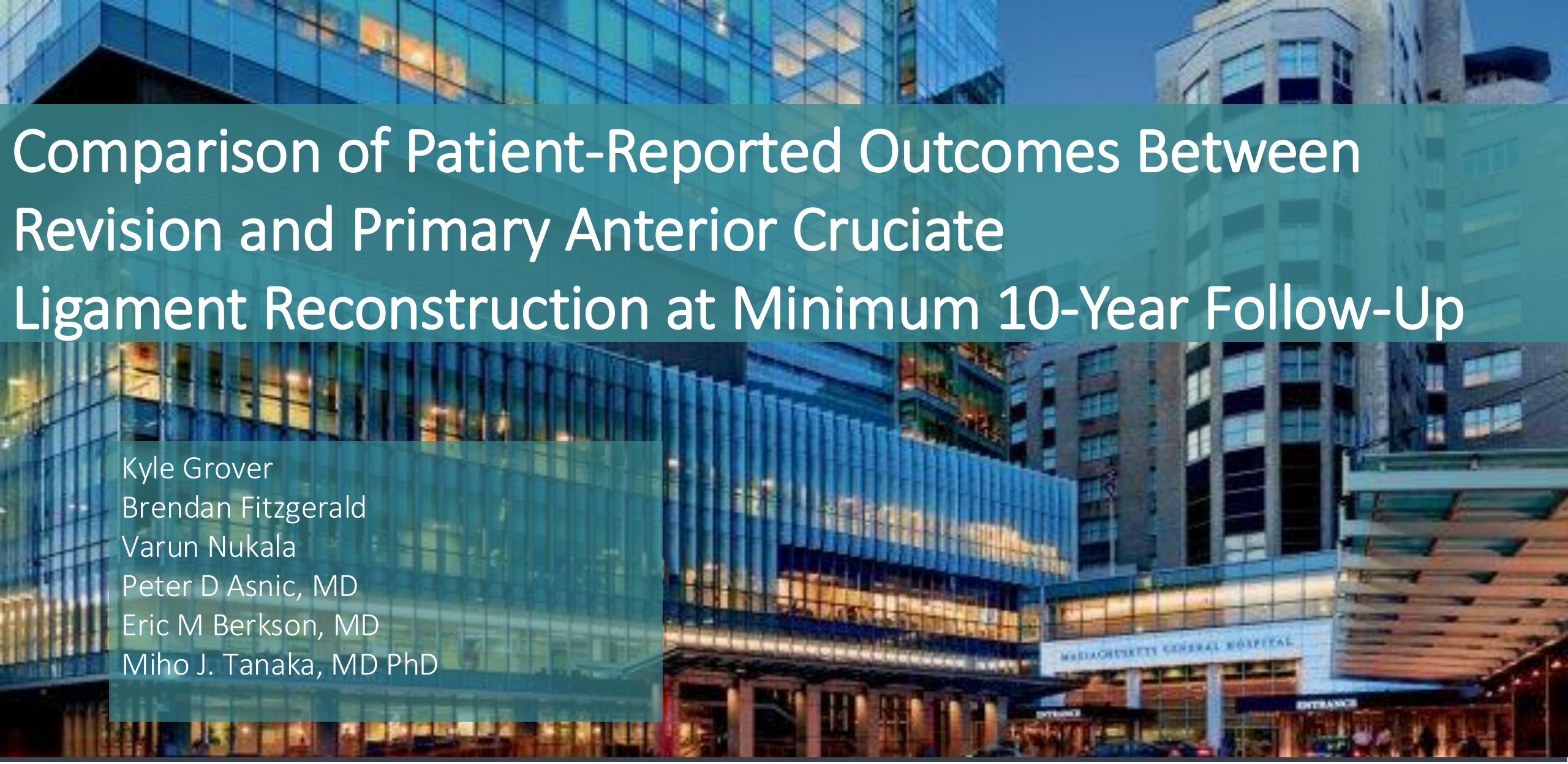
Comparison of Patient-Reported Outcomes Between Revision and Primary Anterior Cruciate Ligament Reconstruction at Minimum 10-Year Follow-Up



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Disclosures

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Background

- Reported failure rates for ACL reconstruction in athletes range widely, from 5% to 34%, depending on activity level, surgical technique, and rehabilitation.
- Revision ACL reconstruction is performed after graft failure or reinjury
  - Graft survival remains relatively high, but it is lower than in primary reconstructions.
- These differences in outcomes may affect an athlete's outcomes:
  - Ability to return to pre-injury levels of sport
  - Maintainance long-term knee health and function

Objective

- The purpose of this study was to report on long term outcomes and compare patient-reported outcomes measures (PROMs) between primary and revision ACL surgery.

