ISAKOS CONGRESS 2025 | MUNICH GERMANY June 8–11

Ibermutua Mutua Colaboradora con la Seguridad Social nº 274 | ribera Hospital Covadonga | Hospital Begoña

Use of Autologous Minced Cartilage for the Treatment of Chondral Defects in Femoral Condyles of Physical Workers

Javier A. Ruiz Díaz [1, 2, 3], Rubén Alvarez Canal [1], Celestino Guerra García [2, 4], Francisco J. Álvarez García [1], Javier Higuera Mateo [1], Amaury González Llorca [1], Gabriel López Graña [5]

[1] Ibermutua Asturiana (Oviedo-Gijón, Spain)
[2] Hospital Ribera Covadonga (Gijón, Spain)
[3] Hospital Begoña (Gijón, Spain)
[4] Hospital de la Cruz Roja (Gijón, Spain)
[5] Ibermutua Servicios Centrales (Madrid, Spain)


@drjruizdiaz


www.linkedin.com/in/javier-a-r-98378b137


drjruizdiaz@gmail.com

Disclosures

- Javier A. Ruiz Díaz:
  - Consultant for Smith & Nephew
  - Consultant for Arthrex
- All other authors: No conflicts of interest

Introduction

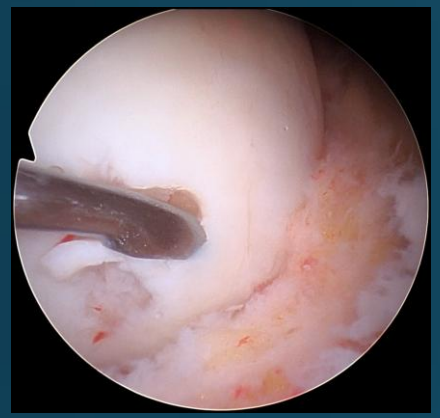
- Chondral lesions of the knee are debilitating injuries
- Autologous minced cartilage is a single-stage surgical treatment option for symptomatic cartilage defects [1] with good results published in the past years [2, 5, 6, 7]
- Minced cartilage is rich in chondrons, which provide improved structural support [3, 4]
- The technique mixes chondrons with plasma-rich-platelet (PRP), which has regenerative and anti-inflammatory properties, and thrombin. The mix of PRP and thrombin creates fibrin [3]
- Cartilage mincing improves extracelular matrix production [4]
- We aim to evaluate the clinical utility of autologous minced cartilage for treating cartilage defects in the femoral condyles of physical workers.

Materials And Methods

- 15 physical workers with a single femoral condyle lesion
  - 10 male, 5 female
- Mean age: 40.4 years (range 24-56 years)
- Surgical technique: autologous minced cartilage transplant mixed with PRP and thrombin [(1)]
- Single surgeon (main author)
- Exclusion criteria: multiple chondral injuries or osteoarthritis
- Mean follow-up: 23.13 months (range 18-30 months)
- Pre and postoperative functional assessment: Oxford Knee Score (OKS) and Knee Society Score (KSS) questionnaires

Surgical Technique

Confirm chondral lesion and associated injuries



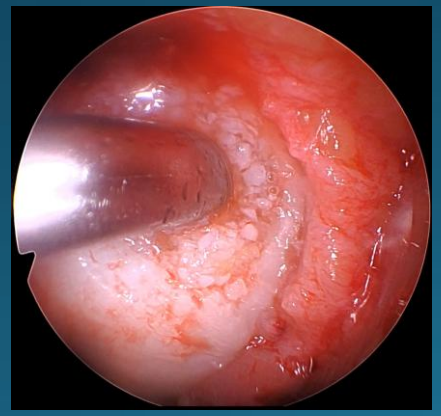
Debride chondral lesion

Connect filter to shaver

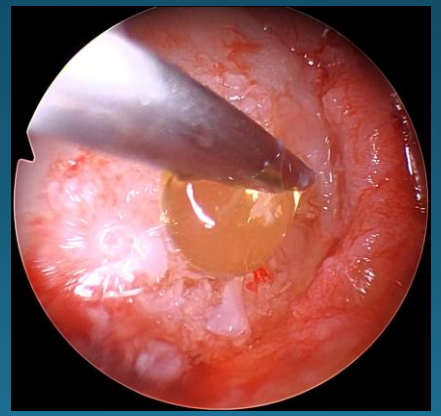
Collect cartilage from the lesion's edges

