

Anterior Cruciate Ligament Insufficiency: Delay in Surgery and Its Association with Spectrum of Intraarticular Knee Lesions

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Abstract: ACL injuries are extremely common^{1,2}. Concurrent Meniscal and Chondral Injuries in ACL injured knees has been reported by many authors and remains a major cause of concern and prognostic factor in long term results³⁻⁵. This Cross sectional study of arthroscopic ACL reconstruction of patients aged 15-50 yrs presents the spectrum of meniscal & chondral lesions, and variation of the severity of these lesions in relation to time since initial injury. We found that a) Medial meniscal injuries had a significant association with delay in ACL surgery ($P = 0.007$), RR = 1.593(95% CI of 1.131 -2.244). b) Medial-sided articular injuries were more associated than lateral, with medial tibial condyle RR =5.021(95% CI of 1.119 -22.534) & medial femoral condyle RR =2.72(95% CI of 1.119 -6.611). c) Lateral tibial condylar lesions were associated with RR=3.264(95% CI of 1.253 - 8.503). d) Lateral meniscal injuries though fairly prevalent weren't associated with delay. e) Chondral lesions of patella(14.2%), Trochlea (4.7%)& Lateral femoral condyle(5.7%) though present, didn't have significant association with delay in surgery. The delay in surgery was also found to have significant association with the presence of intraarticular knee lesions and their number (<3lesions />3 lesions) RR 1.177(CI 1,027-1.349),P-.02

Keywords: ACL injury, Arthroscopic reconstruction, Meniscal lesions, Chondral lesions, surgical delay, Intraarticular knee lesions

I. Introduction

ACL reconstruction is a commonly performed surgery^{1,2}. Despite a 'typical' mechanism of injury leading to ACL rupture⁶⁻⁸, poor rate of initial diagnosis, delay in surgery & its consequences are extremely common⁹⁻¹¹. Concurrent Meniscal and Chondral Injuries in ACL injured knees has been reported by many authors¹²⁻²¹ and remains a major cause of concern and prognostic factor in long term results³⁻⁵. Many studies have tried to associate delay in surgery to chondral & meniscal lesions necessitating additional procedures during ACL reconstruction surgery. This study attempts to present the meniscal & chondral lesions & variation of the severity of these lesions in relation to time since initial injury, suggesting ideal timing of ACL reconstruction surgery. It will help in patient counselling before surgery

II. Materials And Methods

A total of 106 patients of age 15-50 yrs who underwent ACL reconstruction in our institute between July 2015 & June 2016 were included in this study. Patients with prior knee surgery / prior knee pain / Multi ligament injured knee / Intraarticular knee fractures were excluded. History, Pre operative clinical findings & arthroscopic findings were recorded using a structured questionnaire. Diagnostic arthroscopy was done in all patients and the number & degree of severity of chondral & meniscal injuries were noted at the time of reconstructive surgery. Subjects were grouped into two on the basis of surgical delay (Group1 < 6 months & Group2 > 6 months after the injury). Statistical tests were performed to look for association between number of lesions & also its severity, to the time since injury.

2.1 Statistical Analysis

The association of intraarticular knee lesions to surgical delay was calculated after categorizing the participants into two strata of <6 months delay and >6 months delay. Parameters of medial meniscal injuries, medial-sided articular injuries, lateral -sided articular injuries, lateral meniscal injuries, chondral lesions of patella, trochlea, lateral femoral condyle were analyzed by Chi-Square. Relative risk calculation was done to assess the magnitude of association (SPSS for windows version 17). Statistical significance was set at <0.05

III. Results

3.1 Demographic profile

We had 106 cases and the subtypes by sex and age group is given in and figure 1 and table 1.

Figure 1. Sex distribution

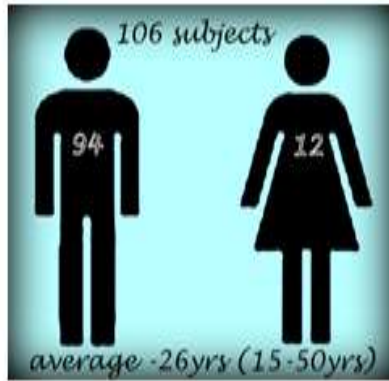
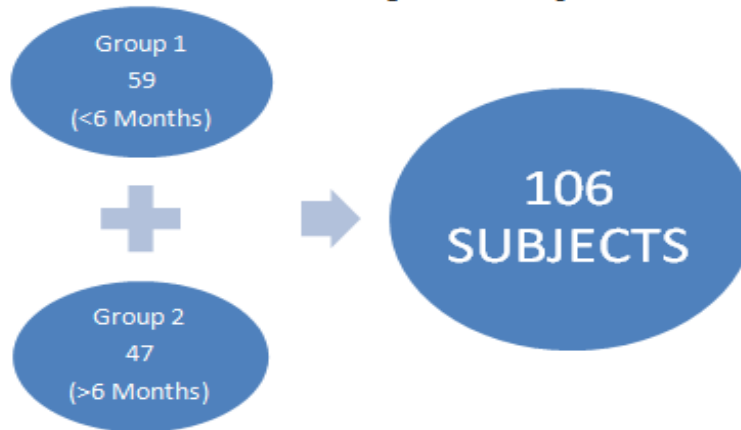


