

THE EFFECT OF GRAFT SEX-MISMATCH ON CLINICAL OUTCOMES AND RETURN TO SPORT AFTER MENISCAL ALLOGRAFT TRANSPLANTATION

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I (and/or my co-authors) have something to disclose.

All relevant financial relationships have been mitigated.

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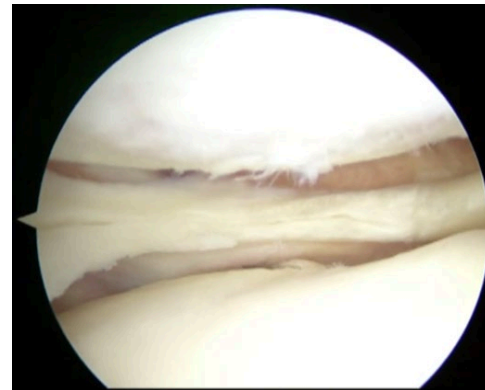
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Background

- Meniscal allograft transplantation (MAT) is a viable solution for the post-meniscectomized patient with persistent symptoms
- There is growing understanding on how concomitant cartilage or soft tissue pathology, knee compartment laterality, alignment, and demographic factors may influence outcomes
- **Donor- and graft-related factors** are less well studied in MAT while being recognized as important in other surgeries using donor grafts



Objective



To identify the potential effect of donor-recipient sex-based mismatch on patient-reported outcomes and return to sport (RTS) following MAT.

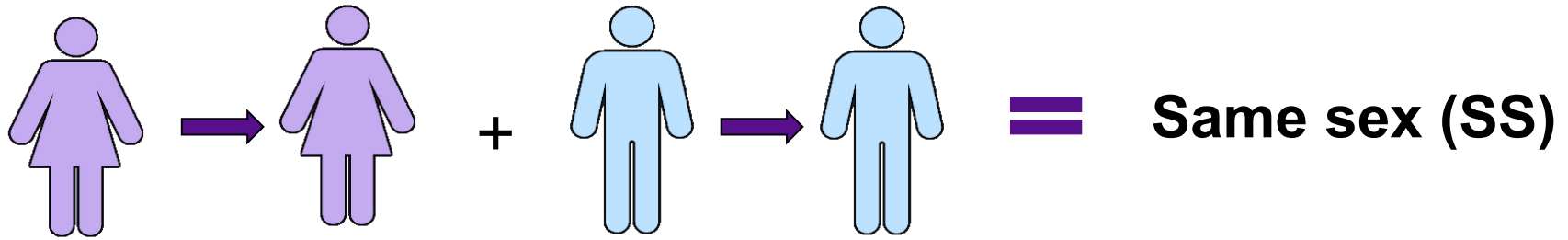
Hypothesis:

- ❖ There will be no significant difference in patient-reported outcomes and return to sport rates between patients that receive donor-recipient sex-matched grafts compared to patients that receive sex-mismatched grafts.

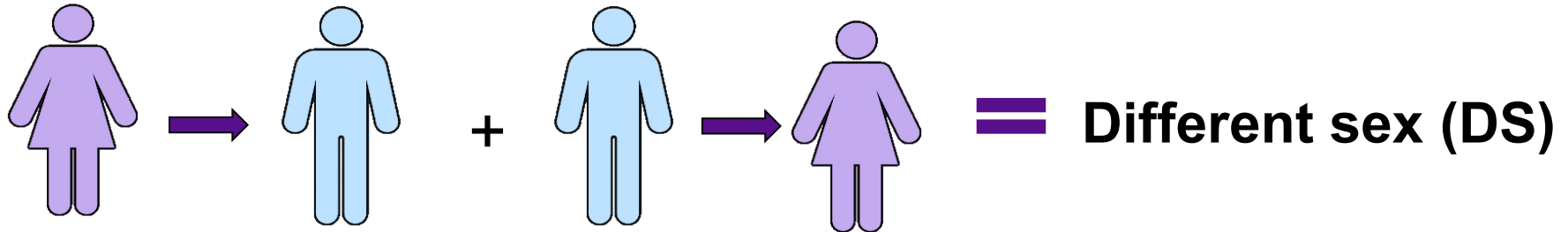
Methods

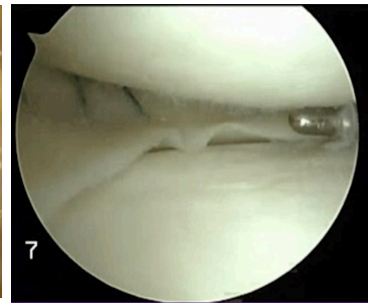
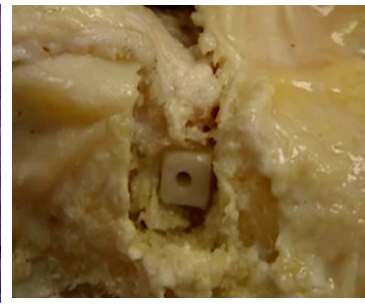
- Retrospective review from 2010-2020
- Single institution
- Included patients undergoing unilateral MAT
- Excluded:
 - Bi-compartmental (lateral/medial) MAT
 - Graft revision
 - Less than 2-year follow-up
- Demographic data collected: Age, sex, body mass index (BMI), smoking status
- Surgical technique, reoperation, and graft failure data collected
- Outcome Measures:
 - KOOS Scores
 - Visual Analog Score (VAS) for pain/satisfaction
 - Return to sport (status and level of return)

