



An Osteophyte in the Tibial Plateau is a Risk Factor for Allograft Extrusion after Meniscus Allograft Transplantation

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Disclosure



ASAN
Medical Center

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I have no financial conflicts to disclose.

Introduction

- ❖ **Osteophytes** may be observed **on the tibial plateau** during meniscal allograft transplantation (MAT)
- ❖ Despite encouraging results after MAT, **extrusion of the transplanted meniscus** has been paid attention as a potential complication, possibly leading to worse long-term clinical outcomes
- ❖ No studies to date have evaluated the effect of these osteophytes on meniscal allograft extrusion

Purpose

❖ To determine

If **concomitant excision of a peripheral osteophyte in the tibial plateau with MAT affects allograft extrusion and clinical outcomes**

Hypothesis

❖ ***Osteophyte excision in the tibial plateau could reduce extrusion of the transplanted meniscus and improve short-term clinical outcomes with meniscus allograft transplantation***

Materials & Methods

- ❖ From Oct. 2004 to Jul. 2012
- ❖ **120 cases** of Arthroscopic assisted **MAT** at Asan Medical Center were enrolled
- ❖ **Tibial osteophyte larger than 2mm** in the involved compartment

- 32 cases were excluded
- No digital MRIs
 - F/U < 1 year

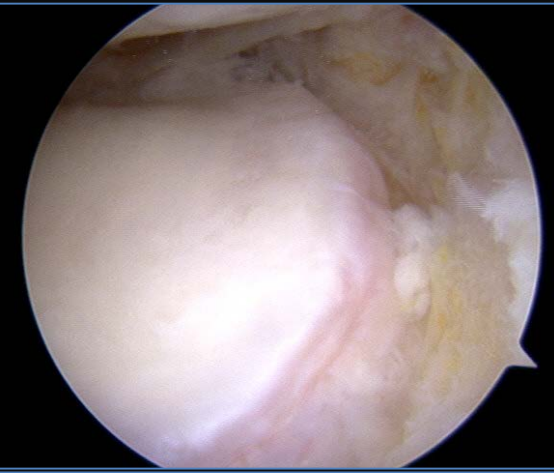
- ❖ The final analysis involved data from **88 cases**
 - Lateral MAT : 75
 - Medial MAT : 13
 - All surgery was performed by a single senior surgeon(S.I.B.)

- ❖ Lateral MAT
: modified keyhole technique
- ❖ Medial MAT
: modified double-bone-plug technique
- ❖ Graft
: Fresh-frozen allograft

Materials & Methods

❖ Surgical Technique

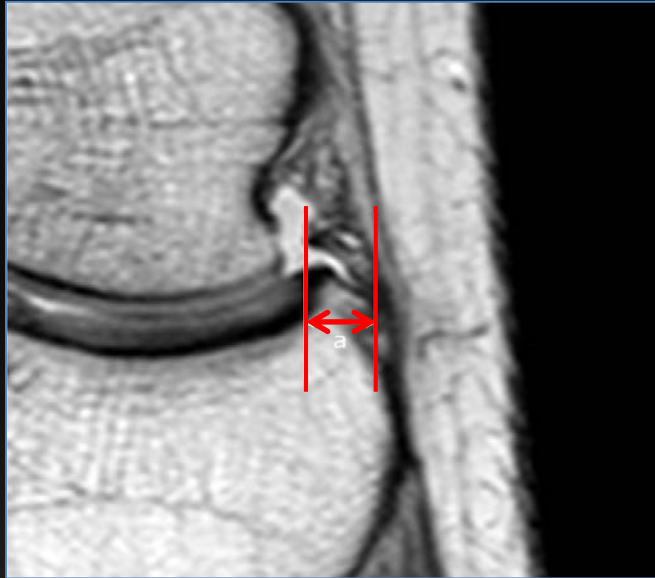
- Osteophyte > 2mm
→ removed arthroscopically
- with osteotome & pituitary rongeur
- Irregular margin of the remnant osteophyte → smoothed with an burr
- Ant. part of the osteophyte
: removed with a rongeur under direct visualization after parapatellar mini-arthrotomy incision



Materials & Methods

❖ Measurements of osteophyte size

: distance between perpendicular lines to the articular horizontal line at the outer edge of articular cartilage and the outer edge of osteophyte