Mix cartilage with PRP

Dry the joint



Apply the mix on the defect

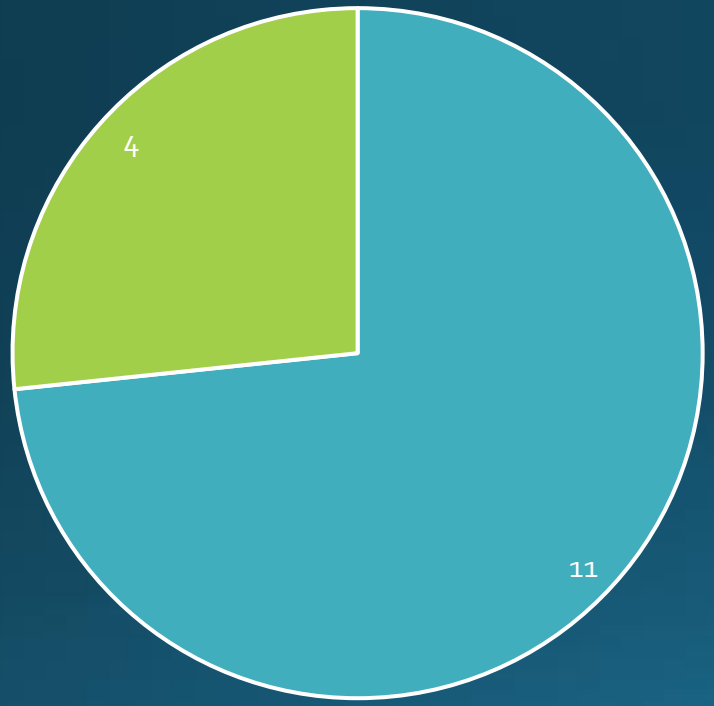


Add thrombin

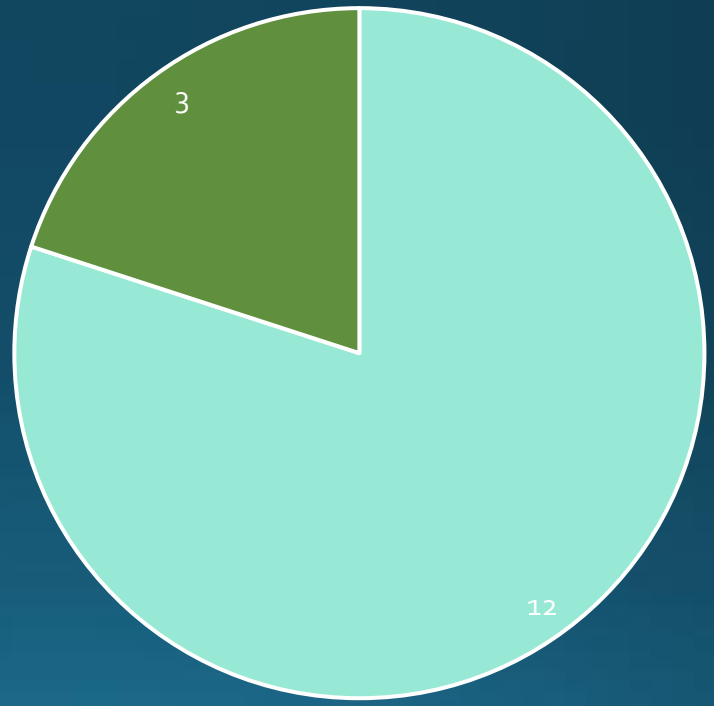
