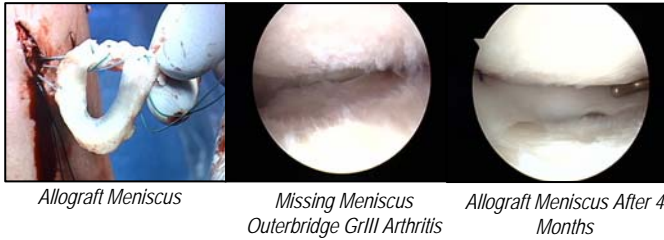


MENISCUS ALLOGRAFT SURVIVAL IN PATIENTS WITH MODERATE TO SEVERE ARTHRITIS: A 2-7 YEAR FOLLOW-UP

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INTRODUCTION

Can meniscus allografting survive in the setting of knee arthritis? We present the findings of 45 patients (47 meniscal allografts) with significant arthrosis to determine if the meniscus can survive in the arthritic joint of older adults. We believe that replacing the meniscus in this patient population may help to delay arthroplasty and improve the results of debridement alone.

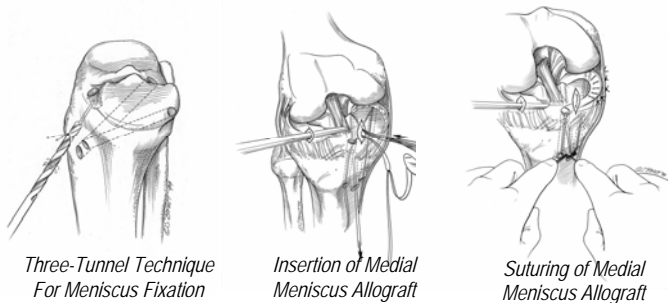


METHODS

Patients: Prospective data was collected for 45 patients (31 men, 14 women, mean age 48, age range 14-69, 2 patients had bilateral grafts), with pre-operative evidence of significant arthritis. Allografts were medial in 37 (79%) and lateral in 10 (21%). Of 47 knees, 9 were Outerbridge Class III (19%) and 38 were Class IV (81%).

Statistics: Serial clinical exams, x-ray, MRI and validated questionnaires for pain, activity and function were used. No patient was lost to follow-up. Graft failure was defined as surgical removal of the allograft or increased pain as reported by the patient. Five out of 47 allografts were considered failures (10.6%). Statistical analysis included paired t-tests and Kaplan-Meier survival analysis. Power analysis with alpha of 0.05 and N=47 demonstrates a power > 0.90.

Surgical Technique: Surgical technique used was the “three-tunnel technique” previously described by the senior author.¹



RESULTS

Statistically significant mean improvement in self-reported measures of pain, activity and functioning with corresponding probabilities of p=0.001, 0.008 and 0.004 using paired t-tests, independent of age, joint space narrowing or severe mal-alignment are reported in Table I.

Twelve of 47 menisci required a second arthroscopy for either suture repair or partial meniscectomy, but were not considered failures because the transplant was a success. A Kaplan-Meier analysis revealed that the mean time to failure, adjusting for censoring, was 4.4 years. The overall failure rate was 5 of 47, or 10.6%.

All 5 patients had chronic injuries with osteochondral lesions (classified as Grade IV Outerbridge lesions) with unremitting pain in the affected compartment, eventually leading to arthroplasty. Table II reveals the survival probabilities from one to five years.

Table I
 Descriptive Statistics for Self-Reported IKDC Pre-Op and Post-Op Measures

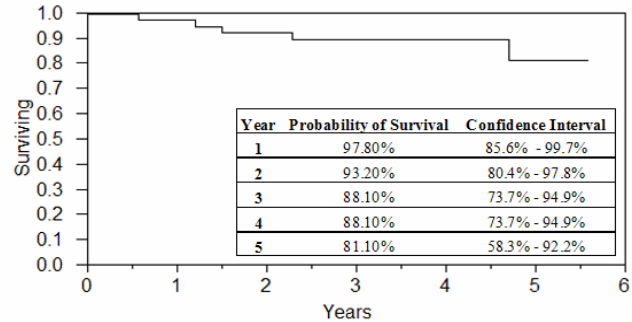
Variable	Pre-Op	Post-Op	Wilcoxon p-value
Pain^a			
Mean	3.02 ^a	4.06	0.001
Standard Deviation	0.99	0.86	
Activity^b			
Mean	2.16	2.65	0.008
Standard Deviation	0.9	0.92	
Functioning^c			
Mean	2.37	3.34	0.001
Standard Deviation	0.81	0.81	

^a Based on a scale from 1-5 where 1 = the most pain and 5 = the least pain.

^b Activity refers to sports-like activities where the most strenuous activities are basketball or soccer and the least strenuous activity is recreational walking.

^c Functioning refers to daily activities such as heavy or light work, ascending and descending stairs, and getting in and out of a car.

Table II
 Product-Limit Survival Plot and Survival Probabilities



DISCUSSION

Meniscus allografts survive moderately well in knees with arthritis. Most patients in this population are pleased to gain 5-10 years if it delays arthroplasty. The role that allografts play is difficult to parse from the benefit of the concomitant procedures performed during arthroscopy of arthritic knees; however, recent reports have indicated that arthroscopic debridement alone has not been satisfactory. Therefore, the addition of the shock-absorbing meniscus may be required to provide longer-term relief. These results compare favorably with previous reports of patients who were younger and with less severe degenerative disease. This study demonstrates that meniscus allograft transplantation can be used in higher-risk patients with reasonable expectations of a successful outcome.²

REFERENCES

- Stone KR, Walgenbach AW. “Meniscal Allografting: the Three-Tunnel Technique.” *Arthroscopy – The Journal of Arthroscopic and Related Surgery*. 2003, 19(4):426-30.
- Stone KR, Walgenbach AW, Turek T, Freyer A. “Meniscus Allograft Survival in Patients With Moderate to Severe Arthritis: A 2-7 Year Follow-Up.” *Arthroscopy – The Journal of Arthroscopic and Related Surgery*. 2006. In Press.