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Concomitant Chondral Injury and ACL Reconstruction

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Introduction

- **The presence of meniscal and chondral lesions at the time of ACL reconstruction is associated with worse patient outcomes**
- **Purpose of this study is to determine if the presence, grade, and location of associated chondral lesions are predictors of postoperative pain and to assess the risk factors for post-operative pain**



Methods

- Retrospective study
- Electronic health records, including MRI and arthroscopic reports, for 137 patients between January 1, 2018 and March 1, 2021 were examined.
- Variables of interest included:
 - Age
 - BMI
 - Mechanism of injury
 - Interval between injury and surgery
 - Graft type
 - Pre-op Lachman and pivot grades



Methods

- Primary outcome of interest: pain at the most recent follow-up
- Statistics:
 - Chi-square for qualitative variables and postoperative pain
 - Crude odds ratio (OR) of the occurrence of post operative pain was analyzed with logistic regression methods with respect to the cohort of patients younger than 19 years of age



Results

- Patient Characteristics:
 - 137 patients
 - 80 males, 57 females
 - Age ranged from 14-71 years, average age 30.28 ± 13.62



Results

- **A statistically significant difference was noted in the following patient descriptions and the presence of pain:**
 - **Age (<19, 20-39, >40years)**
 - **Mechanism of Injury (Sport vs Non-sport (i.e. fall) vs Gradual Worsening)**
 - **Interval between injury and surgery (<36 months vs >36 months)**
 - **Type of graft (allograft, patellar autograft, semitendinous autograft, quadriceps)**



Table 1. Significant Patient Characteristics and the Presence of Pain

Variables	Number of patients with pain (%)	Number of patients without pain (%)	p-value
Age			
Less than 19 years	7 (16.7)	35 (83.3)	0.026
20 to 39 years	19(30.6)	43(69.4)	
40 years and more	15(45.5)	18(54.5)	
Mechanism of injury			
Sport	20(23)	67(77)	0.012
Non-sport	12(34.3)	23(65.7)	
Gradual worsening	9(60)	6(40)	
Interval between Injury and Surgery Months			
Less than 36 months	35(27.6)	92(72.4)	0.031
36 months and more	6(60)	4(40)	
Graft			
allograft	25(45.5)	30(54.5)	0.005
patellar autograft	11(17.7)	51(82.3)	
semitendinous autograft	1(100)	0(0)	
quadriceps	4(28.6)	10(71.4)	

Results

- Factors related to the occurrence of pain were analyzed with crude odds ratios
- Significant ratios were found when analyzing the following variables:
 - Age
 - BMI
 - Mechanism of Injury
 - Interval between injury and surgery
 - Graft used in reconstruction



Table 2. Significant crude odds ratios and the occurrence of pain

	OR (95% CI)	P-value
Age		
Less than 19 years	Reference	
20 to 39 years	2.21 (0.83 – 5.85)	0.111
40 years and more	4.16 (1.44 – 12.05)	0.008
Body mass index		
Normal	Reference	
Over weight	1.86(0.79 -4.40)	0.157
obesity	3.07 (1.14 – 8.25)	0.027
Mechanism of injury		
Sport	Reference	
Non-sport	1.78(0.74 – 4.12)	0.202
Gradual worsening	5.02 (1.60 – 15.82)	0.006
Interval between Injury and Surgery Months		
Less than 36 months	Reference	
36 months and more	3.94 (1.05 – 14.81)	0.042
Graft		
allograft	Reference	
patellar autograft	0.26(0.112-0.60)	0.002
semitendinous autograft	-	-
quadriceps	0.48(0.13 – 1.72)	0.259

Results

- No significant difference in crude odd ratio was detected when analyzing the relationship between those with a Grade 3 or 4 chondral lesion and post-operative pain
- There was significant relationship between the presence of Grade 3 or 4 chondral lesions and age.
 - 42.4% of patients 40 years or older had a concomitant Grade 3 or 4 chondral lesion with an odds ratio of 14.73 (p<0.001) compared to those less than 19 years of age.



Conclusions

- Age greater than 40 years, BMI, mechanism of injury, choice of ACL graft, and interval between injury and time of surgery are predictors of post operative pain.
- Age greater than 40 is associated with a statistically significant increase in the prevalence of Grade 3 and 4 chondral lesions
- Grade 3 or 4 chondral lesions likely play a contribution to the risk of post-operative pain in those patients.



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