Meniscus Allograft Transplantation in Conjunction with Arthroscopic Biologic Knee Restoration Delays Arthroplasty in Patients Over 50 Years of Age

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Introduction

A 10-year delay in total knee arthroplasty has been shown to significantly decrease the lifetime risk of arthroplasty revision.[1] This study evaluates the utility of meniscus allografts to delay knee arthroplasty for patients over 50 years old.[3] It was hypothesized that subjects older than 50 would benefit from an arthroscopic meniscus transplant in terms of improved knee symptoms, function, and importantly delay of arthroplasty.

Methods

One hundred eight meniscus allograft transplants (MATs) using the arthroscopic three tunnel technique between 1997 and 2019 in patients over 50 years of age were retrospectively reviewed with two-year minimum follow-up period. Inclusion criteria were patients recommended knee arthroplasty with pain and preservation of some joint space by standing flexion x-rays. Exclusion criteria were lack of joint space, failure to comply with rehabilitation protocol or complete research questionnaires. International Knee Documentation Committee (IKDC) composite and isolated pain scale were evaluated longitudinally. Time from MAT to arthroplasty was measured with failure defined as allograft excision or revision, progression to arthroplasty, or same or increased pain.

TABLE 1. Demographic Data

Meniscus transplants/patients, n	89/86
Mean age (range), y	55.8 (50-69)
Male/female, n	61/25
Left/right knee, n	40/49
Medial/lateral, n	63/26

TABLE 2. Concomitant Surgeries

Debridement	81
Chondroplasty	64
Articular cartilage reconstruction	45
Microfracture	40
Notchplasty	21
Osteophyte removal	18
Other	17
Loose body removal	9
Osteotomy	9
ACL reconstruction	7
Meniscectomy	7
Posterolateral corner reconstruction	6
ACL revision	5
Hardware removal	3
Meniscus repair	1

Results

Figure 1: Flowchart of 89 MATs Included in Study

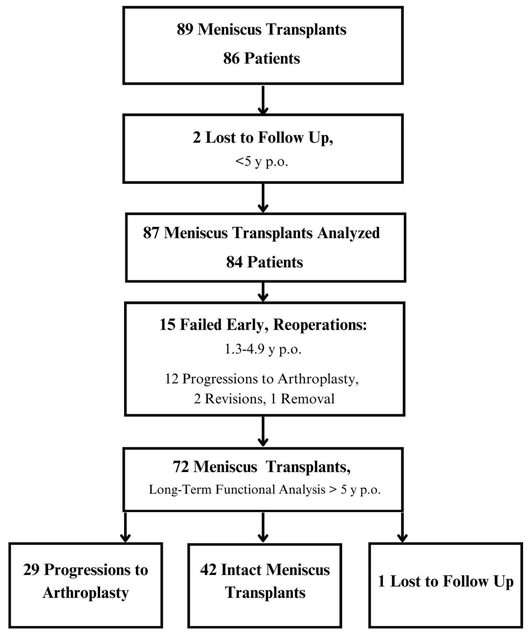


Figure 2: Meniscus Transplant Kaplan Meier Survival Plot

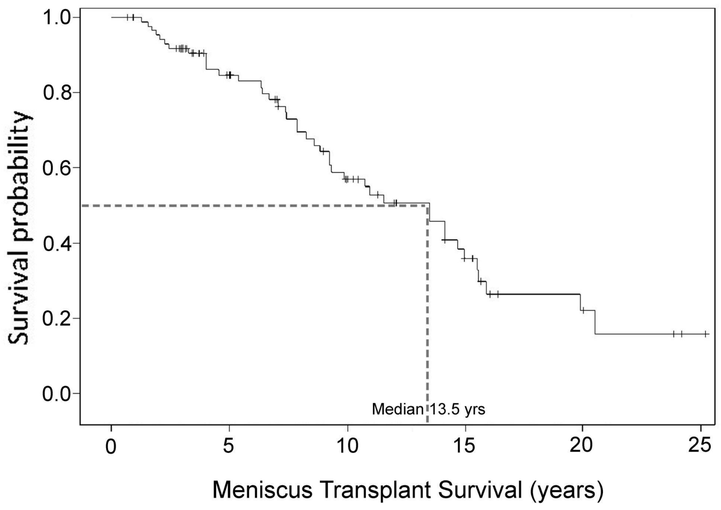
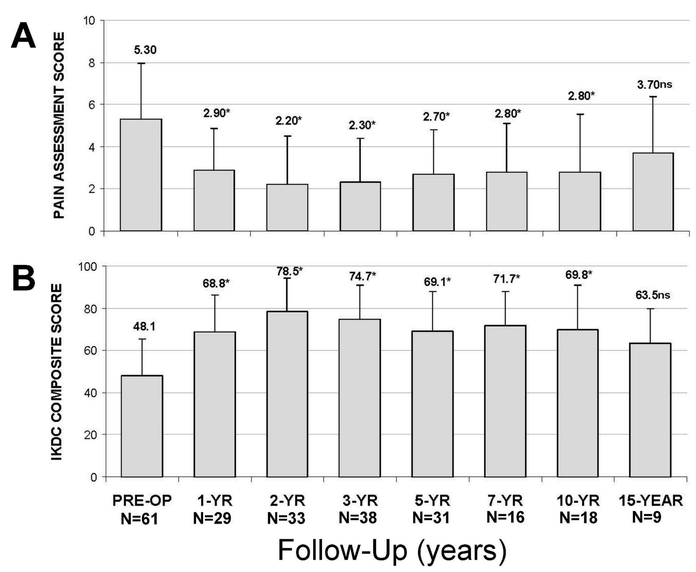


Figure 3: Patient Reported Knee Pain and Function Over Time



Eighty-six of 108 (79.6%) patients met criteria. Over the follow-up mean 8.55 (range of 0.68 to 25.2) years, 42 of 87 (48.2%) grafts progressed to arthroplasty with mean time of 8.64 (median 8.05) years. Concomitant procedures did not have significant impact on survival; however, survival medians were higher among paste graft and chondroplasty and lower among osteotomy groups. At the time of reporting, 41 of 84 (48.8%) patients had intact meniscus transplants, demonstrating significant improvements ($p<0.001$) in pain and function as assessed by IKDC. These improvements were sustained ten years post-operatively, correlated to a mean of 65.8 years of age. At least 50% of patients achieved Minimal Clinically Important Difference (MCID) through 10 years post-operatively.

Discussion

The findings of this study show that meniscus allografting when combined with other joint procedures delays joint arthroplasty. Favorable graft survivorship presents a mean time to revision by arthroplasty of 8.64 years, thereby decreasing the risk of revision while improving pain and function for an active population.[1] Limitations of this study include the lack of a control population and the difficulty separating the relative contribution of concomitant procedures from meniscus transplantation alone to the clinical benefit observed.

Conclusions

Meniscus allografts in combination with other arthroscopic interventions delay knee arthroplasty and improve knee symptoms of pain and function in a population of knee arthroplasty candidates over 50 years of age. Influences of concomitant procedures cannot be defined.

References

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For Further Information

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