

# ASSOCIATION OF SEX-MISMATCH BETWEEN DONOR AND RECIPIENT WITH CLINICAL OUTCOMES AFTER OSTEOCHONDRAL 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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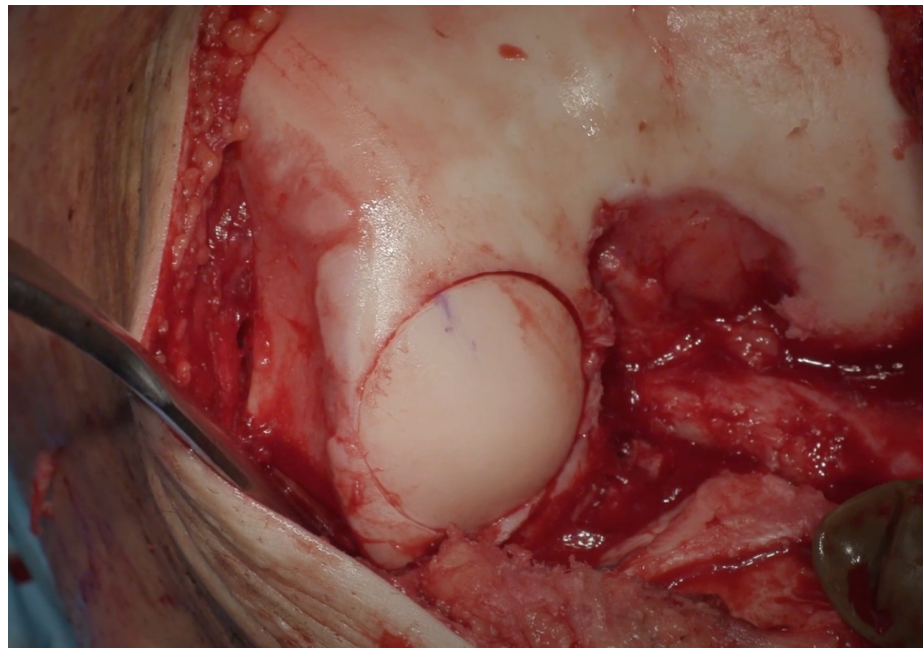
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# Background

- Favorable results have been reported after Osteochondral Allograft Transplantation (OCA)
- However, return to sport (RTS) rates range from 60-80% and graft failure can reach up to 20% at mid-term follow-up
- Donor- and graft-related characteristics have been examined to identify potential contributors to adverse outcomes
- Recent reports suggest a possible **increased risk of long-term graft failure** in patients with **donor-recipient sex-mismatch**



## Objective



To evaluate the potential effect of donor-recipient sex-mismatch in OCA transplantation with respect to graft survival, clinical outcomes, satisfaction, and return to sport

### *Hypothesis:*

- ❖ The rate of graft failure, patient-reported outcomes, and RTS rate would be similar between patients receiving a sex-matched graft compared to those receiving a sex-mismatched graft.

# Methods

- Retrospective review from 2010-2020 at a single institution
- Included patients undergoing a knee OCA for a high-grade (Outerbridge 3 or 4) defect
- Minimum 2-year follow-up
- Demographic factors: Age, sex, body mass index (BMI), lesion characteristics
- Divided into two cohorts:
  - **Same-Sex Donor (SS) and Different-Sex Donor (DS)**
- **Graft failure** defined as:
  - ❖ Subchondral collapse
  - ❖ Revision of primary OCA
  - ❖ Conversion to arthroplasty

# Methods

- Subanalysis comparing PRO scores between SS and DS cohorts
  - KOOS
  - VAS for pain and satisfaction
  - Return to sport rates
- **Cumulative survival assessed and complications compared**



# Results

- **285** patients met inclusion criteria (189 patients in SS group and 96 patients in DS group)
  - Mean follow-up:  $4.8 \pm 2.0$  years
  - Most common defect location:
    - Medial femoral condyle
- **40%** of patients underwent concomitant osteotomy, ACLR, or MAT procedure



