

Lipo-Amic Technique Description

– Autologous Matrix Induced Chondrogenesis With
Microfragmented Adipose Tissue Graft

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Faculty Disclosure Information

- My disclosures include being a consultant or advisor for Arthrex and Geistlich Pharma.



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Introduction

Cartilage injuries, historically challenging to treat, have seen significant advancements with techniques like Autologous Matrix-Induced Chondrogenesis (AMIC).

AMIC uses a collagen membrane to stabilize the bone marrow clot formed during microfracture procedures.



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Introduction

The integration of adipose-derived mesenchymal stem cells (AD-MSCs) has enhanced these repairs.

The Lipo -AMIC technique is an adaptation of AMIC that incorporates microfragmented adipose tissue graft processed using the Lipogems® system for the treatment of focal, full-thickness knee cartilage lesions.



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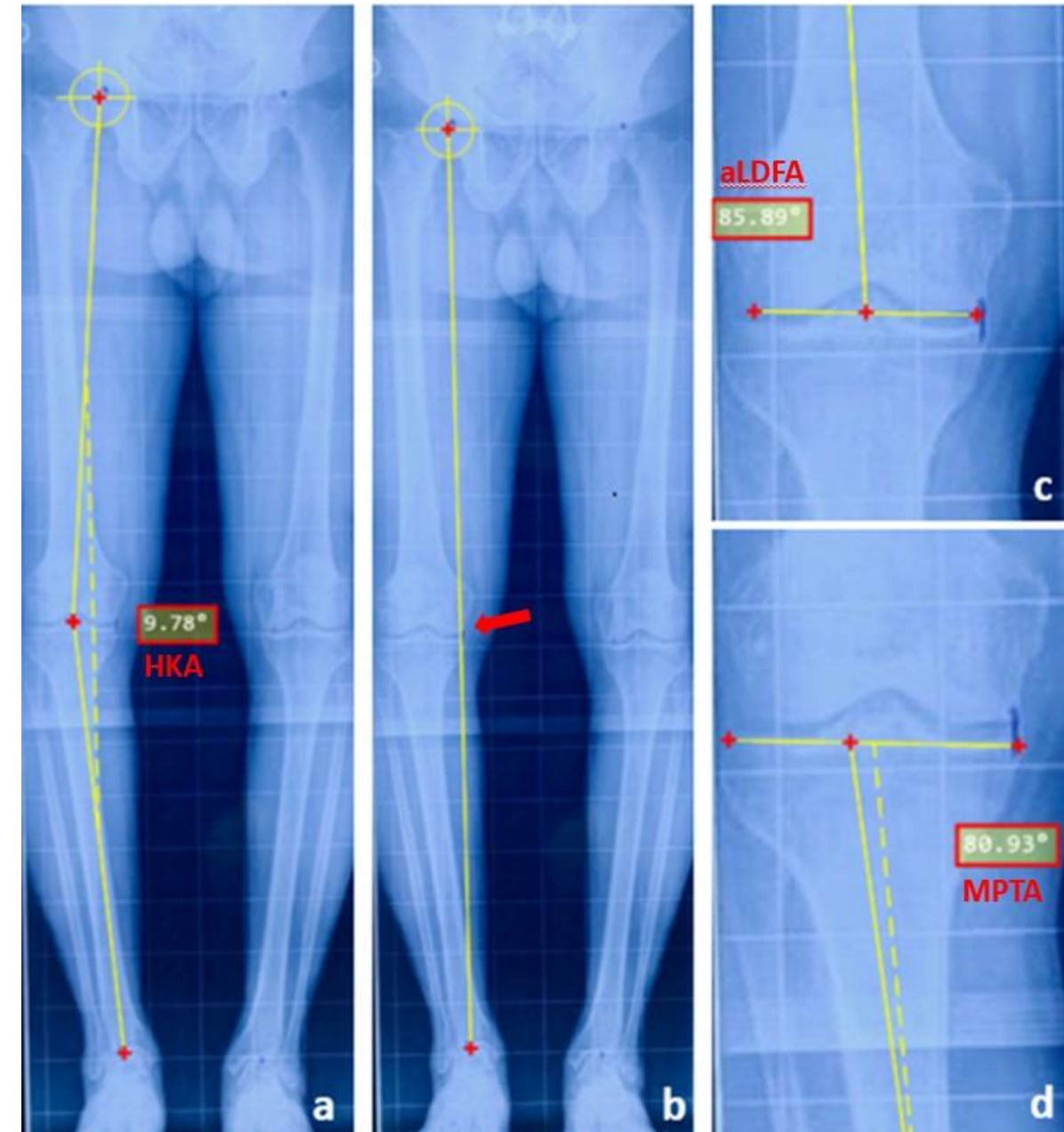
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Technique

Thorough clinical evaluation.

