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Viability of chondrocytes and radiological evaluation using MRI Mapping of the cartilage in Fresh Osteochondral Allograft Transplants in knee femoral condyles.

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Faculty Disclosure Information

- The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

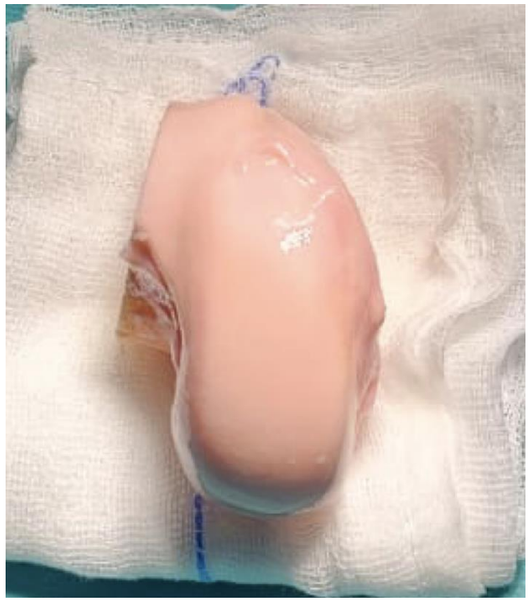
Introduction

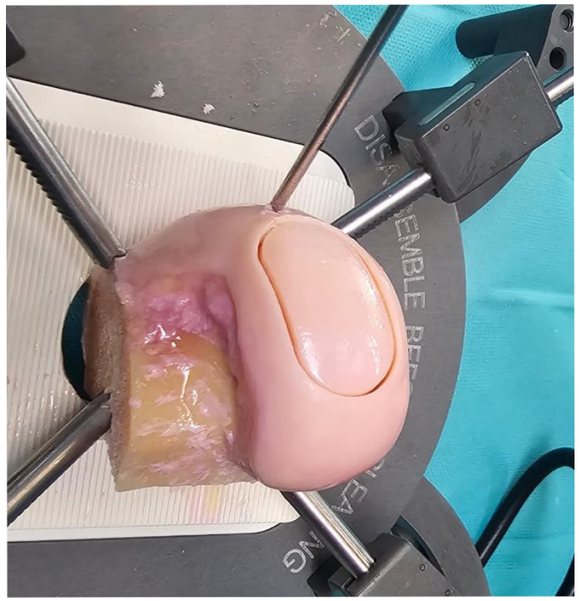
- Fresh osteochondral allograft transplantation (FOCA) is a valid technique for treating osteochondral lesions in young patients.
- The viability of chondrocytes and the integration of the graft are key factors for the success of this procedure.
- MRI Mapping, allows for a non-invasive evaluation of cartilage integrity.
- The viability of the transplant can be analyzed through immunohistochemical methods via biopsy.

Introduction

Objectives:

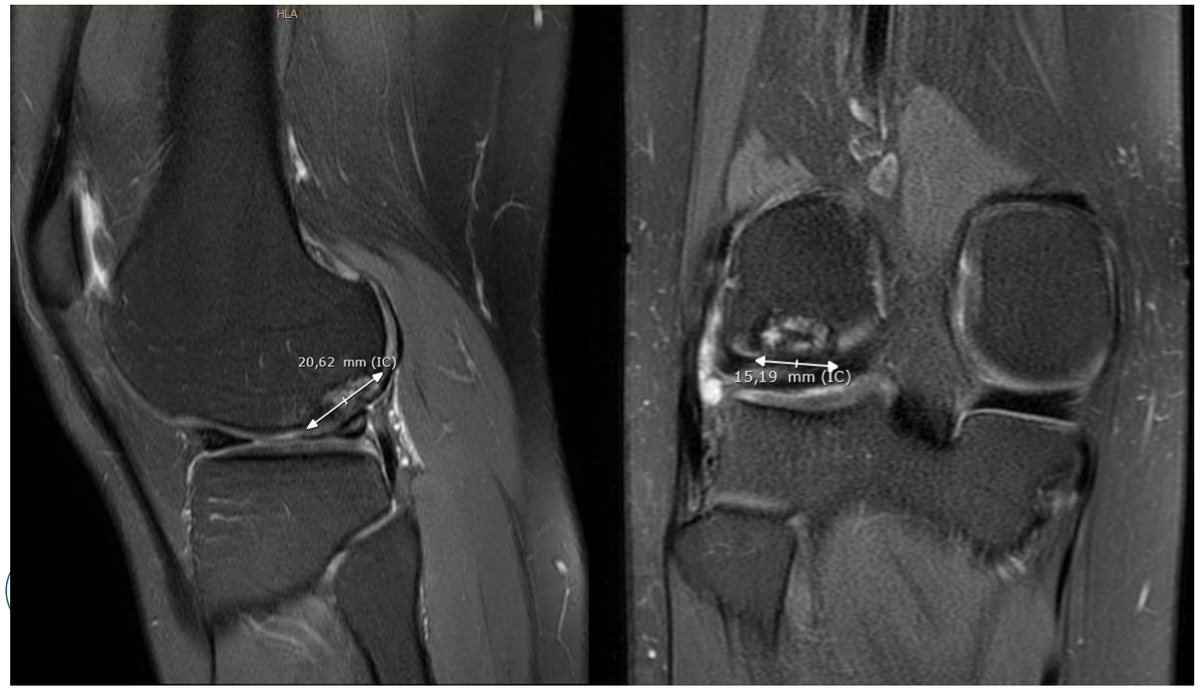
To evaluate the viability of chondrocytes and the integration of fresh osteochondral allografts through histological studies, and to correlate these findings with the images obtained from MRI mapping.





Methods

- 10 patients with osteochondral lesions in the knee femoral condyles diagnosed by MRI were included in this study.
- They all underwent FOCA procedure.



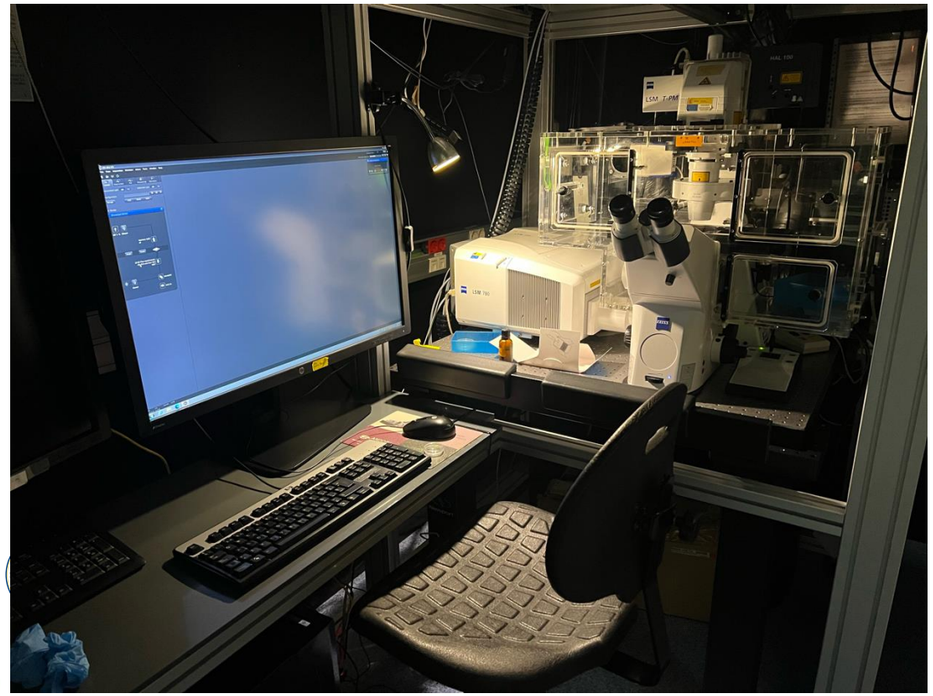
Methods

- Follow up:

	Before surgery	3 month after surgery	6 month after surgery	12 month after surgery
Scores *(KSS, Merlé d'Aubigné, KOOS)*	X	X	X	X
XR	X		X	X
MRI	X			X
Biopsy				X