Methods

- Patients who underwent primary or revision ACL reconstruction at our institution between 2008 and 2013 were included.
- Patients were surveyed using the following Patient-Reported Outcome Measures (PROMs):
  - Marx Activity Rating Scale (MARS)
  - International Knee Documentation Committee – Subjective Knee Evaluation Form (IKDC-SKEF)
  - PROMIS-10 Global Health Questionnaire
  - Tegner Activity Scale
  - Single Assessment Numeric Evaluation (SANE)
- Demographic information, as well as records of any subsequent surgeries or new diagnoses, were collected.

Methods

- PROMs and the incidence of subsequent surgery or diagnosis were compared between primary and revision ACL reconstruction groups.
- Chi-Square tests were used for statistical comparisons, and odds ratios (OR) were calculated for significant findings.
- Patients were defined as having an unsatisfactory outcome if their IKDC score was <75, based on the Patient-Acceptable Symptom State (PASS) threshold.

Results

- 243 patients included in the study (224 primary ACL reconstructions, 19 revision ACL reconstructions).
- Average follow-up time: 11.9 ± 1.8 years.
- Average age at reconstruction: 38.3 ± 12.8 years.
- No patients underwent re-revision surgery.
- Revision ACL patients generally demonstrated lower outcome scores compared to primary ACL patients

PROM	Mean		P-value
	Primary	Revision	
Mars	6.14 ± 4.74	6.32 ± 5.19	0.935
Tegner	5.85 ± 1.70	5.53 ± 1.98	0.777
IKDC	81.04 ± 15.82	76.16 ± 13.60	0.069
SANE	82.94 ± 17.80	70.21 ± 18.91	0.002**
PROMIS-10 Physical	52.93 ± 8.01	49.88 ± 8.72	0.212
PROMIS-10 Mental	54.95 ± 8.16	54.97 ± 7.47	0.874

Means are reported with standard deviation. P<0.05*, P<0.01**, P<0.001***.

Results

Variable	Patient-Reported Outcome Measure (PROM)					
	MARS	Tegner	IKDC	SANE	PROMIS-10 Physical	PROMIS-10 Mental
Sex	0.017*	<0.001***	0.642	0.495	0.086	0.389
Graft Type	0.661	0.703	0.963	0.225	0.402	0.996
Age at time of surgery	0.008*	0.003**	0.567	0.714	0.199	0.039*
BMI	0.004**	0.002**	<0.001***	0.330	<0.001***	<0.001***
Revision	0.640	0.554	0.241	0.004**	0.109	0.956

Values represent p-values obtained from Type III ANOVA of linear regression models. P<0.05*, P<0.01**, P<0.001***.

- BMI significantly predicted worse outcomes across activity scores, knee function, and general health measures.
- Age at surgery was associated with lower physical activity (MARS, Tegner) and mental health scores (PROMIS-10 Mental), but did not impact knee-specific function (IKDC, SANE).
- Sex was a significant predictor for activity levels (higher in males)
- Revision surgery predicted worse subjective SANE scores
- Graft type did not significantly influence any long-term patient-reported outcomes.

Results

- The odds of achieving PASS in revision surgery are 93% of those in primary surgery.
  - Primary Surgery: 156 patients achieved PASS (70%)
  - Revision Surgery: 13 patients achieved PASS (68%)
- No significant difference in achieving PASS between revision and primary surgeries.

Variable	Achieved Pass	Odds Ratio (95% CI)	P-value
Revision	13 (68%	0.93 (0.35, 2.80)	0.912
Primary (Reference)	156 (70%)	1.00	
P<0.05*, P<0.01**, P<0.001***.			

Conclusions

- At a minimum 10-year follow-up, patients who underwent revision ACL reconstruction had significantly lower SANE scores.
- BMI significantly predicted worse outcomes across activity scores, knee function, and general health measures.
- Activity levels were similar between the two groups, and graft type did not influence long-term outcomes.
- Further long-term research is needed to better understand the predictors of success and to clarify the impact of revision surgery on subjective and objective outcomes

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Thank you

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