Imaging studies to assess the extent of the lesion and any associated malalignment.

Surgical correction is considered if the malalignment exceeds 2° to 3° .



Technique

Adipose tissue is harvested from the patient's abdomen or flanks via lipoaspiration.

The aspirate is then processed using the Lipogems® system to isolate the microfragmented adipose tissue, which is rich in AD-MSCs



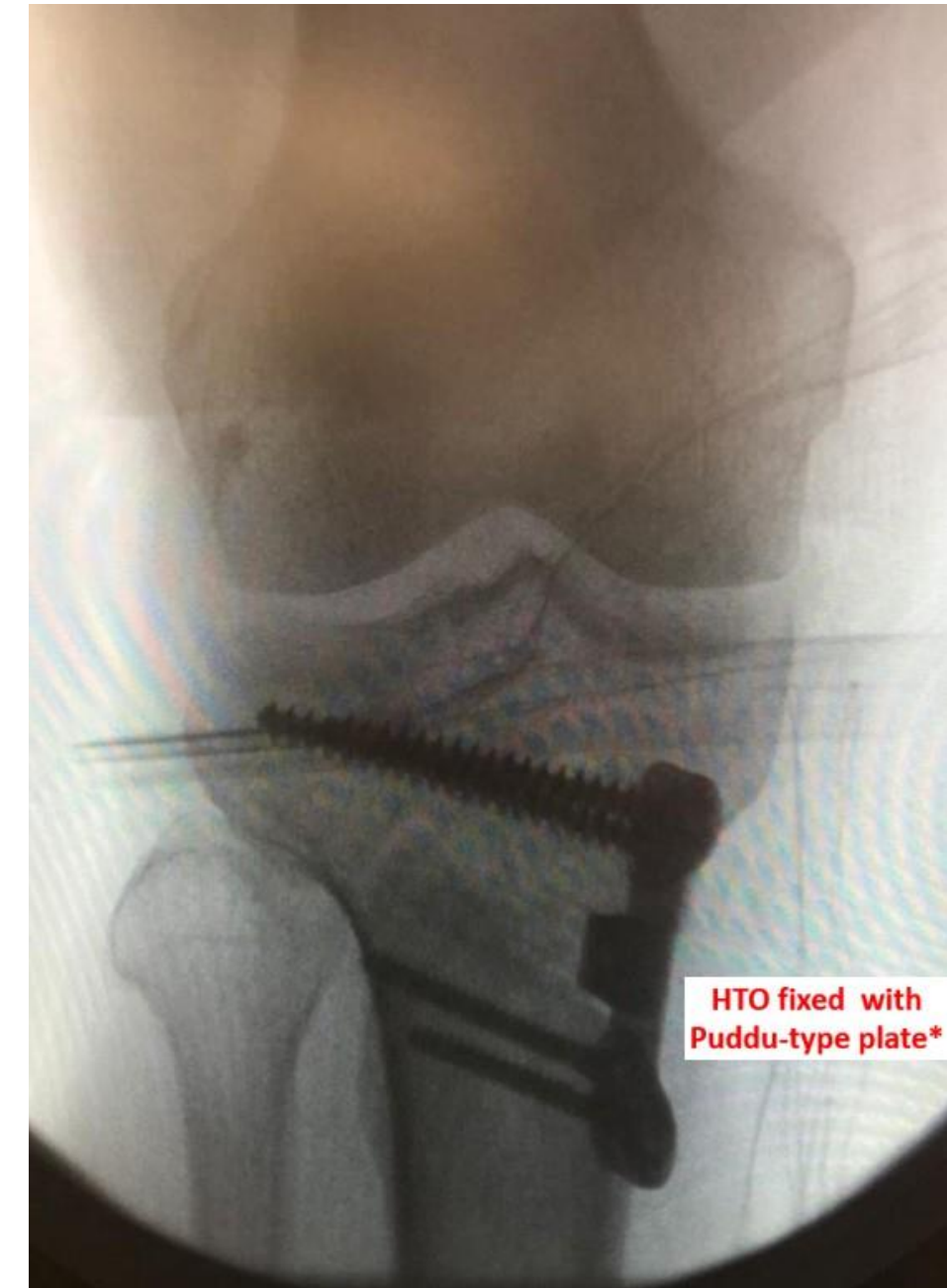
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Technique

Limb axis realignment and treatment of concomitant lesions should ideally be performed using the same procedure.