Table 1. Age distribution

Age in years	Frequency	Percent
≤25	42	39.6
26 - 35	33	31.1
>35	31	29.2
Total	106	100.0

Table 2. Categorization of patients



3.2 Chondral and meniscal lesions

Cartilage injuries were classified according to ICRS classification (figure 2) & meniscal injuries were classified based on morphology & severity (Figure 3).the patterns of medial and lateral meniscal injuries are shown in table 4 &5 respectively.

Figure 2. chondral injury classification(ICRS)

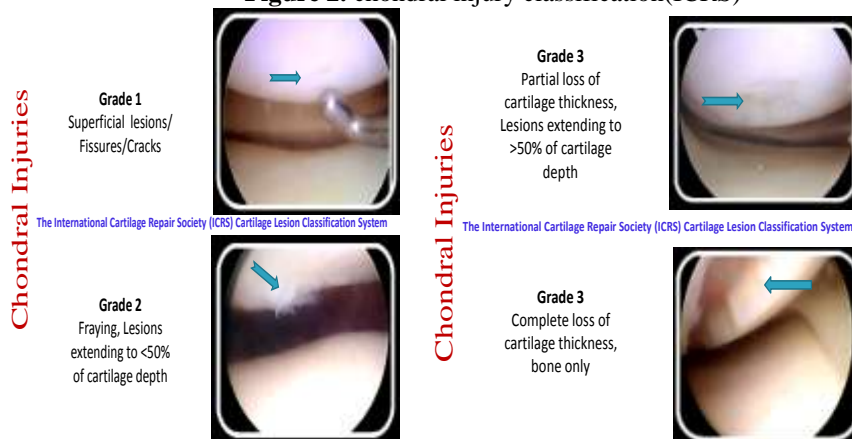


Figure 2. Meniscal injury classification

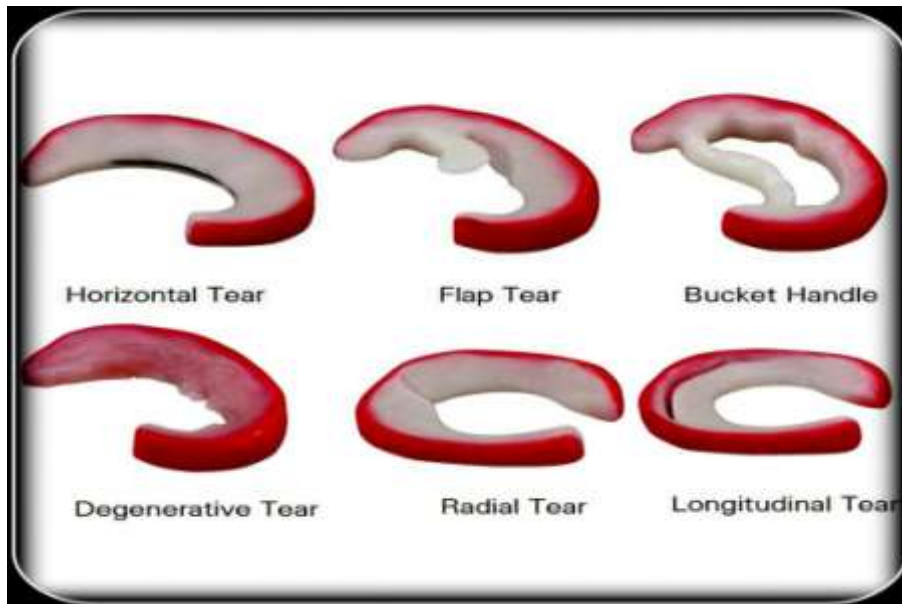
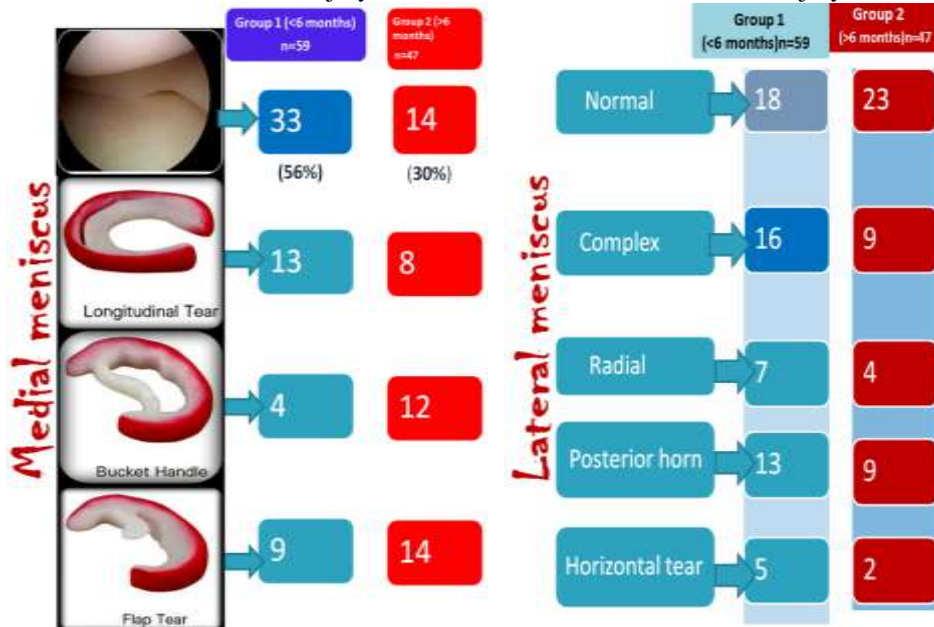