Methods: Group Comparisons by Donor-recipient Graft Sex-Matching



VS

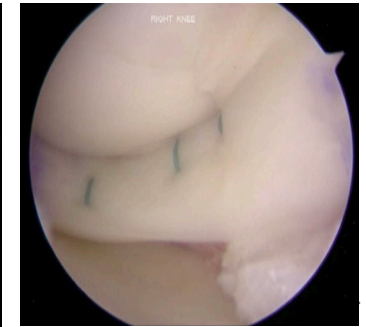
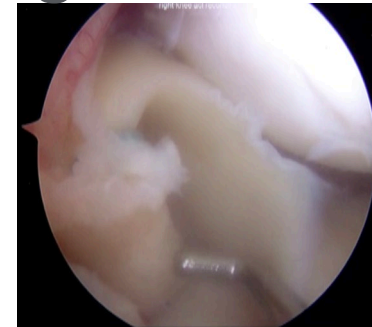
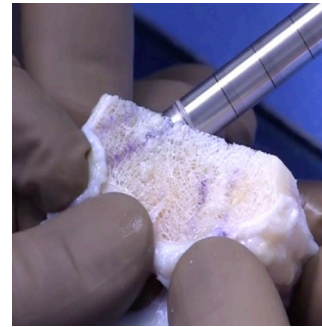
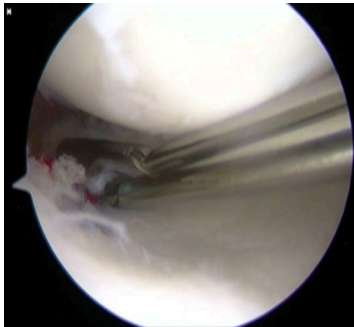




Bridge and Slot



Bone Plug



Results: Patient Demographics

	Same Sex (n=36)	Different Sex (n=21)	p value
Age (years)	31.0 (9.1)	25.9 (7.7)	0.260
Body mass index	26.6 (5.0)	27.1 (7.0)	0.760
Follow-up (months)	72.9 (29.7)	63.9 (31.4)	0.264
Donor age (years)	24.5 (7.9)	26 (6.3)	0.485
Laterality, n (%)			
Left	14 (38.9%)	9 (42.9%)	0.787
Right	22 (61.1%)	12 (57.1%)	
Knee alignment, n (%)			
Neutral	32 (88.8%)	14 (66.6%)	0.054
Valgus	2 (5.6%)	6 (28.6%)	
Varus	2 (5.6%)	1 (4.8%)	

Results: Transplantation Technique and Cartilage Wear

	Same Sex (n=36)	Different Sex (n=21)	p value
Compartment, n (%)			
Lateral	17 (47%)	16 (76%)	0.510
Medial	19 (53%)	5 (24%)	
Transplantation technique, n (%)			
Bone bridge	23 (64%)	14 (67%)	0.741
Double-bone plug	12 (34%)	7 (33%)	
Suture-only	1 (2%)	-	
Capsular fixation, n (%)			
All-inside	6 (17%)	4 (19%)	0.878
Inside-out	23 (64%)	12 (57%)	
Mixed	7 (19%)	5 (24%)	
Evidence of cartilage wear, n (%)	28 (77%)	11 (52%)	0.081
Outerbridge grade, n (%)			
1	3 (8%)	1 (5%)	0.068
2	17 (47%)	6 (29%)	
3	-	2 (9%)	
4	8 (22%)	2 (9%)	

Results: Similar Clinical Outcomes Between SS or DS Groups

	Same Sex (n=36)	Different Sex (n=21)	p value
KOOS symptoms	64.4 (28.7)	70.0 (17.3)	0.654
KOOS pain	74.0 (26.9)	78.8 (19.0)	0.823
KOOS sport/recreation	56.7 (33.5)	57.9 (30.6)	0.934
KOOS QOL	48.8 (27.2)	52.1 (27.4)	0.663
Pain intensity	30.8 (29.6)	28.1 (23.9)	0.947
Satisfaction	67.4 (33.6)	74.0 (27.2)	0.563
RTS, overall	18 (54.5%)	9 (45%)	0.577
RTS, lower level	9 (50%)	6 (66.7%)	0.683

Results- Similar Clinical Outcomes Based on Sex of Graft Donor

	Female Graft (n=15)	Male Graft (n=42)	p value
KOOS symptoms	67.7 (29.5)	66.1 (23.7)	0.611
KOOS pain	71.9 (26.5)	77.2 (23.5)	0.586
KOOS sport/recreation	49.0 (38.2)	60.0 (29.8)	0.398
KOOS QOL	47.5 (31.1)	50.9 (25.8)	0.681
Pain intensity	32.2 (32.0)	28.9 (26.1)	0.835
Satisfaction	67.9 (41.1)	70.6 (27.6)	0.508
RTS, overall	8 (57.1%)	19 (48.7%)	0.757
RTS, lower level	3 (37.5%)	12 (63.2%)	0.398

Results- No Association Between Sex-mismatch and Outcomes

Predictors	Coefficient/Odds Ratio ^a	95% Confidence Interval	p value
KOOS symptoms	0.025	[-16.29, 18.83]	0.885
KOOS pain	0.104	[-11.45, 21.83]	0.534
KOOS sport/recreation	0.083	[-17.61, 28.63]	0.634
KOOS QOL	0.164	[-9.63, 27.86]	0.334
RTS, overall	2.66 ^a	[0.60, 11.71]	0.196
Graft failure	7.53 ^a	[0.56, 100.79]	0.127

Conclusion

- ❖ Patients that undergo meniscal allograft transplantation with grafts from a different sex have similar outcomes to patients that receive grafts from a donor of the same sex
- ❖ Sex-mismatch is not associated with functional outcomes, return to sport, or graft failure

The results of this study support the use of geometrically matched donor grafts, independent of donor gender, which should expand available graft options when matching a patient for MAT.

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