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Treatment Of Osteochondral Talar Dome Lesions Using Autologous Plasma Rich In Growth Factors Clot Mixed With Healthy Chondral Chips

Clinical And Radiological Outcomes After 1-Year Follow-Up in Athletes

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Faculty Disclosure Information

- Nothing to disclosure related to this poster

- Other disclosures:
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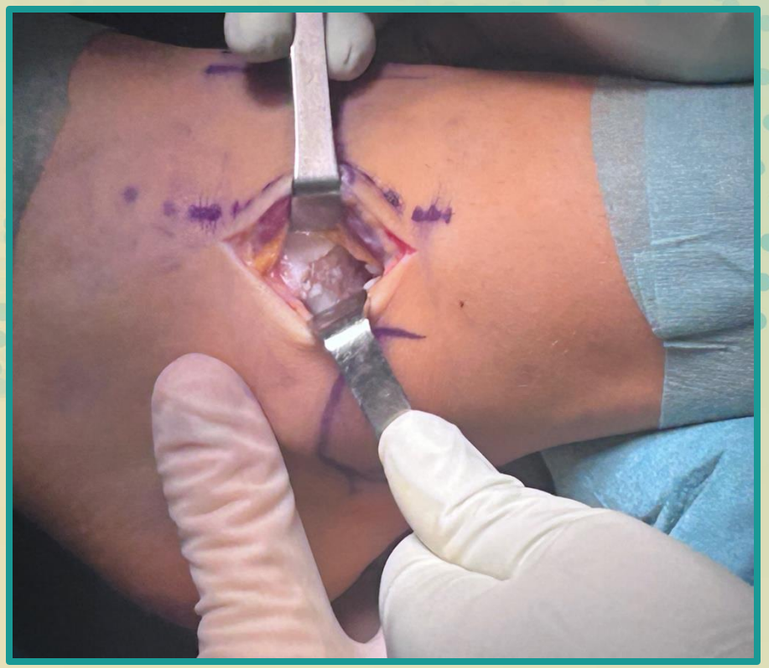
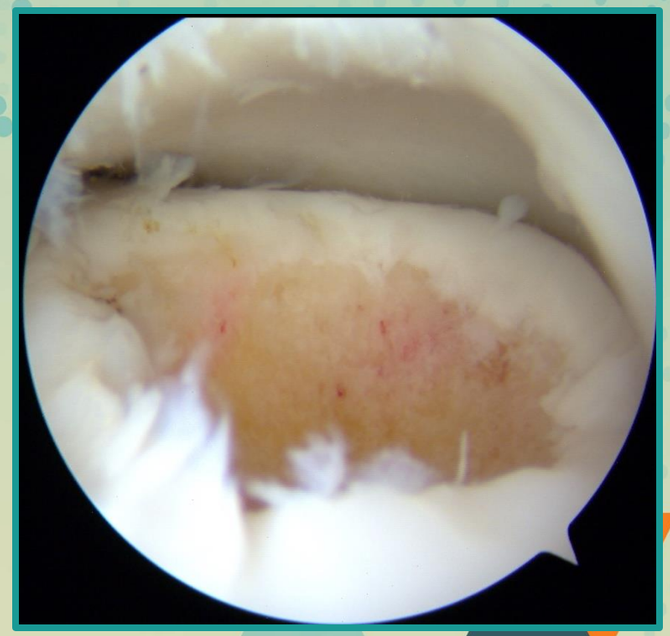
Introduction (I)

Osteochondral talar dome injuries are relatively common among clinical practice and represent a notable repercussion for the athlete and a challenge for the surgeon.

When, how and which is the most effective treatment approach remains a topic of debate among foot and ankle surgeons.

Even though bone marrow stimulation is the classical gold standard therapy in cases of small injuries (< 15 mm2), its long-term effectivity, specially in larger chondral defects is still controversial.





