

Meniscus Allograft Transplantation Delays Arthroplasty in Patients Over 50 Years of Age

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ePoster #68



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No relevant financial relationships to disclose.



Objective

This study evaluates the utility of meniscus allografts in combination with other procedures to delay knee arthroplasty in patients older than 50 years of age previously advised to have a joint arthroplasty.

It was hypothesized that these subjects would benefit from a meniscus transplant in terms of improved knee symptoms, function, and 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 reviewed. Eighty-six of 108 (79.6%) patients met eligibility for this case series report.

Inclusion criteria were patients recommended a knee arthroplasty with pain and preservation of some joint space by standing flexion x-rays. Exclusion criteria were defined as lack of joint space, failure to comply with rehabilitation protocol or complete research questionnaires.



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Methods

International Knee Documentation Committee (IKDC) composite and isolated pain scale question were evaluated longitudinally. Time from meniscus transplantation to arthroplasty was measured with failure defined as allograft excision or revision, progression to arthroplasty, or same or increased pain.

Table 1: Demographic Data

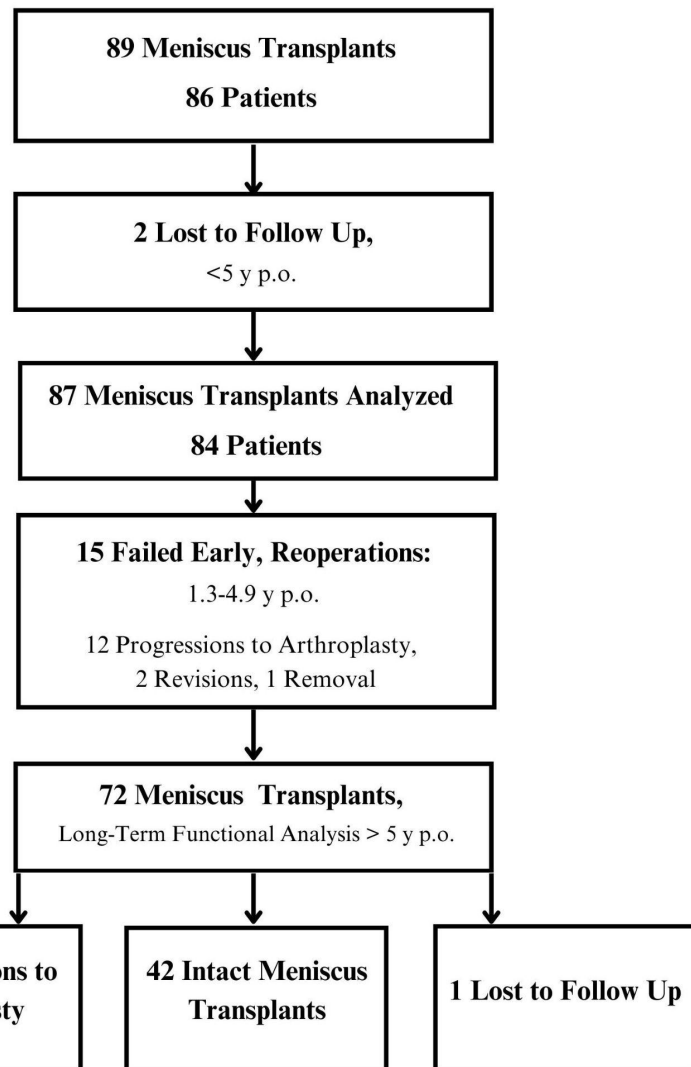
Meniscus transplants/patients, n	89/86
Mean age (range), y	55.8 (50-69)
Male/female, n	61/25
Left/right knee, n	40/49
Medial/lateral, n	63/26

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

Table 3: Early and Later Reoperations

Postoperative Time Period, y	Operative Procedures	No, of Cases
Early (< 5y)	Transplant removed	1
	Transplant revised	2
	Knee arthroplasty	12
	Total	5
	Uni	6
	Unspecified	1
Later (> 5y)	Knee arthroplasty	29
	Total	20
	Uni	7
	Unspecified	2



Results

Over the follow-up mean 8.55 (range of 0.68 to 25.2) years, 42 of 87 (48.2%) grafts progressed to arthroplasty at a mean time of 8.64 (median 8.05) years.