Final repair

Results: Lesion Type And Location

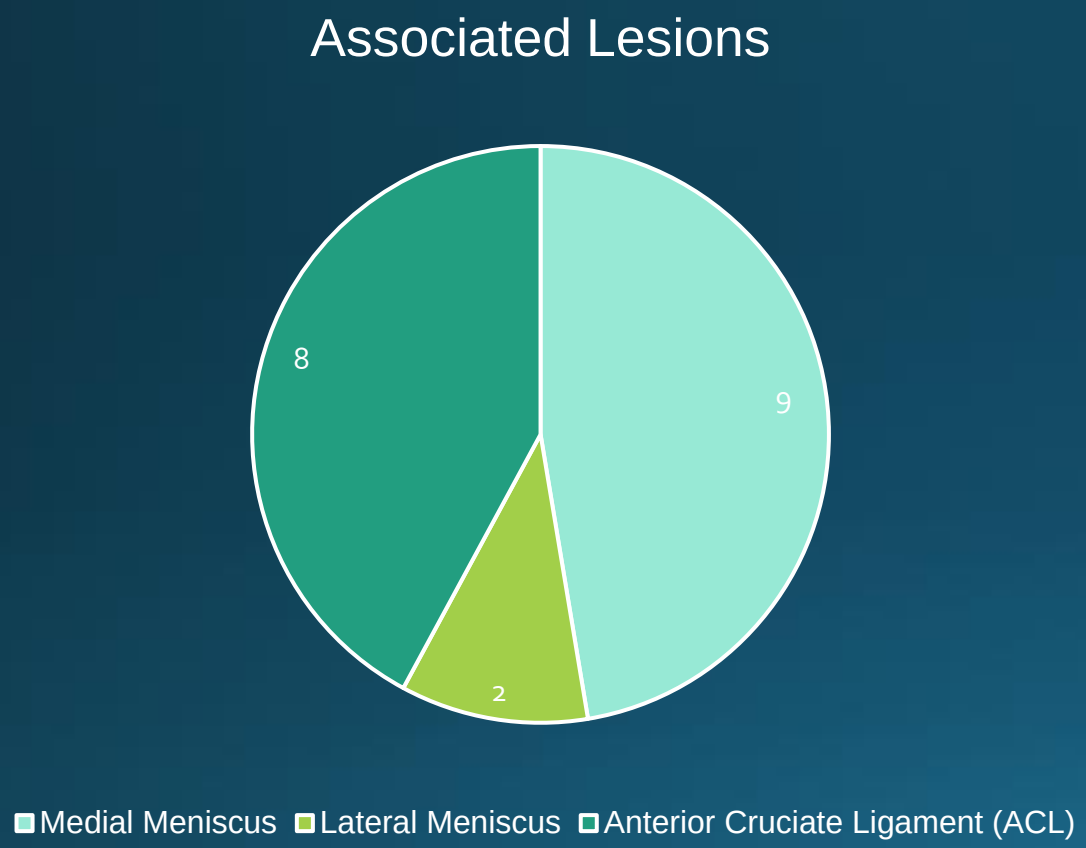
Lesion Grade

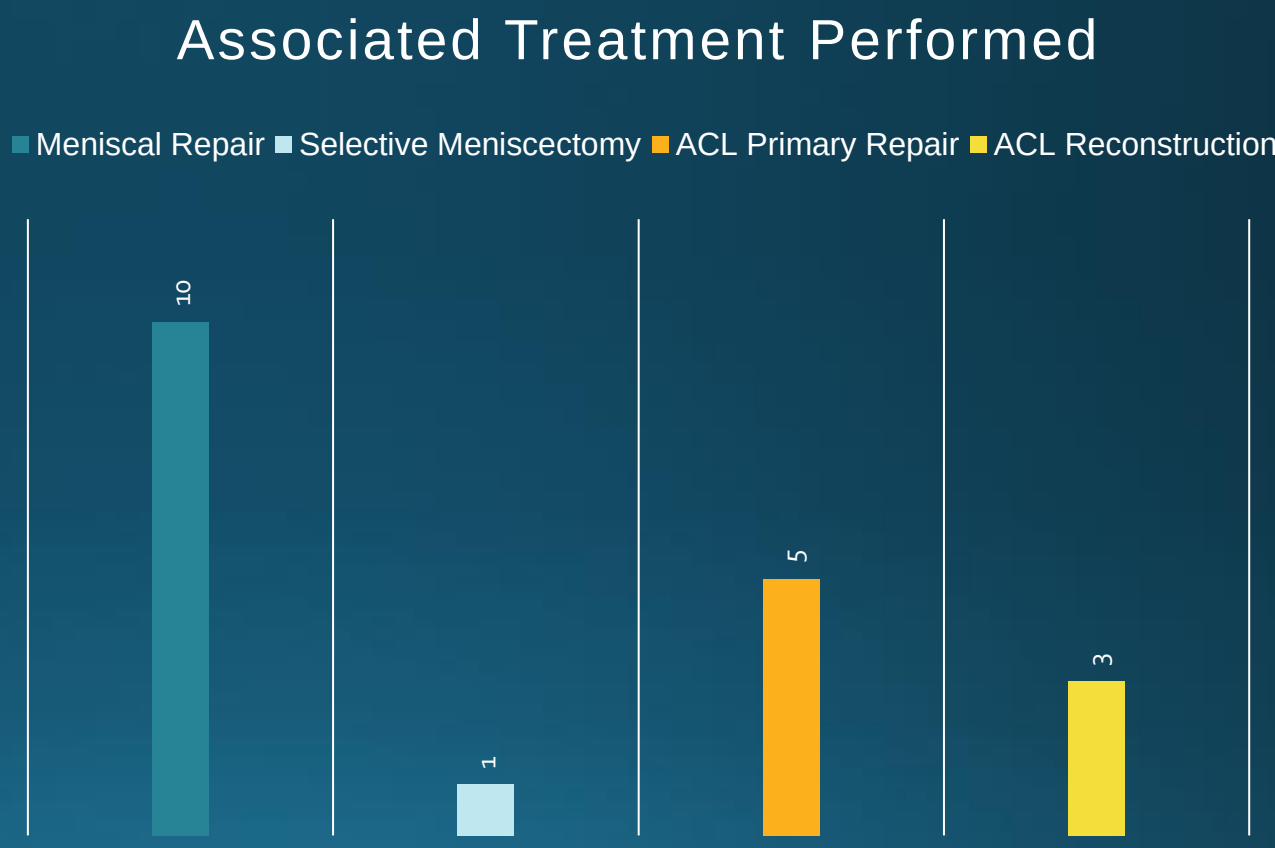


