

**Title: Meniscal Lesion Repair After Implantation Of New Porous Polymers. A Study In Dogs**

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Purpose of the study. Bucket-handle lesions in the avascular part of the meniscus do not heal spontaneously. Connecting the lesion to the meniscus' vascular periphery by implanting a smart scaffold in a partial thickness defect may induce healing.

Materials and methods. We created partial thickness defects in 22 menisci of 16 Beagle dogs with lesions which had full thickness longitudinal extensions in the avascular meniscus substance. In 12 lateral menisci a newly developed porous degradable copolymer implant of 50/50 L-lactide/ε-caprolactone was sutured into the defect. 10 meniscal defects were left empty and served as controls. Healing of the lesion, repair of the defect and consequences for the tibial cartilage were evaluated macroscopically, routine histologically and immunohistochemically.

Results. Six months after surgery all polymers were completely incorporated and resembled normal meniscal fibrocartilage, which was confirmed by matrix staining. Ten cases in the implant group showed at least partial healing of the lesion compared to four in the control group. Also the ingrown tissue in the implants more frequently showed a fibrocartilaginous aspect than in controls. Cartilage degeneration with ulcera occurred three times in the implant group while in controls all cases had this aspect. In all implant cases only few macrophages and giant cells were seen.

Conclusions. In meniscal defects with a porous polymer, more healing of the longitudinal full thickness lesions occurred and more fibrocartilage was detected in the implants. A degrading porous polymer seems an adequate scaffold to enable repair tissue to reach the lesion and restores the fibrocartilage in the defect rapidly. This method might be adequate to repair lesions in the avascular zone of the meniscus.