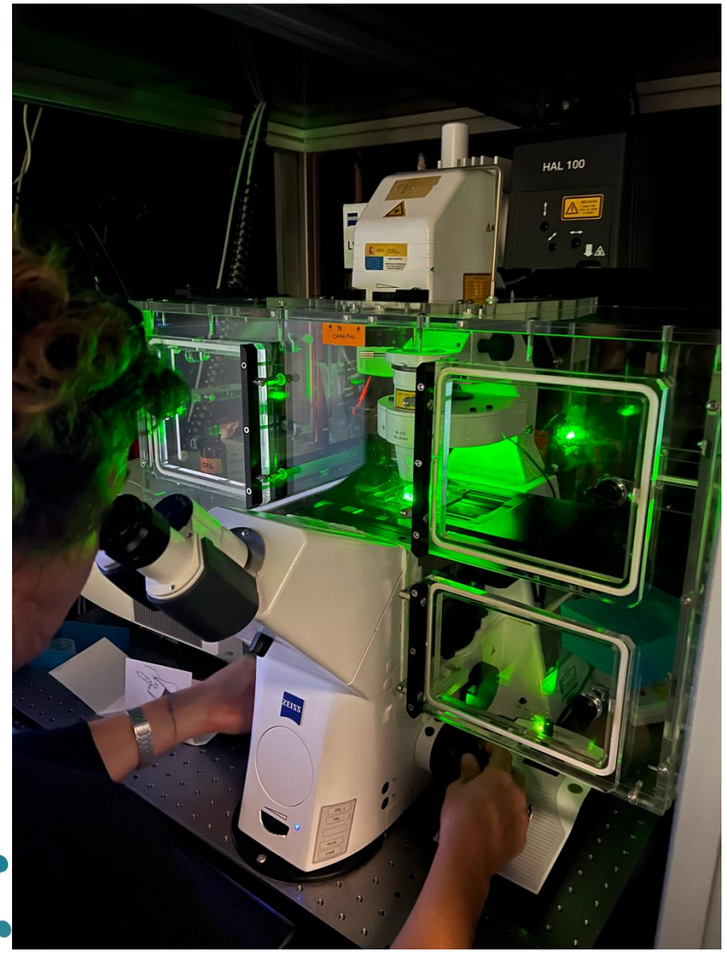
Methods

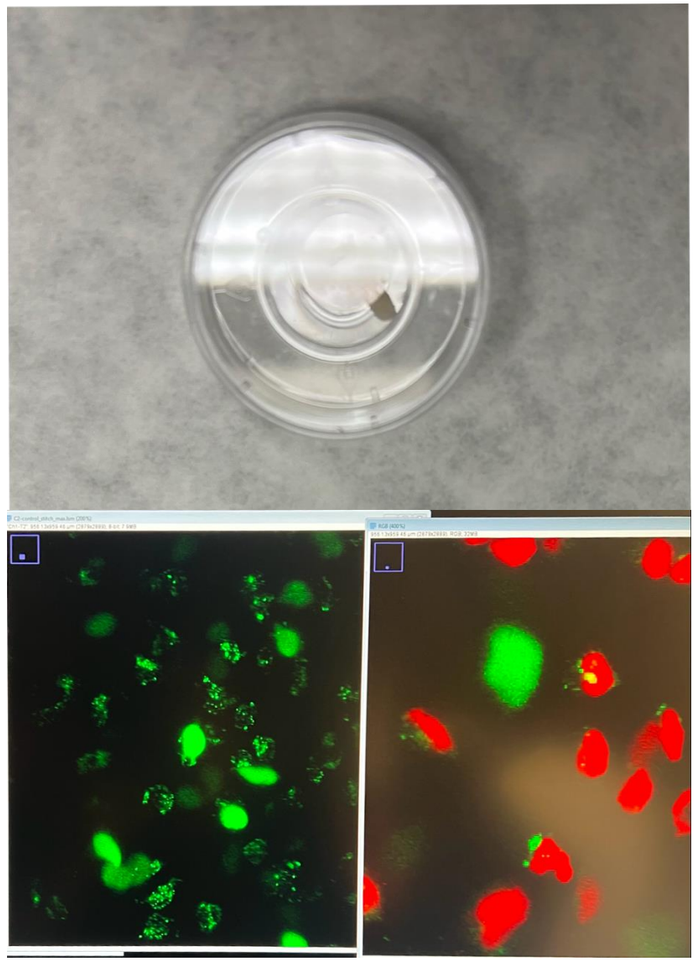
- The viability of the implanted chondrocytes was evaluated with confocal fluorescence microscopy.
- For quantitative T2 mapping, regions of interest were drawn in the deep and superficial layers of allograft and control cartilage.



