

POORER FUNCTIONAL OUTCOMES IN PATIENTS WITH MULTI-LIGAMENTOUS KNEE INJURY WITH CONCOMITANT PATELLAR TENDON RUPTURES AT 5-YEAR FOLLOW-UP

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Disclosures

- **Michael J Alaia, MD, FAAOS:** AAOS: Board or committee member, Arthroscopy: Editorial or governing board, Arthroscopy Association of North America: Board or committee member, BodyCad: Paid consultant, Journal of Cartilage and Joint Preservation: Editorial or governing board, JRF Ortho: Paid consultant, Mitek: Paid consultant, Orcosa, Inc: Research support, Springer: Publishing royalties, financial or material support
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Background

- Multi-ligamentous knee injuries (MLKIs) are high energy injuries that may infrequently present with concomitant patellar tendon rupture.
- There is limited information in the literature regarding these rare presentations, with even less information regarding clinical outcomes.

Purpose

- Compare MLKI patients with extensor mechanism injuries to MLKI patients with using propensity-score matching.
- Investigate extensor mechanism injury as an independent predictor of poor outcomes using multivariate regression.

Methods

- 12 patients who underwent combined MLKI and patellar tendon rupture from 2011 to 2020 with a minimum 1-year follow up were identified from two separate institutions.
- Patients with MLKIs with concomitant patellar extensor mechanism injuries were propensity-score matched with a 1:1 ratio with those with MLKIs without patellar extensor mechanism injuries based on age, body mass index (BMI), gender, and time from surgery.

Methods: Patient Reported Outcomes

- International Knee Documentation Committee (IKDC) Subjective Knee Form
- Lysholm score
- Tegner scores

Results: Demographics

Total <i>n</i> = 24	MLKI with PT rupture (<i>n</i> = 12)	MLKI without PT rupture (<i>n</i> = 12)	<i>P</i> value
Sex, male	11 (92%)	11 (92%)	n.s
Age, years	39.1 ± 12.8	37.4 ± 12.1	n.s
BMI	29.7 ± 4.8	28.7 ± 4.1	n.s
Time to treatment (days)	11.9 ± 15.7	46.2 ± 81.6	n.s
Time from surgery (years)	4.9 ± 2.3	6.2 ± 2.9	n.s
Dislocation at time of injury	4 (33%)	4 (33%)	n.s
Fracture at time of injury	1 (8%)	1 (8%)	n.s
Injury mechanism (high velocity)	5 (42%)	6 (50%)	n.s
Staged reconstruction (2 surgeries)	9 (75%)	3 (42%)	0.04
Required manipulation under anesthesia	4 (33%)	4 (33%)	n.s

Results: Schenck Classification Injury Patterns

- There was no difference in Schenck Classification injury patterns among those with and without patellar extensor injuries.

Injury classification	With PT rupture	Without PT rupture
Schenck 1	6	1
Schenck 2	0	0
Schenck 3	3	7
Schenck 4	1	1
Schenck 5	3	3
Fracture classification	With PT rupture	Without PT rupture
Tibial plateau	1	1

Results: Patient Reported Outcomes

- Those with concomitant extensor mechanism injuries had significantly lower IKDC and Lysholm scores.

Outcome Score	MLKI with PT rupture (<i>n</i> = 12)	MLKI without PT rupture (<i>n</i> = 12)	<i>p</i> -value
IKDC	53.1 ± 24.3	79.3 ± 19.6	0.001
Change in Tegner	1.3 ± 2.2	1.4 ± 1.4	n.s
Lysholm	63.6 ± 22.3	86.3 ± 10.7	0.001

Results: Linear Regression of MLKI with PT Rupture

- Linear regression demonstrated that extensor mechanism injury was a significant predictor of poorer outcomes measured by IKDC ($p = 0.0081$) and Lysholm ($p = 0.0042$) scores.

Variable	B	P value
Linear regression for IKDC knee scores		
Age	- 0.05	n.s
Sex (Male)	- 19.9	n.s
BMI	- 1.65	n.s
Time to surgery (weeks)	- 0.123	n.s
Dislocation at time of injury	- 4.81	n.s
Fracture at time of injury	24.6	n.s
Extensor mechanism injury	- 27.15	< 0.01
Linear regression for Lysholm scores		
Age	- 0.12	n.s
Sex (Male)	- 21.1	n.s
BMI	- 2.00	n.s
Time to surgery (weeks)	- 1.07	n.s
Dislocation at time of injury	- 7.03	n.s
Fracture at time of injury	7.91	n.s
Extensor mechanism Injury	- 22.4	< 0.01

Conclusion

- In the setting of MLKI, patients who have a concomitant patellar tendon rupture have worse functional outcomes compared to those without.
- Increasing BMI is associated with less improvement at follow-up for these patients.
- This information is suggested to be added to current classification scheme, reflecting its prognostic value.

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