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info@tissyou.com

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Collygen
Collagen membrane made from highly pure type I atelocollagen of equine origin, produced by Tiss'You.

Firat Fidan

Pendik Medical Park - *Istanbul, Turkey*

20 patients
26-53 years

Cartilage defect

Up to 6 months
of follow-up

Pain and functional outcomes
VAS and KOOS-12

Background

Chondral defects, characterized by damaged or lost articular cartilage within joints, significantly impact patients' quality of life. These defects result from various factors such as trauma, chronic wear, or degenerative conditions, with a global prevalence affecting a substantial population. Current treatments include conservative therapies like physiotherapy and analgesics, as well as surgical interventions such as microfracture, mosaicplasty, and other cartilage reconstruction techniques.

This study employs Collygen, an absorbable collagen membrane composed of highly pure type I atelocollagen from equine sources. This innovative membrane, designed for post-cartilage reconstruction, offers key advantages. Collygen's 3D structure seamlessly conforms to bone graft surfaces, ensuring optimal implant site protection during the critical healing phase. Its roughened surface enhances intraoperative adhesion without the need for additional fixation. Additionally, Collygen serves as a biological membrane ideally suited for orthopedic procedures, including its role as a barrier to retain, stabilize, and structure clots in cartilage repair techniques, such as those addressing chondral defects.

Methods

Twenty patients, aged between 26 and 53 years, with confirmed chondral defects observed through MRI imaging, were enrolled in the study. The surgical intervention employed an arthroscopic cartilage reconstruction technique, specifically utilizing a cartilage repair method for chondrogenesis. This involved meticulous de-fect cleaning, microfracture procedures, and the subsequent application of a collagen membrane (Tiss'You). Post-operatively, patients were instructed to restrict weight-bearing activities for the initial two weeks. After this period, passive movements were allowed to facilitate the healing process. Clinical evaluations were conducted at three and six months post-intervention to assess pain levels using the Visual Analog Scale (VAS) and functional outcomes using the Knee Injury and Osteoarthritis Outcome Score-12 (KOOS-12).

Results

During the study, no adverse events were reported, underscoring the safety profile of the employed intervention. At the three-month mark, notable improvements were observed, with a 15% enhancement in functional outcomes measured by KOOS-12 and a remarkable 65% reduction in pain levels on the Visual Analog Scale (VAS). These improvements were sustained at the six-month follow-up, demonstrating a 34% increase in KOOS-12 scores and an impressive 79% reduction in pain levels compared to baseline. These differences were found to be statistically significant, highlighting the efficacy of the intervention.

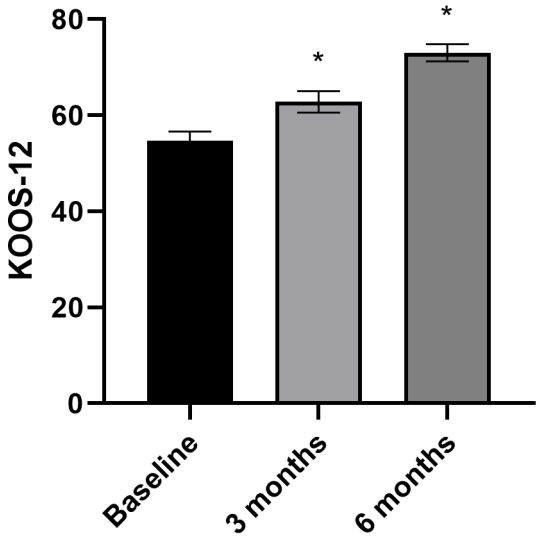

Figure 1. Mean Visual Analogue Scale (VAS) score. Error bars show standard error of the mean.
* = $p < 0.05$.

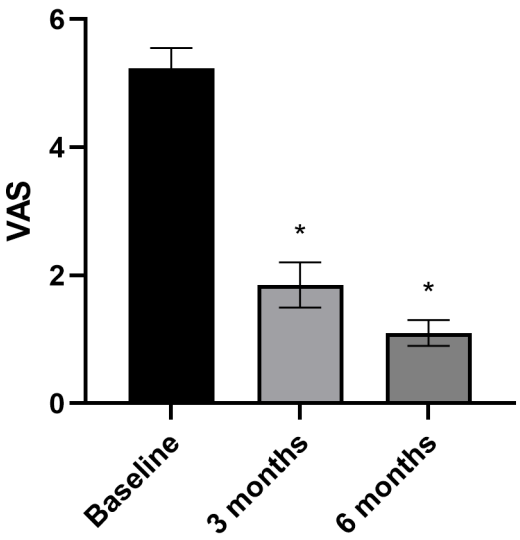

Figure 2. Mean Knee injury and Osteoarthritis Outcome Score-12 (KOOS-12). Error bars show standard error of the mean.
* = $p < 0.05$.

Discussion

The collagen membrane from Tiss'You in conjunction with arthroscopic cartilage reconstruction techniques has shown promising results for treating chondral defects. Patients experienced significant improvements in pain levels (assessed by VAS) and enhanced joint functionality (measured by KOOS-12) over the six-month period. Additionally, follow-up MRI evaluations provided compelling evidence of chondral defect repair and membrane integration, supporting its potential as an effective adjunct in orthopedic practice. These findings suggest the membrane's value in improving patient outcomes and encourage further research into its clinical utility for chondral defect treatment.