Lesion Location

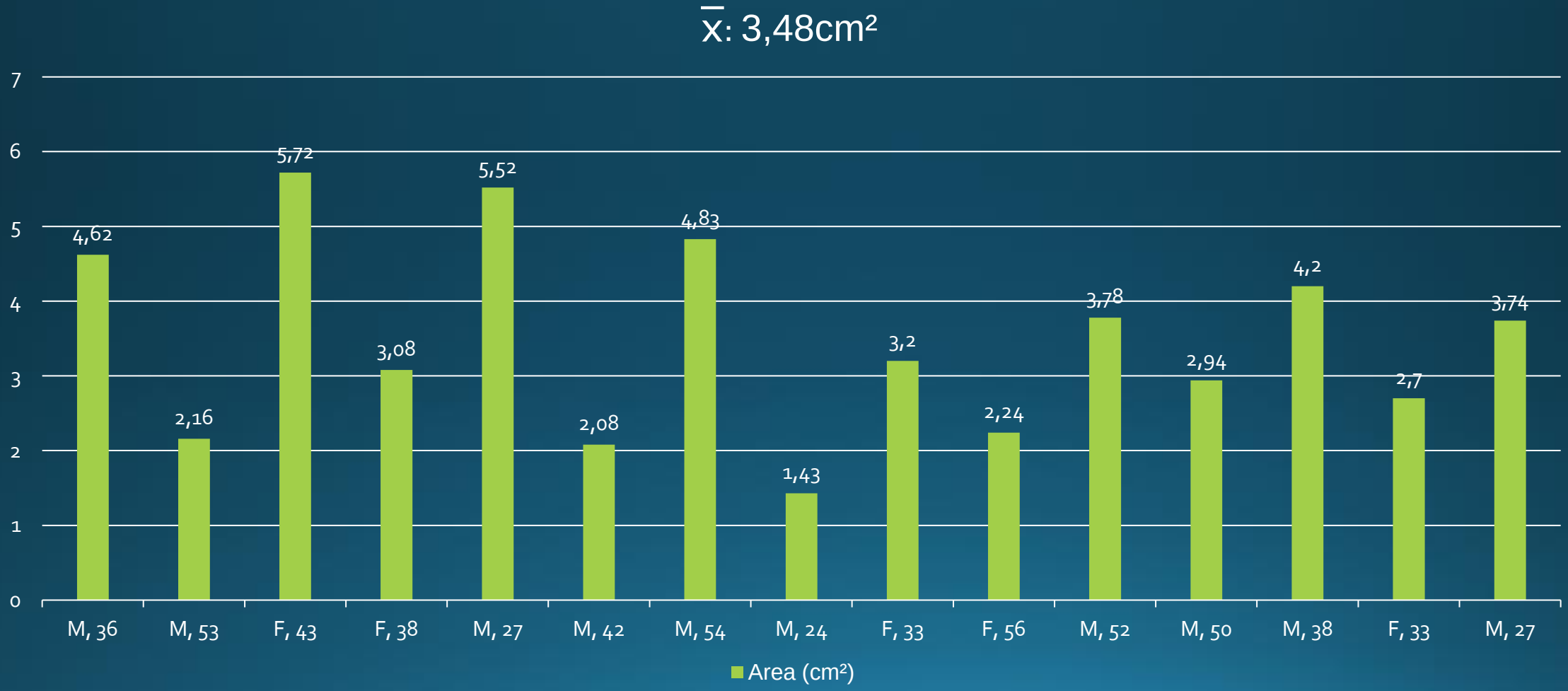


Associated Lesions





Results: Lesion Area



Results: Oxford Knee Score