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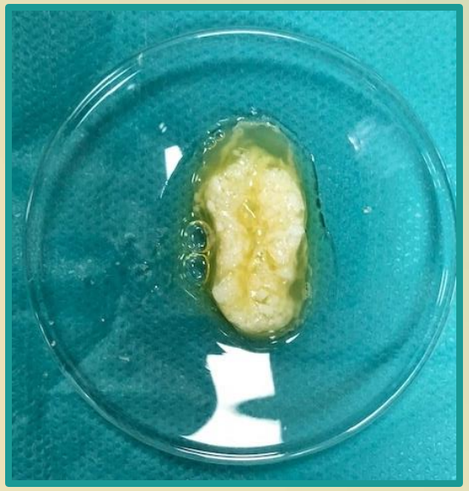
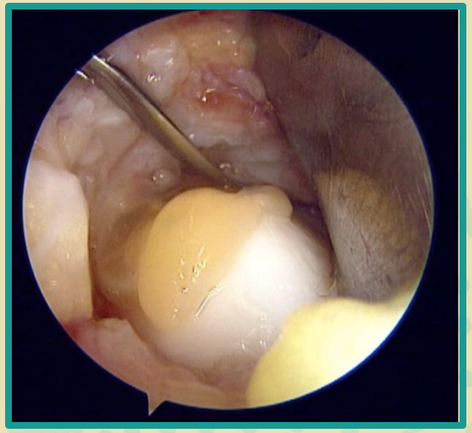
Introduction (II)





In the search of enhance the healing process of chondral lesions and obtaining better tissue quality, new surgical techniques have emerged.

Particulated articular cartilage implantation (PACI) and the use of biological and regenerative therapies such as autologous platelet-rich plasma (PRP) is a promising therapy to

Good results have been reported after the use of PACI-PRP in the treatment of large osteochondral knee defects. However, its effectivity in talar dome lesions remains unclear.

Thus, the aim of the aim of this study is to describe the radiological evolution of a cohort of athletes with osteochondral talar dome lesions after the treatment with autologous chondrocyte implantation with PRP.

Material & Methods

- Retrospective analysis of prospective patient database

- All patients with OC talar dome injuries treated in single private medical institution were approached for eligibility.

- For the purpose of this study were included patients whom:
  - Have osteochondral talar dome injuries larger that 15 mm2 (medial or lateral)
  - Follow the same postoperative protocol with rehab and physiotherapy
  - Have preoperative MRI and Outcomes studies and complete outcomes test and performed MRI at 6 and 12 months.
  - No medial malleolar osteotomy required (medial or lateral arthrotomy)
  - The Magnetic Resonance Observation of Cartilage Repair Tissue (MOCART) 2.0 was used by an external examiner

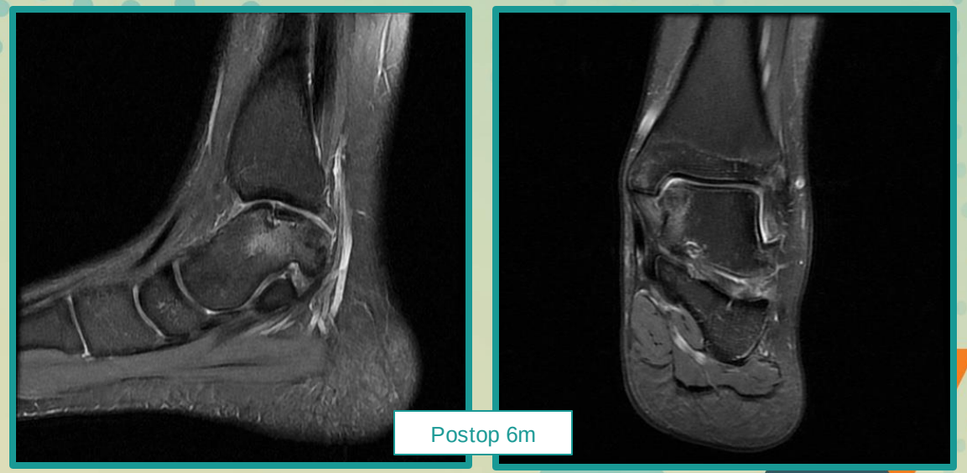
- Surgical procedure was performed by the same medical & nursing team.

- VAS, AOFAS, FADI and Karlsson-Petersen scale were avaluated
- Preop and 1y f-u MRI were compared

Table 3. MOCART score.[a]

Parameter	N	%
Degree of defect repair and defect filling		
Complete	9	64.3
Hypertrophy	1	7.1
Incomplete > 50%	4	28.6
Incomplete < 50%	0	0
Subchondral bone exposed	0	0
Integration to border zone		
Complete	5	35.8
Demarcating border seen	8	57.1
Defect visible < 50% length of repair tissue	1	7.1
Defect visible > 50% length of repair tissue	0	0
Surface of the repair tissue		
Intact	2	14.3
Damaged < 50% length of repair tissue	11	78.6
Damaged > 50% length of repair tissue	1	7.1
Structure of the repair tissue		
Homogenous	5	35.8
Inhomogenous	9	64.2
Signal intensity of the repair tissue		
Dual FSE Isointense	9	64.2
Dual FSE Moderately hyperintense	5	35.8
Dual FSE Markedly hyperintense	0	0
3-D gradient Isointense	11	78.6
3-D gradient Moderately hyperintense	3	21.4
3-D gradient Markedly hyperintense	0	0
Subchondral lamina		
Intact	2	14.3
Not intact	12	85.7
Subchondral bone		
Intact	1	7.1
Not intact	13	92.9
Adhesions		
No	14	100
Yes	0	0
Effusion		
No	12	85.7
Yes	2	14.3

MOCART: magnetic resonance observation of cartilage repair tissue; FSE: fast spin echo.
[a]One missing value.



