

## Long-Term Survivorship of Meniscal Allograft Transplantation

Catherine Van Der Straeten, MD, PhD, BELGIUM  
Jan M.K. Victor, MD, PhD, BELGIUM

Ghent University Hospital  
Ghent, East-Flanders, BELGIUM

### Summary:

Long-term survivorship of meniscal allograft transplantation was 13.8% at 24 years. Age >30 years and cartilage Outerbridge grade >III had significantly worse outcomes. Indications for meniscal allograft transplantations should be limited to symptomatic young patients with no-to-mild cartilage damage.

### Abstract:

#### INTRODUCTION

Total meniscectomy is a surgical treatment for symptomatic meniscal tears. After meniscectomy, the tibiofemoral contact area is decreased leading to higher contact stresses often associated with clinical symptoms and a faster progression of tibiofemoral osteoarthritis (OA). Meniscal allograft transplantation has been used since 1989 at our institution as a surgical option post-meniscectomy to alleviate symptoms and delay OA progression.

#### AIMS

The long-term clinical results, patient satisfaction and allograft survivorship were evaluated retrospectively. Additional knee interventions and determinants for success/failure were assessed.

**PATIENTS AND METHODS:** 328 meniscal allograft transplantations were performed in 314 patients from 1989 till 2013. Mean age at surgery was 33 (15-57); 60% were males. MRI revealed no-to-mild cartilage damage (modified Outerbridge grade 0-II) in 147 cases, moderate-to-severe damage (grade III-V) in 136. There was a significant correlation between cartilage damage and age ( $p < 0.001$ ). The lateral meniscus was replaced in 208 cases, medial in 120. 42% of allografts were viable, the others deep-frozen. Surgical approach was open in 257 cases (78.4%), arthroscopic in 71 (21.6%). In 118 patients a concomitant procedure was performed simultaneously: microfracture ( $n=50$ ), OATS ( $n=2$ ), osteotomy ( $n=39$ ) or ACL-plasty ( $n=27$ ).

#### RESULTS

At a mean follow-up of 7.6 years (0.2-24.3), 6 patients were deceased and 64 lost to follow-up (19.5%). 85 meniscal allografts had been removed (25.9%) of which 43 were converted to a total knee arthroplasty (TKA), 16 to a unicompartmental (UKA) besides 26 total meniscectomies. 174 allografts were still in situ (53.0%) including 18 partial meniscectomies, 34 with a tear or re-tear after suture, 2 totally resorbed on MRI and 120 at least partially present on MRI. Eight additional knees were planned for TKA. In 91 patients with the allograft in situ clinical data were obtained. Median VAS for pain was 5 at a mean follow-up of 7.2 years. Other symptoms included locking, instability, swelling and stiffness. The median VAS for satisfaction was 8. The overall cumulative survivorship with endpoint removal of the allograft either by conversion to arthroplasty or total meniscectomy was 13.8% at 24 years. There was no statistically significant difference in survivorship between genders, open versus arthroscopic approach, viable versus deep-frozen allografts. In patients younger than 30 years at surgery, the survival was significantly better (37.3% at 20 years) compared to patients older than 30 (8.0% at 24 years) ( $p=0.006$ ). For knees with no-to-mild cartilage damage the survivorship was better (34.0% at 21.2 years) compared to moderate-to-severe damage (7.8% at 24 years) ( $p=0.048$ ). Concomitant microfracture or ACL-plasty had no significant effect on survivorship but with simultaneous osteotomy survival was significantly worse (0% at 24 years) ( $p=0.015$ ). 63.5% of patients underwent at least one additional surgery (1-11) for knee symptoms after the meniscal transplantation. Cumulative survivorship with endpoint subsequent surgical interventions at the same knee was 0% at 24 years.

#### DISCUSSION

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