Preoperative $\bar{x}$: 15,96 / Postoperative $\bar{x}$: 40,6

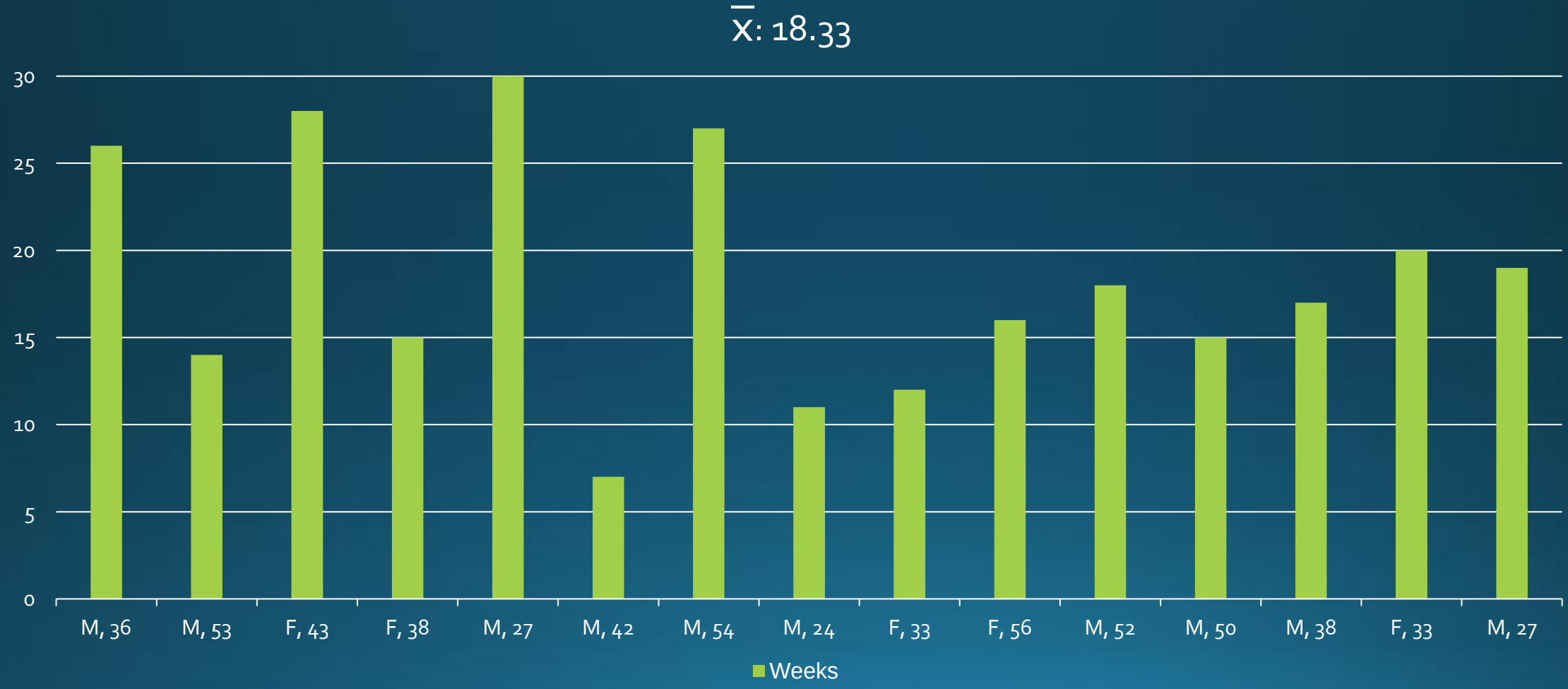
P <0,01

Results: Knee Society Score

