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# Effect of ICRS Lesion Grade on Graft Survival After Medial Meniscal Allograft Transplantation

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## Mandatory Disclosures:

- The authors do not have a financial interest or other relationship with a commercial company or institution.
- The authors do not have any affiliations or conflict of interest notifications to disclose.





# Background

- Data is lacking regarding the survival rate after medial meniscal allograft transplantation (MAT) alone.
- Little information is available about prognostic factors for graft survival that affect outcomes of medial MAT.
- The purpose of this study was to investigate the prognostic factors and survival rate of allograft after medial MAT.



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# Methods

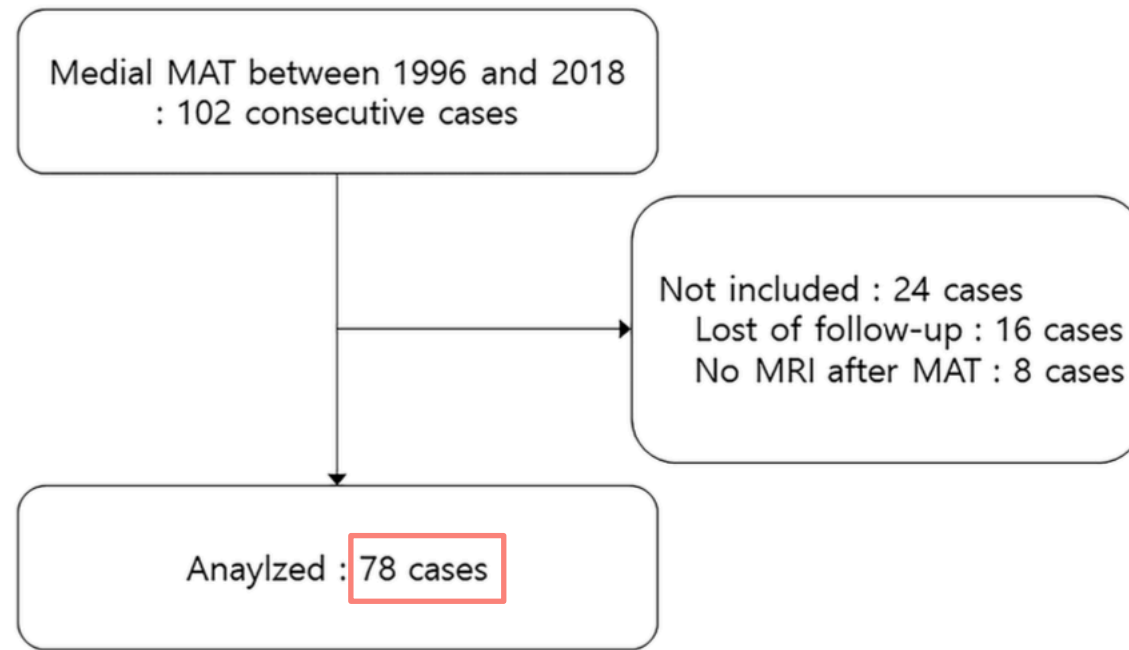
## - Patient selection and Study Design

- Retrospectively reviewed 102 consecutive patients who underwent primary medial MAT between 1996 and 2018.
- Patients with minimum 2 year follow-up and postoperative MRI for evaluation of the allograft after MAT were included.
- The exclusion criteria were as follows: (1) follow-up duration <2 years, (2) no MRI after MAT, (3) ipsilateral lateral MAT, (4) history of previous fracture, (5) ipsilateral knee infection.