Overall MAT survival amongst the 87 allografts was mean 12.3 (median 13.5) years.

Figure 1: Flowchart of 89 MATs Included in Study

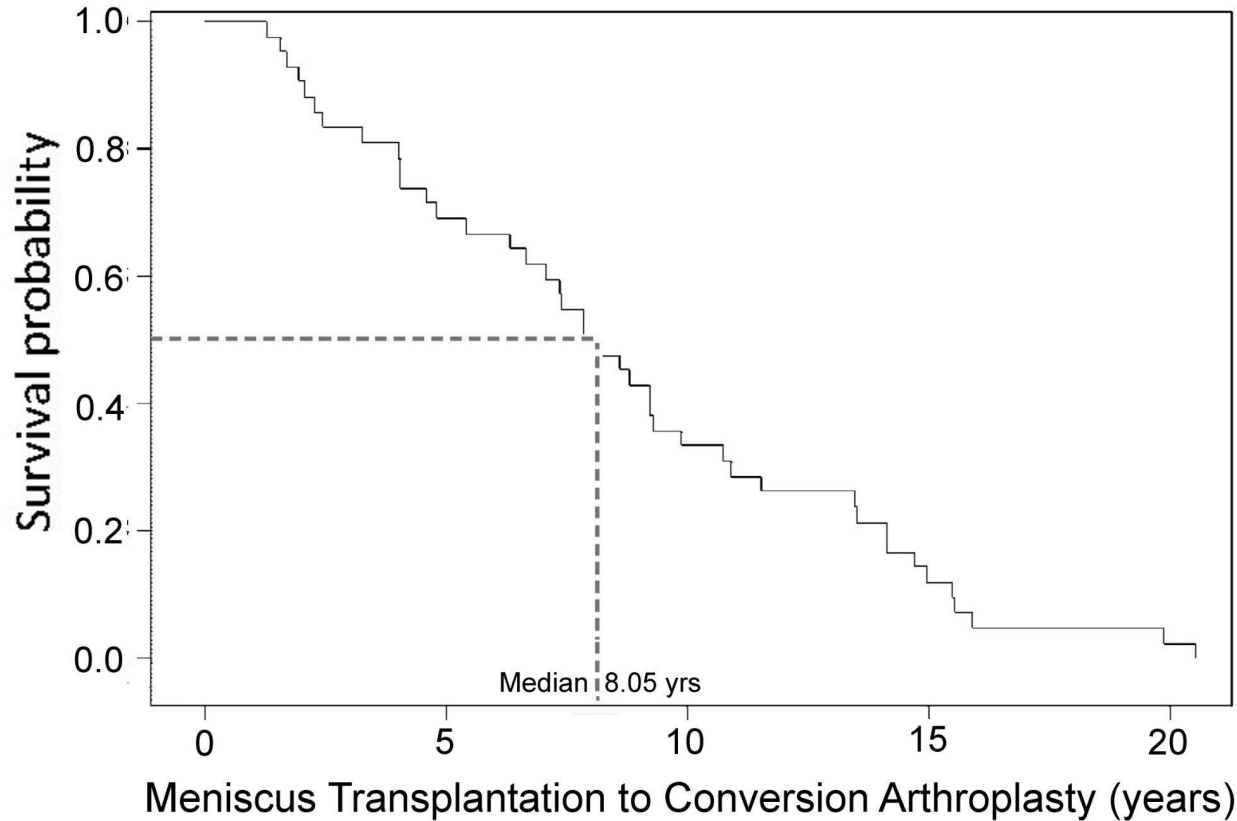


Figure 2

Kaplan Meier Survival Plot: Conversion to Arthroplasty. 42 Grafts in 41 subjects. Analysis of time to conversion yielded a median survival time of 8.05, mean survival 8.64, range 1.3 – 20.5, and confidence interval of 9.2 – 15.0 years.

