

LATERAL MENISCAL ALLOGRAFT TRANSPLANT: NO DIFFERENCE EXISTS IN MAGNETIC RESONANCE APPEARANCES BETWEEN BONE BRIDGE AND SOFT TISSUE FIXATION TECHNIQUES AT 12 MONTHS FOLLOW UP

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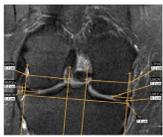
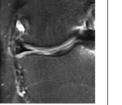
INTRODUCTION: The study unit has previously devised and validated a radiographic scoring system to analyse MAT appearances on magnetic resonance imaging (MRI) at 12 months post-operatively; the "MRI appearance in Meniscal transplants Score" (MIMS).

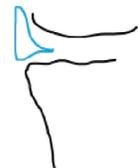
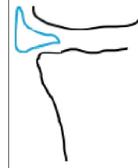
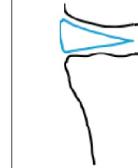
A maximum score of 11 is provided for well appearing grafts. This study aims to delineate whether a difference exists in MIMS score, or its components between bone-bridge (BB) and soft tissue (ST) fixation techniques in meniscal allograft transplants, at 12 month magnetic resonance imaging.

METHODS: The study was conducted on 81 consecutive adult patients between January 2017 and January 2021 who required lateral MAT only without the need for concomitant procedures (eg osteotomy, ligament reconstruction). Components of MIMS (0-11) included meniscal extrusion (0-2), bone oedema (0-1), meniscal signal change (0-3), meniscus shape (0-2) and synovitis (0-2). A t-test was used for differences between groups ($p < 0.05$ set as significant). The Pearson correlation was used to test for correlation of MIMS score between two raters.

RESULTS: Of the 81 patients, 35/81 (43.2%) were male. Mean age was 29.9 years. Pearson correlation was strong (0.86, $p < 0.001$). There were 18/81 (22.2%) BB patients versus 63/81 (77.8%) ST fixations. Overall MIMS score was 7.72 for BB, and 7.20 for ST ($p = 0.35$), extrusion 3.03 BB vs 3.12 ST ($p = 0.77$), bone oedema 1.72 BB vs 1.67 ST ($p = 0.75$), meniscus change 2.33 BB vs 2.00 ST ($p = 0.09$), meniscus flattening 0.83 BB vs 0.73 ST ($p = 0.48$) and synovitis 1.28 BB vs 1.38 ST ($p = 0.53$).

DISCUSSION AND CONCLUSION: There was no observable difference between bone-bridge and soft tissue fixation techniques for lateral meniscal allograft transplant only at 12 month MRI follow up. Further studies are required to correlate this functionally with a larger data set.

EXTRUSION (0-2)			
Coronal	>5mm (0)	3-5mm (1)	<3mm (2)
<p>Coronal measurement (Fig. 1)</p> <ol style="list-style-type: none"> 1. Perform measurement on mid-coronal slice defined as medial tibial spine of maximal diameter. 2. Where unable to identify the maximal tibial spine width the slice with the maximal tibial width should be used. 3. Draw a reference line between medial and lateral osteochondral junctions on the tibia, at the joint margin excluding osteophytes. 4. Draw 4 gridlines at 90 degrees to this line (See figure 1). 5. Using these reference lines the meniscal coronal width (medial or lateral) and the meniscal extrusion width is measured.  <p>Extrusion:</p> <ol style="list-style-type: none"> 6. <0mm = 3 (Meniscus remains anatomically positioned) 7. 0-5mm = 2 (Partial. Part of meniscus remains in contact with articular surface) 8. >5mm = 1 <p><small>Fig. 1. Coronal MRI image showing the measurement. The blue width MTPW (Medial tibial plateau width), LTPW (Lateral tibial plateau width), AME (Anterior meniscal extrusion width), LME (Lateral meniscal extrusion width), MACE (Medial meniscal extrusion width), LACE (Lateral meniscal extrusion width).</small></p>			
BONE MARROW OEDEMA (0-1)			
Femoral	Yes (0)	No (1)	
Tibial	Yes (0)	No (1)	
1. Identify any bone marrow oedema and score for both femur and tibia			
**MENISCAL SIGNAL CHANGE (Gd 0-3)			
Absent Transplant Meniscus (0)	High signal (1) (Not in the interface b/w transplant and rim)	Intermediate signal (2) (No evidence of a tear)	No signal or normal (3)
			
* Signal should be present on 2 or more continuous slices. ** Care should be taken when assessing the interface between meniscal graft transplant and remnant meniscus. *** If there is more than one tear, score the tear that is more severe.			

SHAPE OF MENISCUS (0-2)			
Using the midcoronal slice determine the shape of the meniscus	Grossly flattened/deformed (0)	Loss of triangular shape (1)	Normal appearance (2)
			
			
SYNOVITIS/EFFUSION (0-2)			
Effusion +/- Synovitis	Obvious fluid synovitis (0)	Fluid present in lateral/medial recess or suprapatellar pouch (1)	Normal appearance (2)