Preoperative $\bar{x}$: 43,8 / Postoperative $\bar{x}$: 86,46

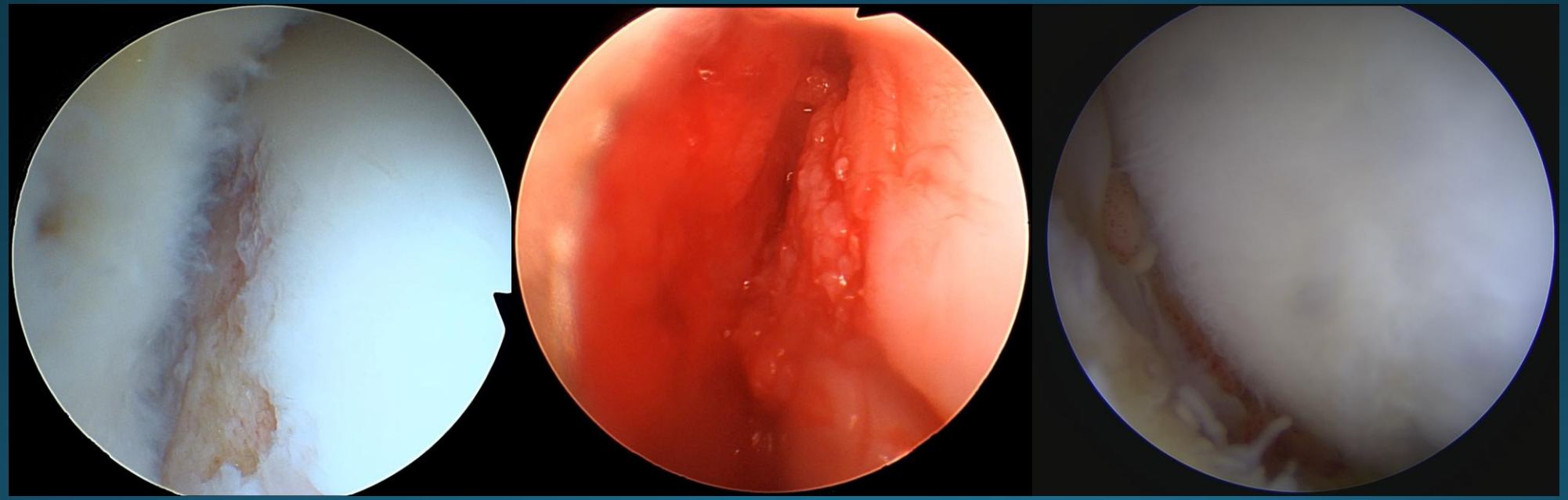
P <0,01

Results: Return to Work (Weeks)