41 of 84 (48.8%) patients still had intact meniscus transplants

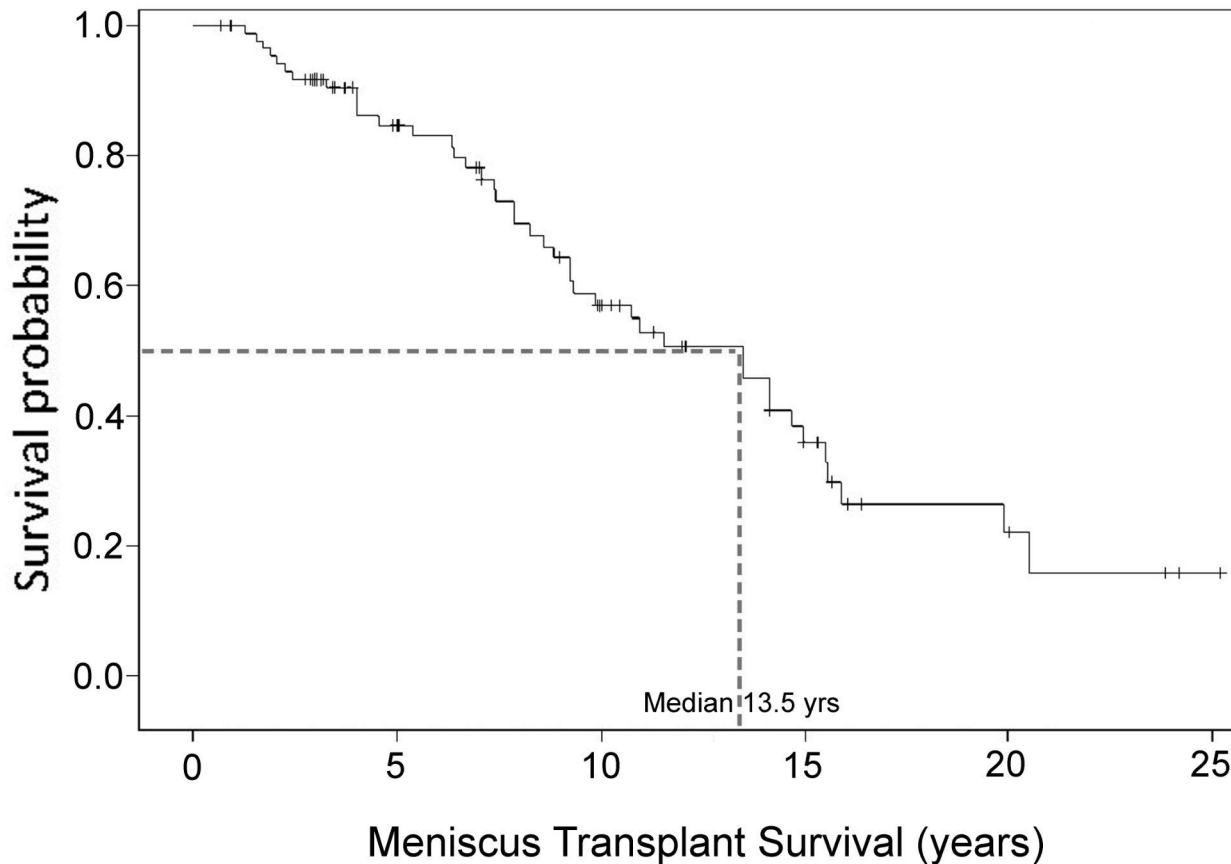


Figure 3

Kaplan Meier Survival Plot: Meniscus Transplant Survival. 87 allografts in 84 subjects. Analysis yielded a median survival time of 13.5, mean survival 12.5, range 0.68 – 25.2, and confidence interval of 9.3 – 15.0 years.

41 of 84 (48.8%) patients still had intact meniscus transplants

Results

At the time of reporting, **41 of 84 (48.8%) patients had intact meniscus transplants** demonstrating significant improvements ($p < 0.05$) in both pain and function as assessed by IKDC.

These improvements were sustained through ten years post-operatively, correlated to a mean of 65.8 years of age.

