#1779 - Clinical Study / Free Papers

Arthroscopic Partial Meniscectomy In The Degenerative Knee: Why Do We Still Do It?

Orthopaedics / Knee & Lower Leg / Joint Preserving Surgery & Soft-tissue Repair

Victor van de Graaf, Nienke Willigenburg, Julia Noorduyn, Rudolf Poolman

OLVG, Amsterdam, Netherlands, The

Keywords: Knee, Meniscus, Arthroscopic Meniscectomy, Physical Therapy, RCT

Background
Each year approximately two million arthroscopic partial meniscectomies (APMs) are performed, with the majority in patients over 45 years old, contributing significantly to our healthcare costs.
In recent years, APM for degenerative meniscal tears has come under scrutiny after several randomised controlled trials (RCTs) were unable to show its superiority over conservative treatment.
Despite these publications, orthopedic surgeons are still not convinced with the evidence, since the numbers of APMs did not decrease as much as would be expected.
Objectives
In this non-inferiority multi-centre RCT, we aimed to determine the efficiency of APM compared with PT.
We hypothesized PT to be non-inferior to APM.
Study Design & Methods
Study design
A non-inferiority, multicentre randomised controlled trial.

Participants
We included patients between 45 and 70 years with a magnetic resonance imaging (MRI) confirmed non-obstructive meniscal tear.
All participants signed written informed consent and were subsequently randomised for APM or PT in a 1:1 ratio using random blocks. Patients were stratified for centre and age (45– 57 and 58–70 years).

Procedures
APM was generally performed within four weeks after randomisation and was performed in day-care.
PT was performed at pre-selected physical therapy clinics. All participants were treated according to a standardised protocol which was developed by a knee-specialised physical therapist.

Outcomes
Primary outcome was mean improvement in IKDC-score from baseline (T0) to 24 months of follow-up.

Sample size calculation

We calculated with a power of 90%, an α of 0.05, a standard deviation (SD) of 18 points on IKDC, a non-inferiority threshold of 8 points, and accounted for 25% cross-over from PT to APM, and 20% dropout, that we needed 160 patients per group.

Statistical analysis
We applied a general linear model with the IKDC as dependent variable, and included different confounders for their effect on the outcome.

Results

Between 2013 and 2015, we randomly assigned 321 patients to either APM (n=159) or PT. (n=162).
We found no differences between groups at baseline.

We found the following mean differences (MD) for the IKDC between groups, all in favor of surgery:
T0 to 3 months: MD=1.49 (95%CI -2.2 to 5.2)
T0 to 6 months: MD=4.47 (95%CI 0.27 to 8.7)
T0 to 12 months: MD=6.92 (95%CI 2.5 to 11.3)
T0 to 24 months: MD=6.09 (95%CI 1.9 to 10.3)

Our linear model revealed confounding effects for BMI (intercept -1,1 per unit; p<0,001), Gender (intercept -4.2 for women; p<0,01), and time (all measurement moments compared to T0; p<0.001).

We found no confounding effects for baseline osteoarthritis level (Kellgren Lawrence; p=0.52), Age (p=0.57), and intervention (p=0.41).

Conclusions

In this non-inferiority RCT we found significant improvement of physical function for both groups after 24 months of follow-up. We found significant differences in favor of the APM group between groups in mean improvement from baseline to 6, 12, and 24 months. However, none of these differences exceeded the non-inferiority threshold and are therefore not clinically relevant.
Our general linear model analysis confirmed improvement over time and significant confounding of BMI and gender. However, we were unable to show a confounding effect of baseline osteoarthritis level. This could be explained by the exclusion of severe osteoarthritis from our study.

Future research should focus on the applicability of these confounders in treatment process, as well as on further de-implementation of APM as treatment for meniscal tears in the degenerative knee.