Results

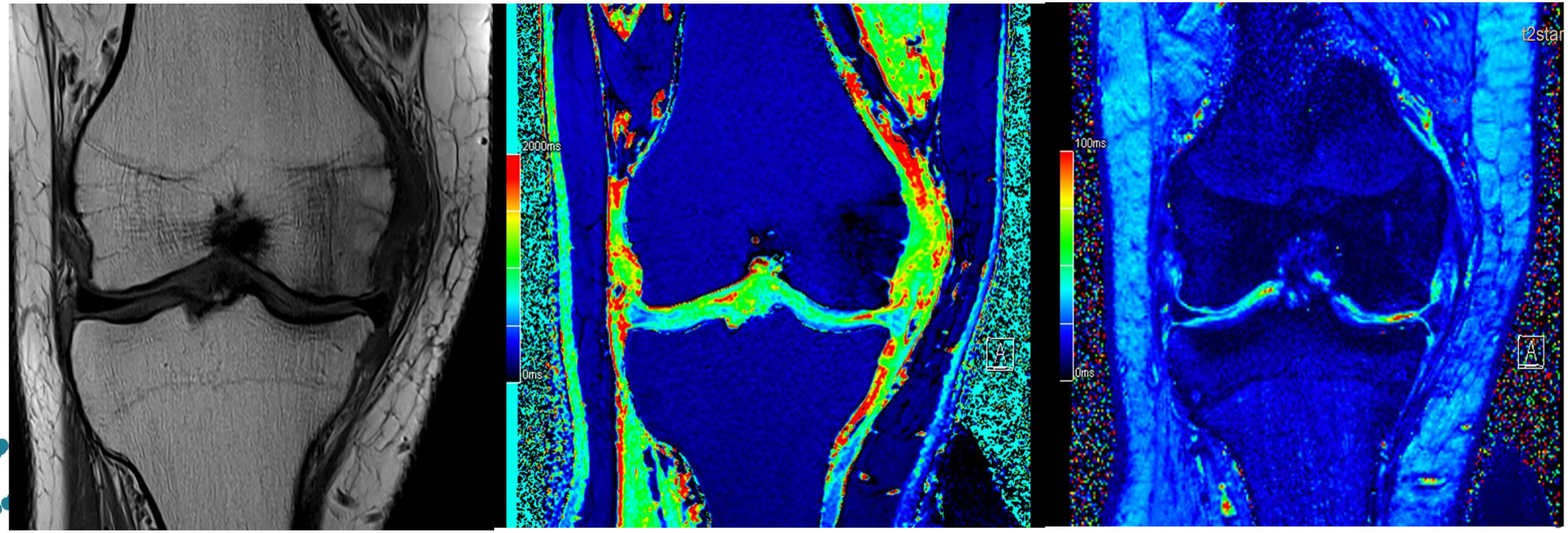
- Histological analyses: <u>viability of chondrocytes above 72%</u> ($p \leq 0.05$).





Results

- MRI Mapping: significant correlation with histological results.
- No difference between the mean T2 values in the deep zone of the allograft and control cartilage at one year ($p < 0.01$.



Results

- Significant improvement in functional outcomes.
- No correlation was found between functional and radiological outcomes.

Conclusions

- FOCA proves to be a viable technique, with a high chondrocyte viability rate and good graft integration, with positive clinical and functional results one year after implantation.

- The MRI mapping is a valuable tool for non-invasive evaluation of cartilage integrity and transplant viability. Graft integration was complete in almost all patients.

References

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