

## Histological analysis of human acellular dermal matrix explants after joint arthroplasty

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**Introduction:** In CMC arthroplasty, the FCR tendon is often harvested and placed in the open joint space. **Unfortunately**, tendon harvest can result in donor site morbidity. **Recent** trials in humans have substituted acellular dermal matrices (ADMs) in the joint space. **However**, there is no data that examines the status of ADM after implantation into a small joint. In this study, we aim to describe the revascularization, recellularization, and reorganization of ADMs in the joint space **using a rabbit model**.

**Methods:** Bilateral lunate removal in **New Zealand White** rabbits was performed. The bone on one side was replaced with dermis harvested from the rabbit's back, while the other was replaced with FlexHD ADM. As a non-joint control, the site of dermis removal received ADM. Samples were collected at 0, 6, or 12 weeks and examined histologically.

**Results:** In the ADM wrist implants, semi quantitative analysis of cellular infiltrate revealed the presence of 0%, 30%, and 22.5% new host cells/hpf at baseline, 6 weeks, and 12 weeks, respectively. In the autologous dermis wrist implants, <10%, 20%, and 25% new host cells/hpf were found at baseline, 6 weeks, and 12 weeks. In ADM samples inserted subcutaneously in the back, 0%, 20%, and 10% new host cells/hpf were observed at baseline, 6 weeks, and 12 weeks.

**Conclusion:** ADM arthroplasty led to higher cellular infiltration than autologous dermis arthroplasty at week 6 but less infiltration at week 12. ADM samples inserted subcutaneously matched the autologous dermis cellular infiltration at week 6 but dropped at week 12.