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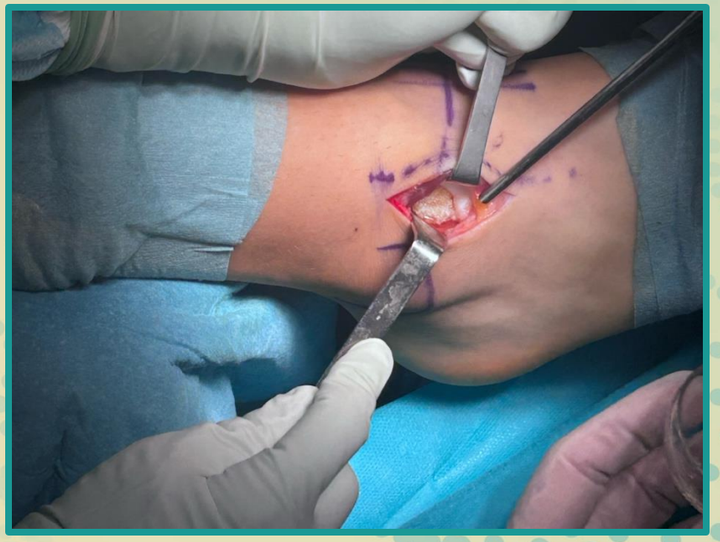
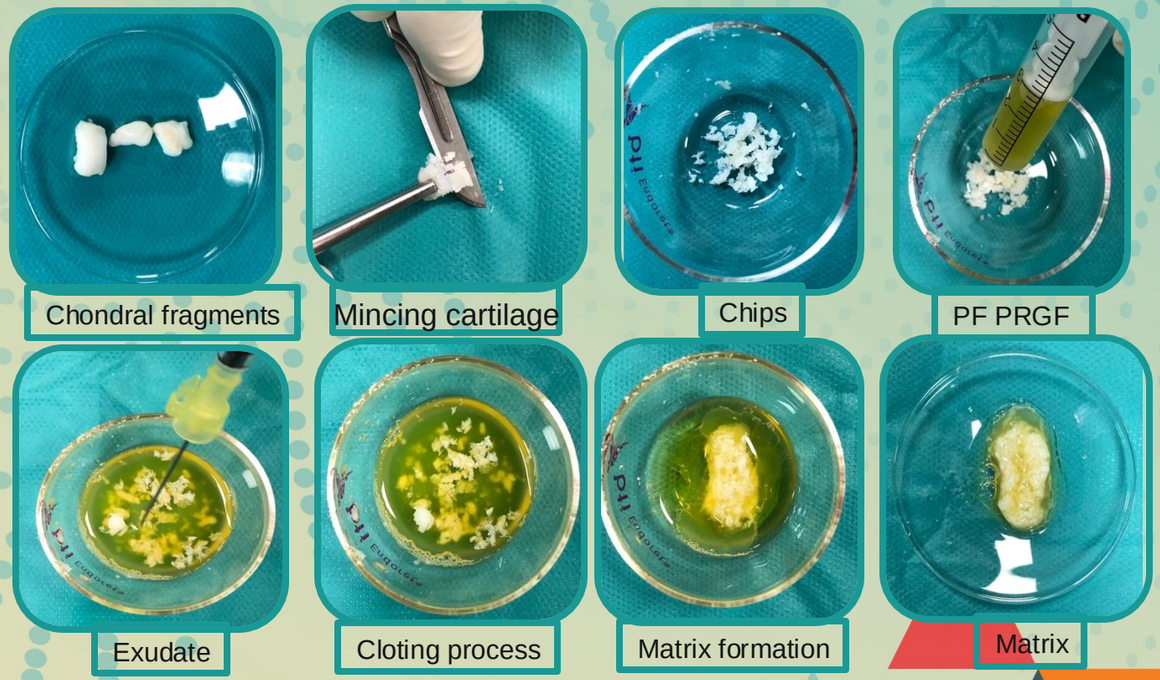
Surgical technique (I)