# Results – Patient Demographics

	Total Cohort (n=285)	Same-Sex Donor (SS) (n=189)	Different-Sex Donor (DS) (n=96)	p-value*
<b>Female n (%)</b>	118 (41.4%)	42 (22.2%)	76 (79.2%)	<b>&lt;0.001</b>
<b>Age (years)</b>	32.4±11.1	32.9±11.2	31.6±11.0	0.351
<b>BMI</b>	27.0±5.3	27.2±5.3	26.7±5.3	0.423
<b>Smoking Status</b>				
Current	23 (8.1%)	20 (10.6%)	3 (3.1%)	<b>0.040</b>
Former	33 (11.6%)	18 (9.5%)	15 (15.6%)	
Never	229 (80.4%)	151 (79.9%)	78 (81.3%)	
<b>OCA Size (mm<sup>2</sup>)</b>	23.4±10.2	24.5±10.9	21.2±9.0	<b>0.007</b>



## Results – Comparable Graft Failure Rates Between Groups — Shorter Time to Failure in SS Group

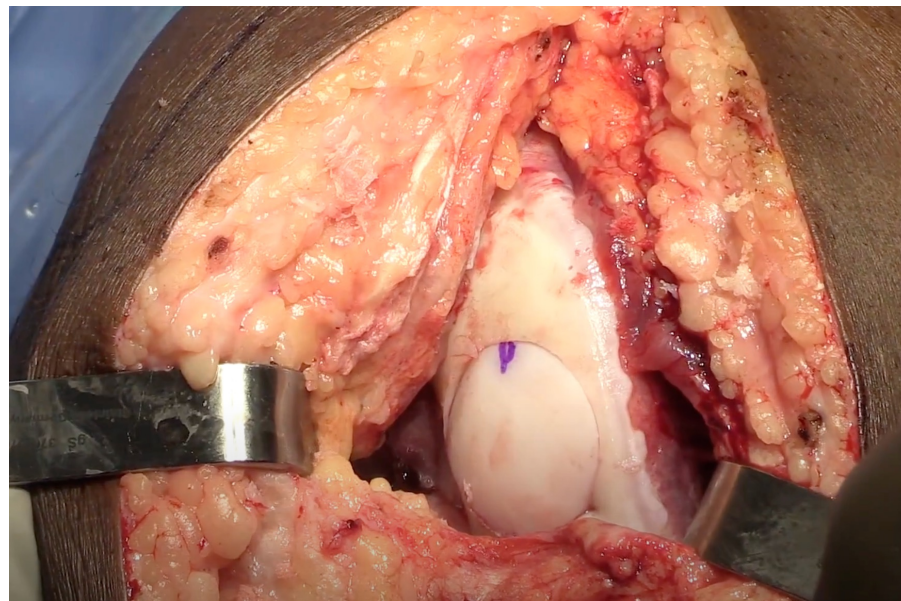
	Total Cohort (n=285)	Same-Sex Donor (SS) (n=189)	Different-Sex Donor (DS) (n=96)	p-value*
Graft Failure	17 (6.0%)	12 (6.3%)	5 (5.2%)	0.701
Time to Graft Failure (Days)	713 ± 433	864 ± 425	353 ± 152	<b>0.002</b>
Need for Reoperation	55 (19.3%)	34 (18.0%)	21 (11.1%)	0.432
LOA/MUA	21 (7.4%)	14 (7.4%)	7 (3.7%)	0.364
DVT/PE	8 (2.8%)	6 (3.2%)	2 (1.1%)	0.441
Infection	2 (0.7%)	1 (0.5%)	1 (0.5%)	0.624

## Results – No Association Between Host- and Graft-related Predictors on Graft Failure

Predictors	Hazard Ratio	95% CI	P-value
Sex Mismatch	0.895	0.259-3.094	0.861
Patient Female Sex	1.120	0.341-3.678	0.852
Patient Age	1.027	0.984-1.073	0.221
BMI	0.988	0.893-1.094	0.821
Smoking Status	0.796	0.224-2.829	0.725
Graft Size	1.028	0.994-1.063	0.107

# Results – Sub-Analysis of Patient-reported Outcomes

- **71-patient** cohort with two-year PRO scores:
  - **Return to Sport:**
    - 65.1% in SS group vs. 54.2% in the DS group ( $p=0.378$ )
  - **No differences** were observed after controlling for sex of the patient with respect to:
    - **KOOS scores**
    - Satisfaction
    - Pain



# Conclusion

❖ **No observable differences in graft survivorship or short-term clinical outcomes** based on donor-recipient graft sex-matching

*Surgeons can use sex-mismatched grafts for the treatment of osteochondral lesions of the knee and expect limited effect on graft survivorship and clinical outcomes*



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