

# 論 文 内 容 要 旨

Autologous meniscus fragments embedded in atelocollagen gel  
enhance meniscus repair in a rabbit model

(ウサギモデルにおけるアテロコラーゲンを用いた細碎半月板は半  
月板修復を促進する)

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**Aims:** This study evaluated the cell migration and proliferation of minced meniscus and meniscus regeneration following implantation of minced meniscus into massive meniscus defect in rabbit.

**Materials and Methods:** Meniscus fragments were obtained from Japanese white rabbits, manually minced, embedded in atelocollagen gel, and cultured for 3 weeks. Cell migration and proliferation were then evaluated. In the rabbit model, the anterior half of the medial meniscus was excised, and minced meniscus embedded in atelocollagen gel was implanted (minced meniscus group). Rabbits with untreated meniscus defect (defect group) and transplanted with atelocollagen gel only (atelocollagen group) were also prepared. Meniscus regeneration was evaluated histologically at 8, 12, and 16 weeks.

**Results:** Abundant cells were observed in the gel after 3 weeks of culture, indicating that meniscus cells migrated from the minced meniscus and proliferated in the gel. The regenerated tissue in the minced meniscus group more closely resembled native meniscus histologically than that in the defect and atelocollagen group. Furthermore, the modified Pauli's score was significantly higher in the minced meniscus group than in the defect and atelocollagen group.

**Conclusion:** Thus, this study revealed that cells in minced meniscus can proliferate, and implantation of minced meniscus induces meniscus regeneration. This meniscus

regeneration method involving minced meniscus is a potential therapeutic option for treating meniscus tear in one-step surgery.