total	300	100



**Table 6:** Type of tear in study patients according to MRI

Type of Tear	Frequency	Percentage
HORIZONTAL TEAR	117	39
Longtudinal Tear	39	13
Bucket handle tear	30	10
Oblique Tear	54	18
Radial Tear	48	16
Complex Tear	12	4

**Table 7:** Showing part of the meniscus involved in study patients according to MRI

Part of Meniscus Involved	Frequency	Percentage
Posterior Horn	213	71
Anterior Horn	33	11
Body	54	18

**Table 9:** Type of tear in study patients according to Arthroscopy

Type of Tear	Frequency	Percentage
Horizontal Tear	81	27
Bucket handleTear	48	16
longitudnal Tear	36	12
Oblique Tear	57	19
Radial Tear	54	18
Complex Tear	24	8

**Table 10:** Showing part of the meniscus involved in study patients according to arthroscopy

Part of meniscus involved	NUMBER	PERCENTAGE
Posterior horn	207	69
Anterior horn	30	10
Body	63	21

### Discussion

IN our study out of 300 patients 52% were males and 48 %females with an average age of 33(range 18-50). Elvenes<sup>11</sup>et al in their study of 40 cases found mean age of 32. Weinstabl<sup>12</sup> et at in their study of 823 cases found mean age of 40.

In this study Fifty-two percent patients had left knee involved while forty-eight percent had right knee.Tregonning<sup>13</sup> RJ et al in their study had involvement of right and left knee in 48.9% and 51.1% respectively.

In our study majority 65% of the tears involved were medial meniscus .Grevitt et al<sup>14</sup> (1992) in their study 55% were medial meniscal tear. The higher percentage of medial meniscal tear can be explained because medial meniscus is firmly attached to the tibia especially at the posterior horn. lateral meniscal tears occurs slightly more frequently with ACL injuries.

In our study 27% were horizontal tear, 16% bucket handle tear, 12% longitudinal tear, 19% oblique tear, 18% radial tear and 8 % complex tear.

Our study is in consistence with the study done by Dasic Z et al although not correlating with bucket handle tear.

STUDY	BHT	RT	OT	LT	HT	COMPLEX
DASIC Z et al <sup>15</sup> (2011)	37%	9%	16%	17%	13%	8%
Costa et al <sup>16</sup> (2004)	13%	17%	13%	2%	10%	45%
present	16%	18%	19%	12%	27%	8%

### Conclusion

In patients with isolated meniscal tears horizontal appers to be more prominent.Tear in peripheral areas have better results.longitudinal tears and bucket handle are better treated with arthroscopy. Thus type and location of meniscal tears are useful for predicting the most likely surgical procedures.

### References

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