HTO fixed with
Puddu-type plate*



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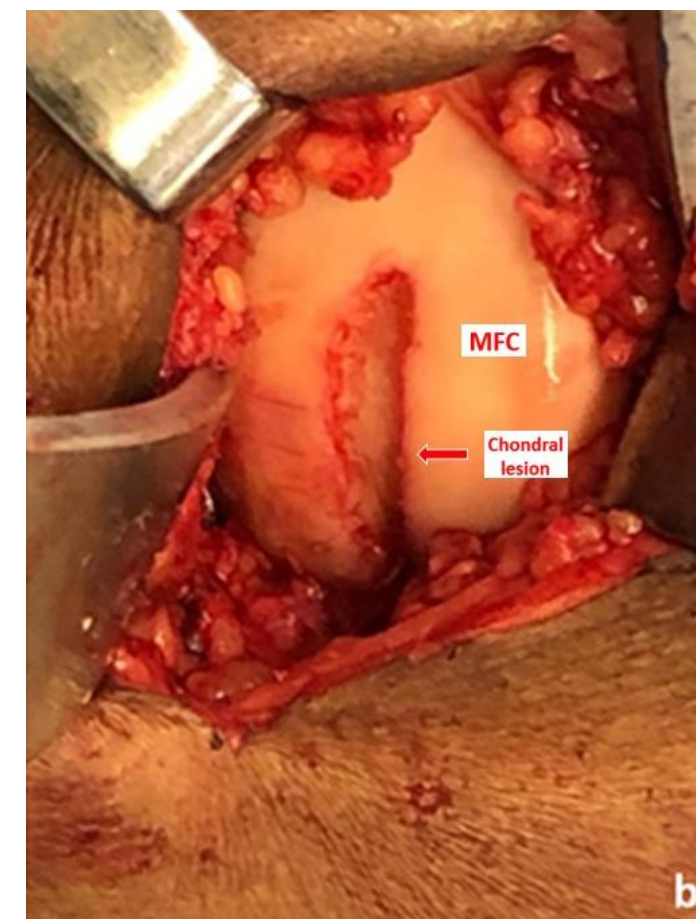
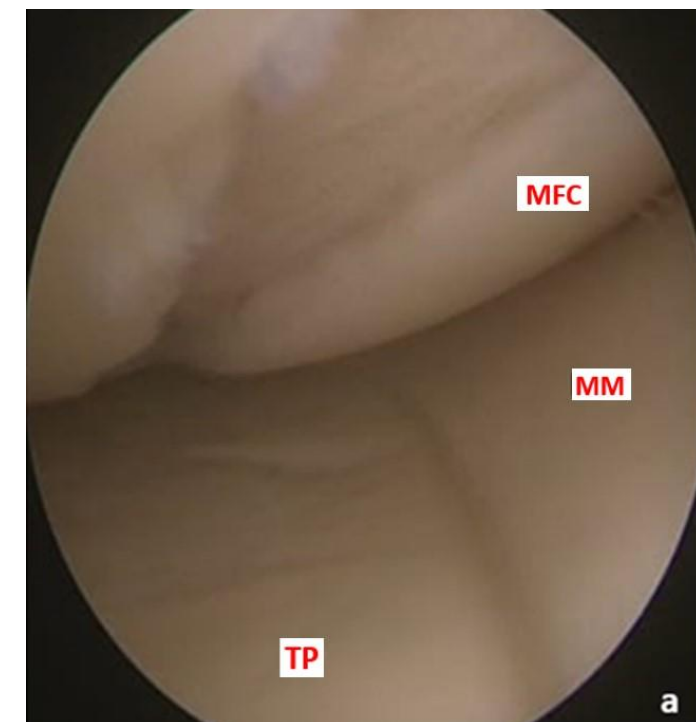
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Technique

Exposure is achieved through a medial parapatellar mini-arthrotomy.

The edge of the lesion is addressed using a scalpel blade, delicate straight periosteal elevator, and curettes, aiming for perpendicular edges of healthy cartilage.

This will serve as containment for the previously prepared microfragmented adipose tissue graft and anchorage for the membrane.