- Ankle arthroscopy was performed through the classical portals,
- Identifying the injury site and performing an initial debridement until a healthy base of subchondral bone was reached.
- The viable hyaline cartilage obtained during such procedure (discarding loose bodies) were cut into small pieces.
- Then, it was mixed with autologous leucocyte poor PRP (PRGF® Endoret® (BTI Biotechnology institute, Vitoria-Gasteiz, Araba, Spain)

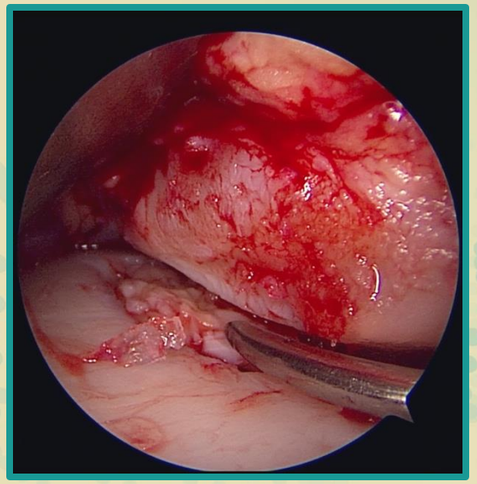


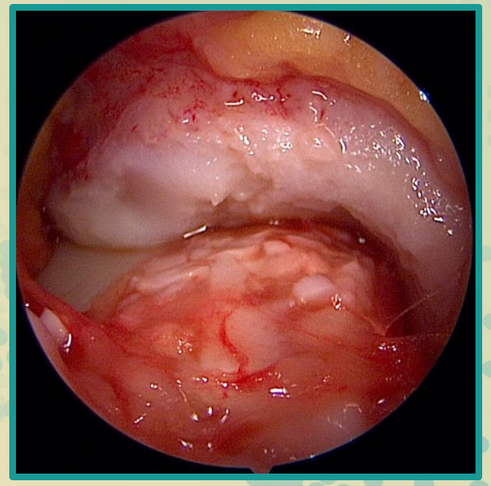


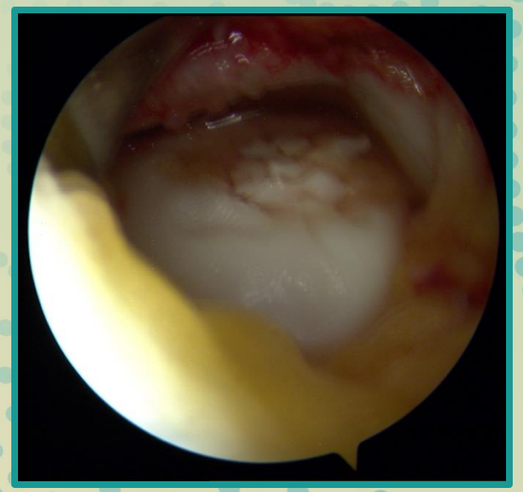
CN-Biomatrix® Preparation

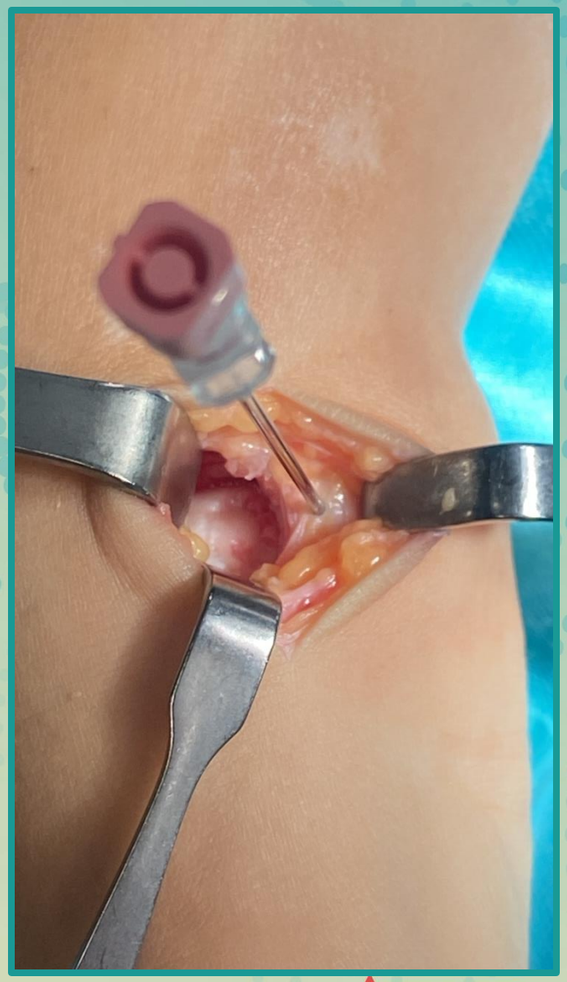
Surgical technique (II)

- After activation and incubation at 36ºC during 30 minutes until a semisolid matrix was obtained.
- During the process, medial (or lateral) arthrotomy was performed to expose defect and regularize borders.
- The final matrix was reshaped according to the osteochondral injury area and placed inside the joint covering entirely the osteochondral defect.



