

## A 24-Month Follow-Up Study On Clinical And Radiological Outcomes Of Polyurethane Meniscal Scaffolds

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### Summary:

radial displacement after poly-urethane meniscus scaffold for treatment of partial defects does not correlate with significant clinical improvement

### Abstract:

**Background:** Little is known about radial displacement (RD) of polyurethane (PU) scaffolds, intended for partial meniscus defect substitution; no data are available on whether rim thickness has an effect on RD, and if RD correlates with clinical outcome scores.

**Hypothesis:** The meniscus is not extruded preoperatively, but RD occurs after scaffold implantation. It is also hypothesized that a thicker meniscal rim will limit RD, and that there is no correlation between RD and clinical outcome.

**Study design:** Case series

**Methods:** Twenty-six patients were implanted with a PU scaffold (8 lateral, 18 medial) and were followed up for 2 years. RD (mm) was evaluated on magnetic resonance images preoperatively and at 3, 12 and 24 months postoperatively. At each of these time points it was determined whether a correlation existed between the rim and RD. Clinical outcome scores were determined pre- and postoperative using a visual analog scale (VAS) for pain and with the Lysholm, Knee Injury and Osteoarthritis Outcome Score (KOOS) and International Knee Documentation Committee (IKDC) scores.

**Results:** RD of lateral scaffolds was not significantly different ( $p=0.178$ ) neither preoperatively ( $3.42\pm 0.99$  mm), nor at 3 months ( $4.82\pm 0.59$  mm), 1 year ( $4.55\pm 0.87$  mm) and 2 years postoperatively ( $4.10\pm 0.93$  mm). No correlation was observed between the rim and lateral RD at all time points.

RD of medial scaffolds increased significantly ( $p<0.001$ ) from the preoperative values ( $2.17\pm 0.84$  mm) to those at 3 months ( $4.25\pm 0.89$  mm), 1 year ( $4.43\pm 1.01$  mm) and 2 years postoperatively ( $4.41\pm 0.96$  mm). A strong negative correlation between medial RD and the rim was observed at all postoperative time points. There was no significant correlation between clinical outcome scores and RD, both pre- and postoperative.

**Conclusion:** This study demonstrated that limited medial meniscal RD was present preoperatively, but increased by 2 mm after scaffold implantation. Lateral RD was also present preoperatively, but did not increase after scaffold implantation. Importantly, a strong negative correlation was found between the rim and postoperative medial RD ; a thicker rim limited RD. However, in the lateral compartment, rim thickness did not correlate with RD because RD was already strongly present preoperatively. Finally, no correlations were observed between scaffold RD and clinical outcome scores, both pre-and postoperative.