Table 3. Medial Meniscal Injury Pattern Table 4. Lateral Meniscal Injury Pattern



Meniscal injury	Group 1	Group 2
Absent	33(56%)	14(30%)
Present	26(44%)	33(70%)


Meniscal injury	Group 1	Group 2
Absent	18(30%)	23(49%)
Present	41(70%)	24(51%)

(P = 0.007), RR = 1.593(95% CI of 1.131 -2.244

(P = 0.053) RR= 0.714 (95% CI of 0.494 -1.032)

Medial meniscal injuries were present in 70% of group 2 subjects as compared to 44% of group 1 (p=.007). lateral meniscal injuries had no significant association to delay in surgery. The medial sided chondral injury patterns showed significant association to delay as compared to lateral side (Table5)with medial tibial condyle RR =5.021(95% CI of 1.119 -22.534) & medial femoral condyle RR =2.72(95% CI of 1.119 -6.611). Lateral tibial condyle was associated with RR=3.264(95% CI of 1.253 - 8.503). 45 out of 47 patients in group2 had intraarticular knee lesions with p value of 0 .025.

Table 5. Chondral injury patterns



	Gp1	Gp2	P value
patella	7(12%)	8(17%)	.449
Trochlea	1(1.7%)	4(8.5%)	.100
Lateral femoral condyle	2(3.4%)	4(8.5%)	.257
Medial femoral condyle	6(10%)	13(27%)	.020
Medial tibial condyle	2(3.4%)	8(17%)	.009
Lateral tibial condyle	5(8.4%)	13(27%)	.017

Complications	≤6 months	>6 months
Absent	11	2
Present	48	45

P=0.025

No of Lesions	≤6 months	>6 months
0	11	2
1	19	17
2	18	11
3	10	7
>3	1	10

IV. Discussion

In this study of 106 subjects with ACL injuries with mean surgical delay of 17.05Months (2wks to 5 yrs), we observed that majority of patients were males (88.7%) and 70% were of <35 years age. 53% of subjects had involvement of left knee. Medial meniscal injuries had a significant association with surgical delay (P = 0.007), RR = 1.593(95% CI of 1.131 -2.244). Longitudinal tears, the most common in subtype of medial meniscal injuries did not increase with surgical delay whereas bucket handle and flap tears increased significantly. Lateral meniscal injuries were fairly prevalent, but however weren't associated with delay. Complex tears were most common in lateral meniscus. This was in concordance with observations of ravi gupta et al and AAOS Medial-sided articular injuries were more associated than lateral, with medial tibial condyle RR =5.021(95% CI of 1.119 -22.534) & medial femoral condyle RR =2.72(95% CI of 1.119 -6.611). Lateral tibial condylar lesions were associated with RR=3.264(95% CI of 1.253 - 8.503).. Chondral lesions of patella(14.2%), Trochlea (4.7%)& Lateral femoral condyle(5.7%) though present, didn't have significant association with delay in surgery. Our observations in 106 patients have limitations in throwing light to association of chondral changes in patella, trochlea and lateral femoral condyle, as compared to some investigators^{4,25-28}, as the numbers in subtypes were minimal for statistical association. Delay in surgery was also found to have significant association with the presence of intraarticular knee lesions and their number (<3lesions />3 lesions) RR 1.177(CI 1,027-1.349),P-.02 .

V. Conclusion

Timing of ACL reconstruction is extremely important. Medial sided chondral & meniscal lesions increased significantly with time since injury. As the fresh lesions & the number of intraarticular lesions increased with surgical delay, early ACL reconstruction is recommended.

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