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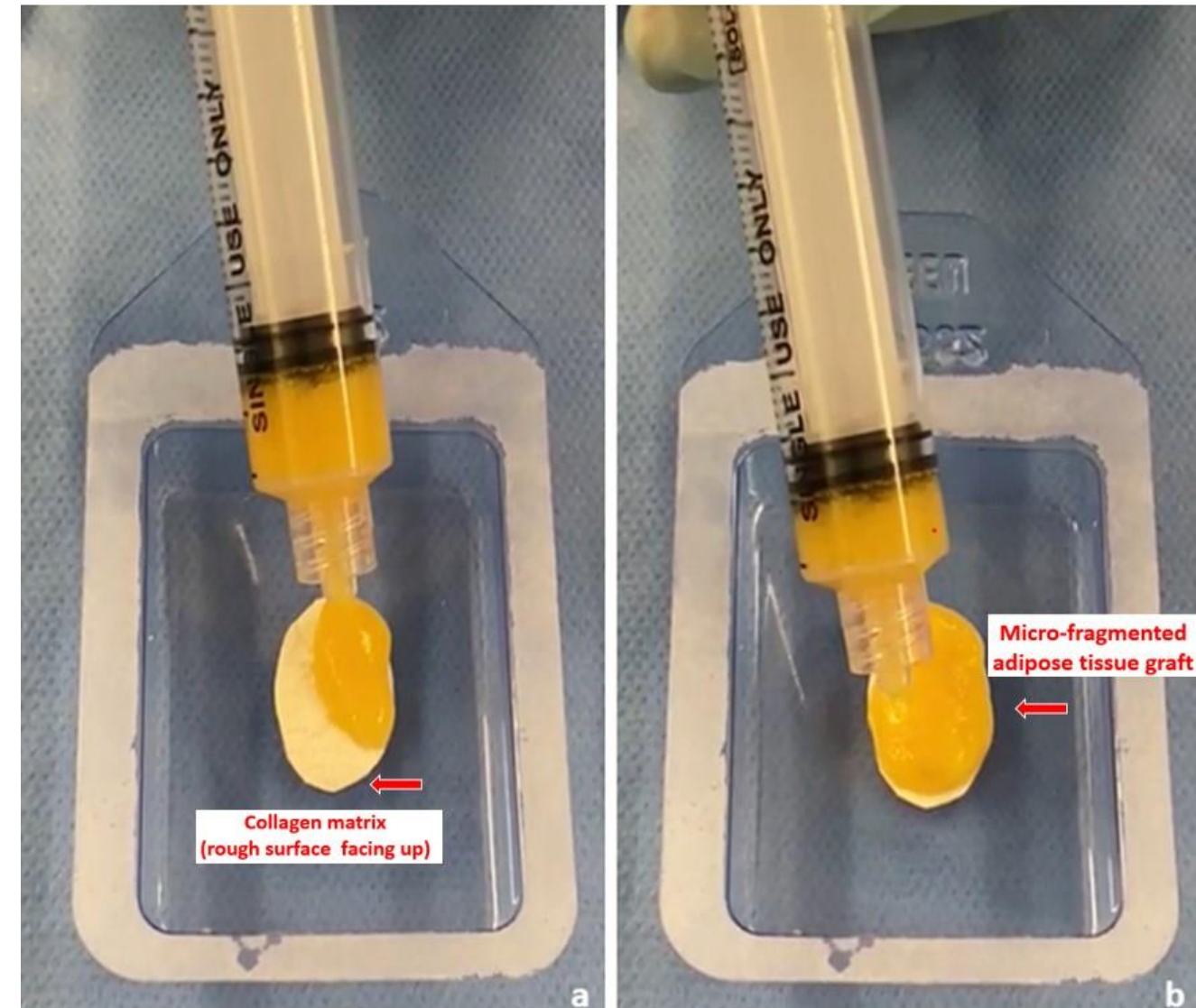


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Technique

A mold of the lesion is created, and the Chondro-Gide® membrane is cut to fit the defect precisely.

This adipose graft, characterized by high viscosity, is combined with the Chondro-Gide® membrane to enhance cartilage repair.