# Patient Selection & Characteristics



**Figure 1.** Flow diagram of patient selection for this study.

**TABLE 1**  
Descriptive and Clinical Characteristics of 78 Patients  
Who Underwent Medial Meniscal Allograft Transplant<sup>a</sup>

Characteristic	
Age, y	34.96 ± 9.62
Sex, male/female	64/14
Side, right/left	39/39
Body mass index	25.62 ± 3.70
Time since meniscectomy, y	3.24 ± 4.19
Mechanical axis deviation, deg <sup>b</sup>	1.00 ± 2.22
No. of concomitant surgeries	0.99 ± 0.88
Concomitant surgery	53
Ligament procedures	47
Cartilage procedures	4
Osteotomy	2
ACL revision	17
ICRS grade	
0	1
1	7
2	37
3	20
4	13
Preoperative Lysholm score	67.50 ± 14.63
Last Lysholm score	86.69 ± 11.10



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## - Postoperative Evaluation and Analysis

- Postoperative MRIs taken at 1 year after surgery, and at 2 year intervals thereafter, were reviewed. Patient-reported outcomes were evaluated using modified Lysholm knee scores.
- **Anatomic failure** was defined as an allograft tear covering >50% of the allograft confirmed by MRI, or an unstable peripheral rim confirmed by second-look arthroscopy.
- **Clinical failure** was considered as Lysholm score <65 or need for additional surgery such as meniscal repair, revision MAT, etc.