❖ Measurements of allograft extrusion

(a) Absolute extrusion

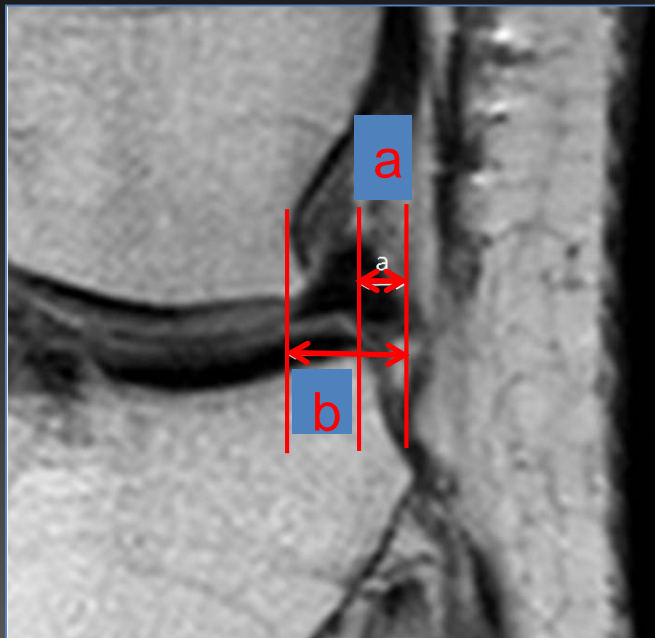
: between the outer edge of the articular cartilage and the outer edge of the meniscus allograft

(b) : between the inner and the outer edges of allograft

(entire allograft width)

Relative percentage of extrusion(%)

(RPE)= $a/b \times 100$



Materials & Methods

To evaluate clinical outcomes

- ✓ Modified Lysholm scoring system
- ✓ Hospital for Special Surgery (HSS) score

Factors that were thought to affect the allograft extrusion

- ✓ Gender, age at the time of surgery, BMI, time after meniscectomy, mechanical axis deviation, pre-existing arthritis on radiographs or arthroscopic findings, joint space width(JSW)

Data analysis

SPSS statistics version 19.0

- ✓ Student's t-test : JSW, AE, Lysholm score, HSS score
- ✓ Mann-Whitney U test
: age, BMI, time after meniscectomy, mechanical axis deviation, RPE, Lysholm score, HSS score
- ✓ Chi-square test
: gender, involved knees, affected compartment, ICRS grade, allograft extrusion incidence
- ✓ Fisher's exact test : Tegner activity level, K-L grade

Results ❖ Demographic characteristics



	Overall	Excision	Non-excision	P-value
Number	88	44	44	
Age(years)	35.3±10.5	36.8±11.3	33.9±9.6	0.128
Gender(M/F)	57/31	24/20	33/11	0.045
BMI(Kg/cm ²)	24.2±2.9	24.2±2.9	24.1±3.0	0.983
Involved knees (Rt/Lt)	37/51	15/29	22/22	0.131
Compartment (med/lat)	13/75	1/43	12/32	0.001
Time after menisectomy(month)	54.9±72.6	74.1±87.9	35.8±46.7	0.092
Postop Tegner activity	4.1±1.0	4.1±1.0	4.0±0.9	0.752
Mechanical axis deviation(°)	-0.7±2.5	-0.5±3.1	-0.9±1.6	0.341
Postop. JSW	5.1±1.1	4.7±1.0	5.4±1.2	0.003
Preop. osteophyte size	4.1±1.2	4.2±1.4	3.9±0.9	0.067
Preop. Lysholm score	66.5±18.1	64.1±18.6	68.8±17.5	0.228
Postop. HHS score	88.9±11.0	90.2±8.0	89.5±13.5	0.662

Results



❖ Degree of arthritis as according to Kellgren-Lawrence grade

	Overall	Excision	Non-excision	P-value
Low grade (0,1,2)	76/88 (86.4%)	36	0	0.214
High grade (3,4)	12/88 (13.6%)	8	4	