Conclusion

- Treating single chondral lesions in femoral condyles by implantation of autologous minced cartilage is an option with good short-term results in physical workers.



Original lesion, minced cartilage, and 2nd look at 8 months post-op (2nd look due to a different injury)

References

1. Schneider S, Ossendorff R, Holz J, Salzmann GM. Arthroscopic Minced Cartilage Implantation (MCI): A Technical Note. Arthrosc Tech. 2020 Dec 19;10(1):e97-e101. doi: 10.1016/j.eats.2020.09.015. PMID: 33532215; PMCID: PMC7823081.
2. Schneider S, Ossendorff R, Walter SG, Berger M, Endler C, Kaiser R, Ilg A, Salzmann GM, Holz J. Arthroscopic Autologous Minced Cartilage Implantation of Cartilage Defects in the Knee: A 2-Year Follow-up of 62 Patients. Orthop J Sports Med. 2024 Dec 5;12(12):23259671241297970. doi: 10.1177/23259671241297970. PMID: 39640183; PMCID: PMC11618912.
3. Ossendorff R, Walter SG, Schildberg FA, Spang J, Obudzinski S, Preiss S, Schneider S, Salzmann GM. Biologic principles of minced cartilage implantation: a narrative review. Arch Orthop Trauma Surg. 2023 Jun;143(6):3259-3269. doi: 10.1007/s00402-022-04692-y. Epub 2022 Nov 16. PMID: 36385655; PMCID: PMC10191961.
4. Bonasia DE, Marmotti A, Mattia S, Cosentino A, Spolaore S, Governale G, Castoldi F, Rossi R. The Degree of Chondral Fragmentation Affects Extracellular Matrix Production in Cartilage Autograft Implantation: An In Vitro Study. Arthroscopy. 2015 Dec;31(12):2335-41. doi: 10.1016/j.arthro.2015.06.025. Epub 2015 Aug 28. PMID: 26321111.
5. Blanke F, Warth F, Oehler N, Siegl J, Prall WC. Autologous platelet-rich plasma and fibrin-augmented minced cartilage implantation in chondral lesions of the knee leads to good clinical and radiological outcomes after more than 12 months: A retrospective cohort study of 71 patients. J Exp Orthop. 2024 Oct 16;11(4):e70051. doi: 10.1002/jeo2.70051. PMID: 39415804; PMCID: PMC11480521.
6. Runer A, Ossendorff R, Öttl F, Stadelmann VA, Schneider S, Preiss S, Salzmann GM, Hax J. Autologous minced cartilage repair for chondral and osteochondral lesions of the knee joint demonstrates good postoperative outcomes and low reoperation rates at minimum five-year follow-up. Knee Surg Sports Traumatol Arthrosc. 2023 Nov;31(11):4977-4987. doi: 10.1007/s00167-023-07546-1. Epub 2023 Aug 27. PMID: 37634136; PMCID: PMC10598129.
7. Dasari SP, Jawanda H, Mameri ES, Fortier LM, Polce EM, Kerzner B, Gursoy S, Hevesi M, Khan ZA, Jackson GR, Cole BJ, Yanke AB, Verma NN, Chahla J. Single-stage autologous cartilage repair results in positive patient-reported outcomes for chondral lesions of the knee: a systematic review. J ISAKOS. 2023 Oct;8(5):372-380. doi: 10.1016/j.jisako.2023.05.003. Epub 2023 May 24. PMID: 37236360.