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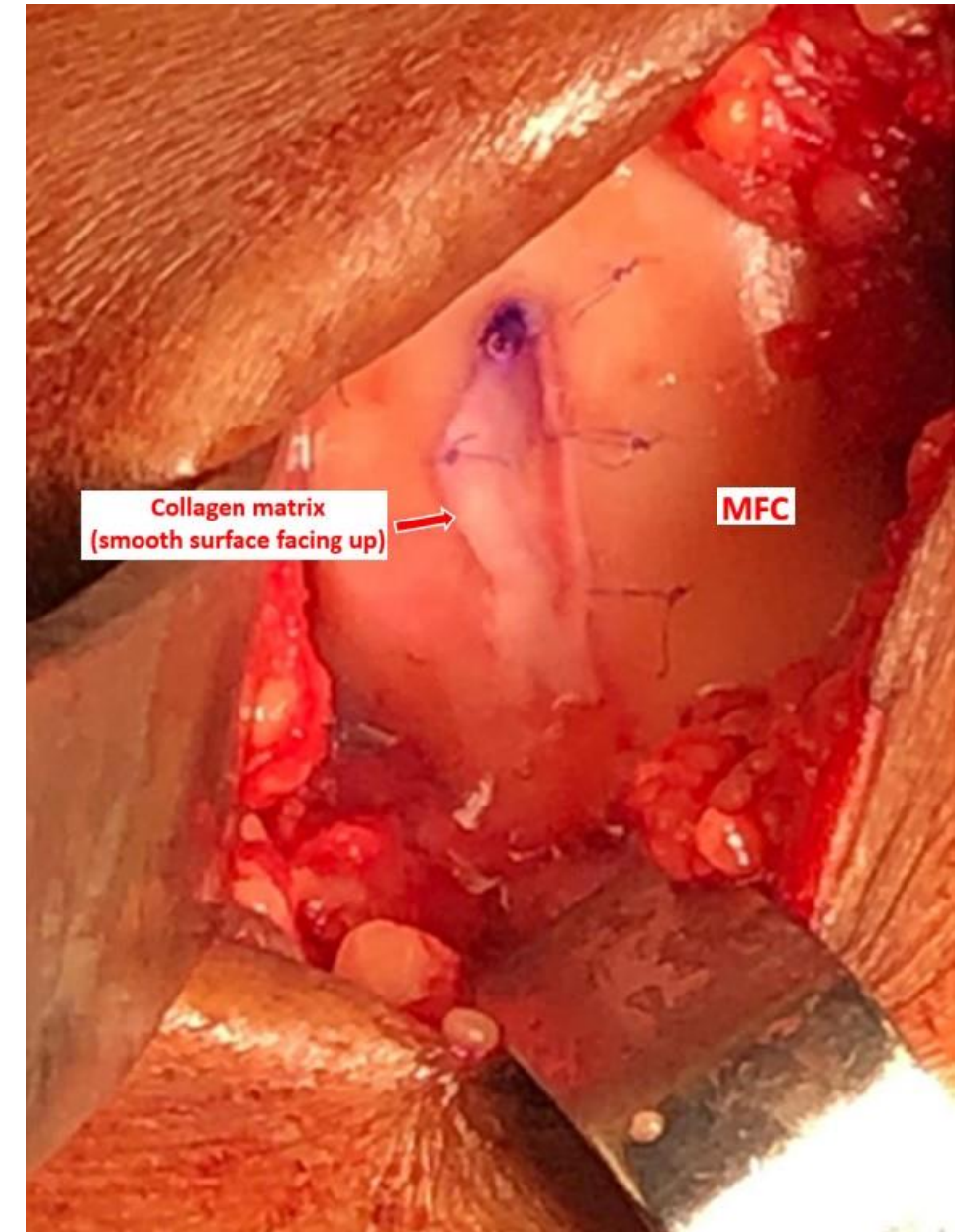


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Technique

Ensure that the graft is contained and adequately fills the defect, avoiding overflow, overfilling of the cavity, or excessive tension on the membrane.

Fixation is performed using interrupted absorbable sutures with 6-0 PDS (Ethicon) anchored at the edge of the cartilage with a spacing of 3 to 5 mm



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Discussion

The use of AD-MSCs in cartilage repair has gained substantial support due to their chondrogenic potential and paracrine activity, which are critical for tissue repair and regeneration. [9, 15]

The Lipo -AMIC technique represents an alternative in treating full-thickness cartilage lesions by increasing the number of AD-MSCs within the lesion.

Early clinical outcomes from similar procedures show significant improvements in patient-reported outcome measures (PROMs) and imaging studies. [20]



Conclusion

The modifications proposed in this Lipo-AMIC technique offer a promising, single-stage solution for full-thickness knee cartilage lesions.

This procedure provides a feasible, safe, and potentially superior approach to cartilage repair. Further research is needed to validate these findings and assess long-term outcomes.



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