❖ Degree of intraoperative cartilage status according to ICRS grade

	Overall	Excision	Non-excision	P-value
Femoral side				
Low grade(0,1,2)	42/88 (42.7%)	18	24	0.200
High grade(3,4)	46/88 (52.3%)	26	20	
Tibial side				
Low grade(0,1,2)	21/88 (23.9%)	9	12	0.453
High grade(3,4)	67/88 (76.1%)	35	32	

Results



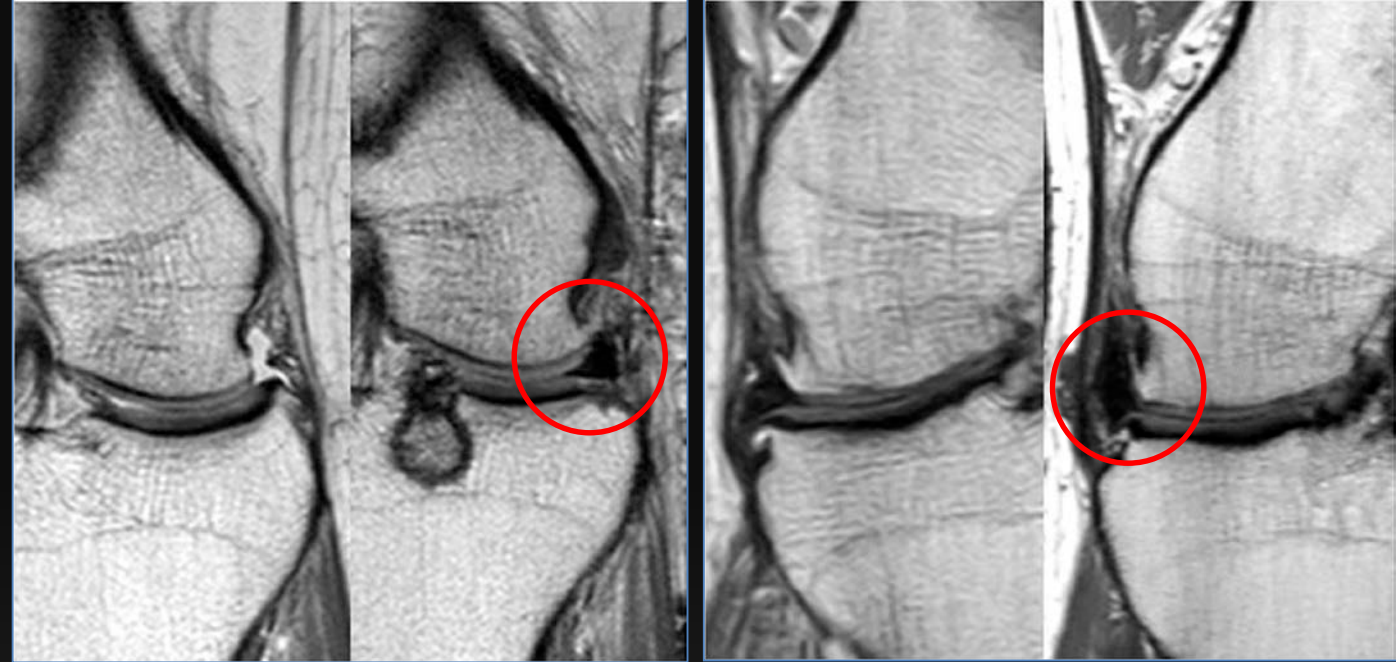
❖ Comparison of allograft extrusion between both groups

	Excision	Non-excision	P-value
Absolute extrusion (AE, mm)	3.5±1.5	5.5±1.6	<0.001
Relative percentage of extrusion (RPE,%)	34.1±15.9	54.7±20.7	<0.001
Allograft extrusion incidence (>3.0mm)	28/44 (63.6%)	41/44 (93.2%)	<0.001

❖ Comparison of clinical results between both groups

	Overall	Excision	Non-excision	P-value
Postop. modified Lysholm score	89.9±11.0	90.2±8.0	89.5±13.5	0.662
Postop. HHS score	94.8±7.5	95.9±4.0	93.7±9.7	0.433

Conclusion



Osteophyte excision

No excision

- ❖ Osteophyte excision concomitant with MAT decreased allograft extrusion.
- ❖ However, there were *no obvious short-term clinical benefits* related to osteophyte excision

References

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