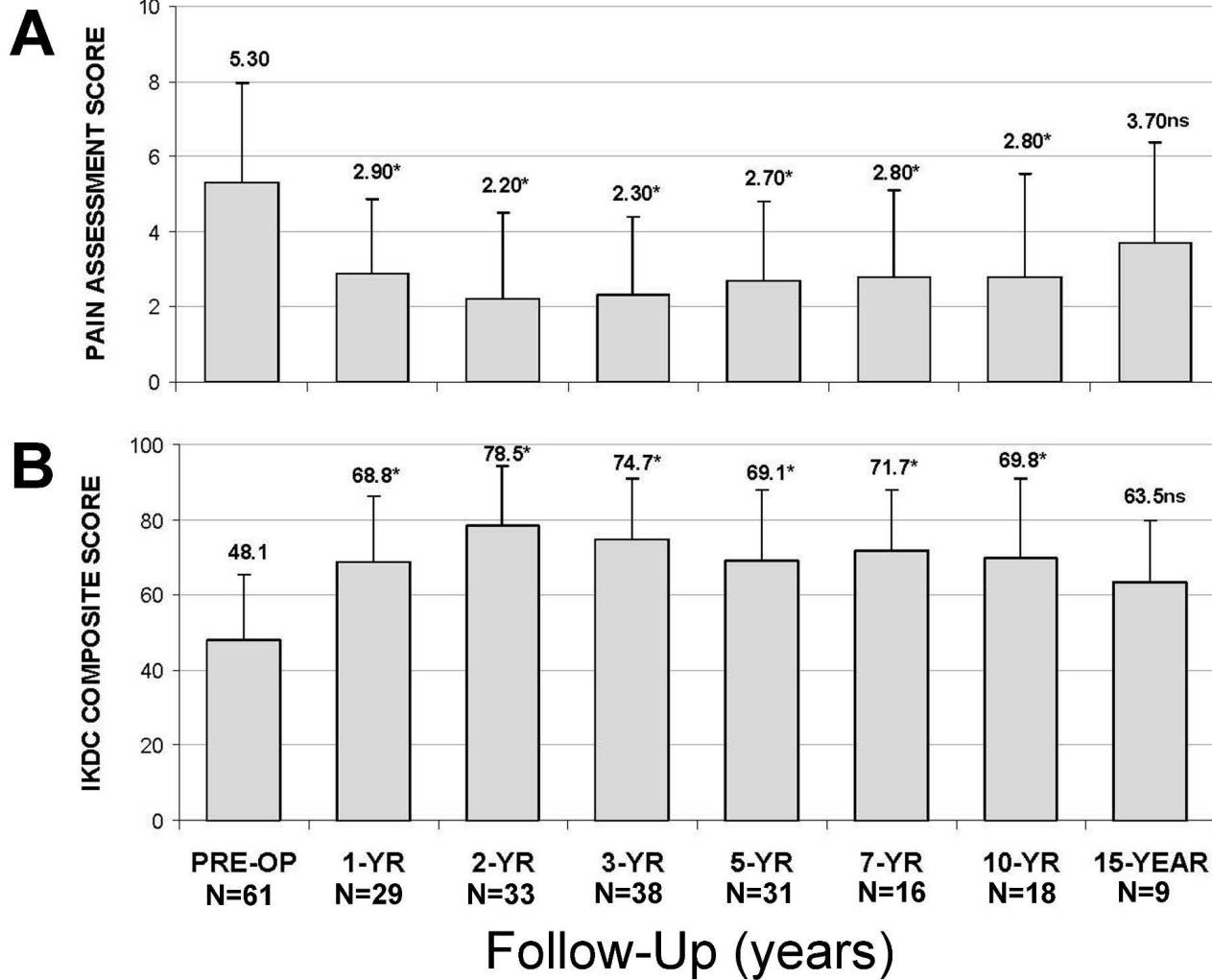


Figure 3A-B

Patient Assessment Outcomes. (A) Pain, and (B) Activity as assessed by IKDC Score. Outcomes reported in N, mean +/- standard deviation for both scores pre-operatively through 15 years postoperatively.

Conclusions

Meniscus allografts in combination with other arthroscopic knee treatments delay arthroplasty and improve symptoms of pain and function in a population over 50 who are otherwise candidates for knee arthroplasty and patients in which debridement alone has shown to be ineffective.

Limitations 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.