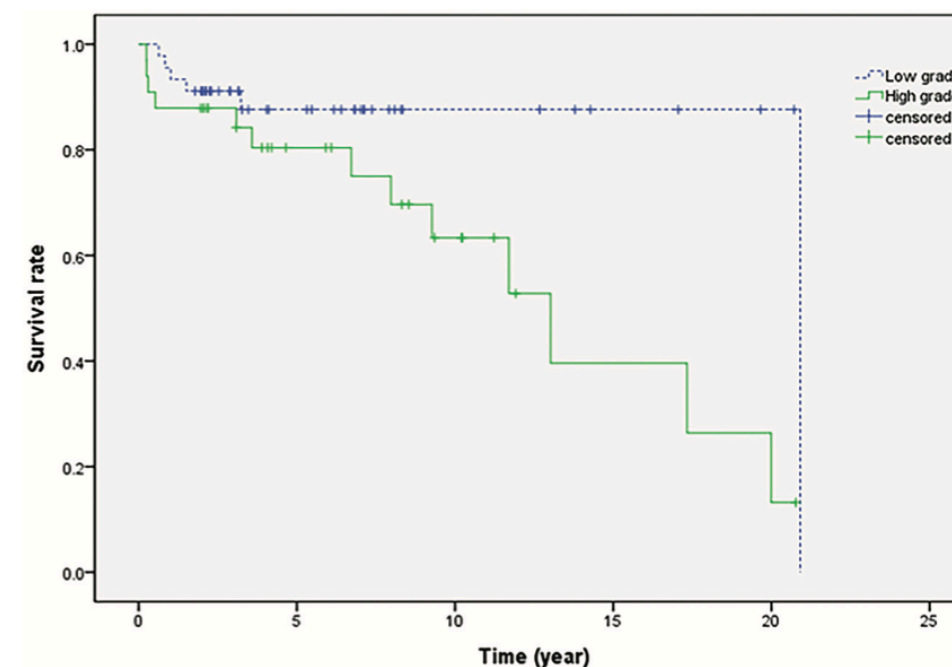




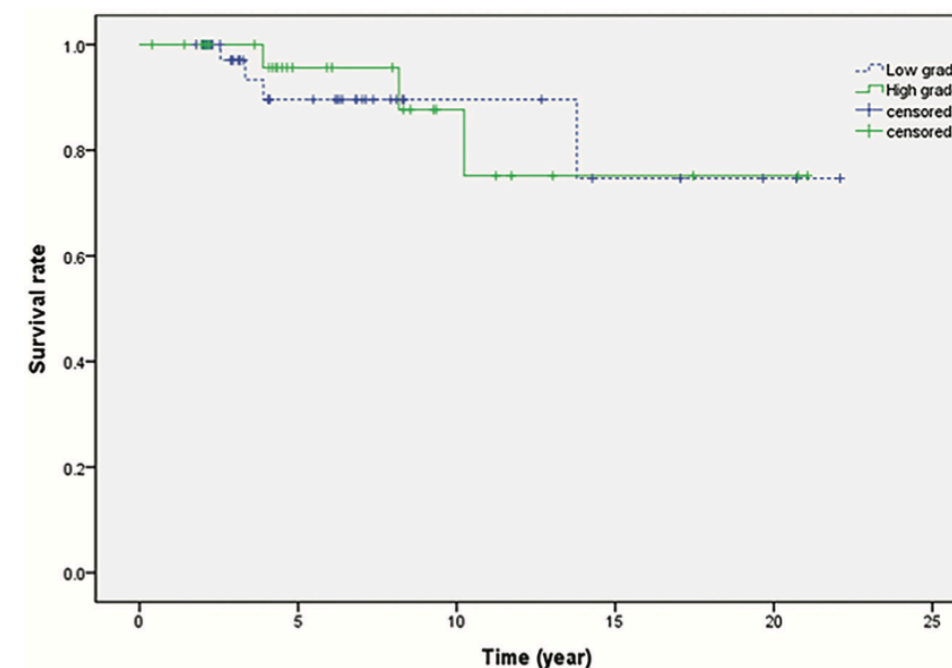
# Results

## Anatomic and Clinical Failure After Medial Meniscal Allograft Transplant

	No.
<b>Anatomic failure</b>	
Tear involving more than one-half of the allograft	19
Unstable peripheral rim of the allograft	2
<b>Total</b>	<b>19</b>
<b>Clinical failure</b>	
Poor Lysholm score (<65)	4
Meniscectomy for more than one-half of the allograft	0
Meniscectomy to the zone of the meniscocapsular junction	0
Additional surgery such as meniscal repair, revision meniscal allograft transplant, realignment osteotomy, or arthroplasty	3
<b>Total</b>	<b>7</b>



**Figure 2.** Anatomic survival rate according to cartilage status after medial meniscal allograft transplant.



**Figure 3.** Clinical survival rate according to cartilage status after medial meniscal allograft transplant.



# Results

- 19 patients (24.4%) had anatomic failure with an allograft tear covering >50% of the allograft, as seen on MRI. None of these patients had a persistent poor Lysholm score of <65.
- 7 patients (9.0%) had clinical failure. Of these, 4 patients had a Lysholm score <65, and 3 patients underwent an additional procedure (2 meniscal repair, and 1 HTO).
- Patients with high ICRS cartilage grade tended to have higher risk of anatomic failure. Other factors did not have a significant correlation with anatomic failure. No factors had a statistically significant correlation with clinical failure.





# Results

- Multivariate analysis with adjustment for all other confounding factors showed that cartilage status had a significant effect on the anatomic survival rate.
- The 5-year anatomic survival rate for patients with low ICRS grade was  $87.61\% \pm 5.33\%$ , which was significantly higher than the  $80.39\% \pm 7.26\%$  in patients with high ICRS grade.
- However, the 5-year clinical survival rate was  $89.59\% \pm 5.73\%$  in patients with low ICRS grade and  $96.65\% \pm 4.25\%$  in those with high ICRS grade, showing no significant difference.





# Discussion

- This was a long-term follow-up study among medial MAT patients. The estimated 10-year anatomic & clinical graft survival rates were 73.9% and 87.9%, and better cartilage status was associated with higher anatomic survival rate.
- Clinical survival rate was higher than the anatomic survival rate. This indicates that the clinical outcome in the patients was good, despite anatomic failure.
- High-grade ICRS lesions had an adverse effect on anatomic outcomes, but did not significantly affect clinical outcomes.





# Conclusion

- Low-grade ICRS lesion was associated with a higher anatomic survival rate after medial MAT.
- In patients with high-grade ICRS lesions, the clinical outcome might be good; however, the status of an allograft might be poor.
- The surgeon should be aware of this and explain to the patient that close observation is necessary.







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# Thank You

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