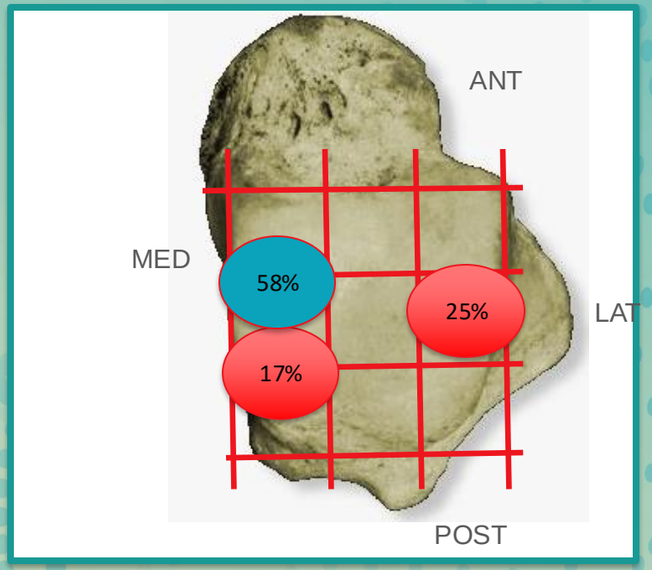


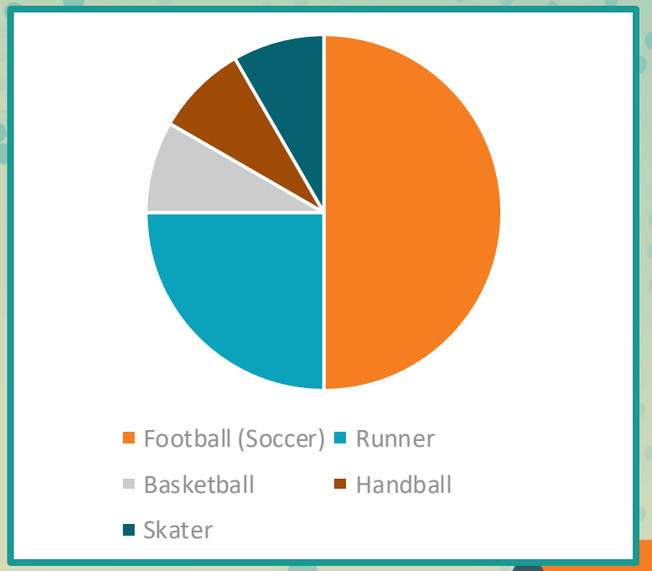




Results (I)

- Final sample of 12 athletes (8 males and 4 females) were included in this analysis.
- Tegner from 7 to 9.
- Mean ± SD age at injury was 30.08 ± 12.35 years
- Mean ± SD body mass index (BMI) of 21.56 ± 2.10.
- Depth: 100% Osteochondral
- Needed of bone graft: 25% only
- Mean Area: 1,62 ± 0,55 cm^2
- 4 cases one-step unstability recon + matrix (1/3 of cases)





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Results (II)

- The results at 1 year follow-up are acceptable in terms of patient satisfaction and return to sport during follow-up.
- Clinical improvements in terms of pain and functionality, higher and statistically significant than MRI findings.
- Clinicoradiological dissociation / MOCART limitations?

Test	pre	6m	1a	P value
AOFAS	71,89 (6,74)	75,86 (6,51)	85,04 (8,69)	< 0.05
VAS	5,88 (0,21)	3,20 (0,36)	2,00 (1,41 – 2,78)	< 0.05
FADI	62,06 (10,45)	73,25 (8,28)	84,50 (77,15 – 84,93)	< 0.05
Karlson	85,00 (76,88 – 84,07)	91,43 (8,96)	95,00 (90,07 – 100,40)	No sig.

RTS rate: 78,89 %

Mean RTS: 32,15 ± 5,56 weeks

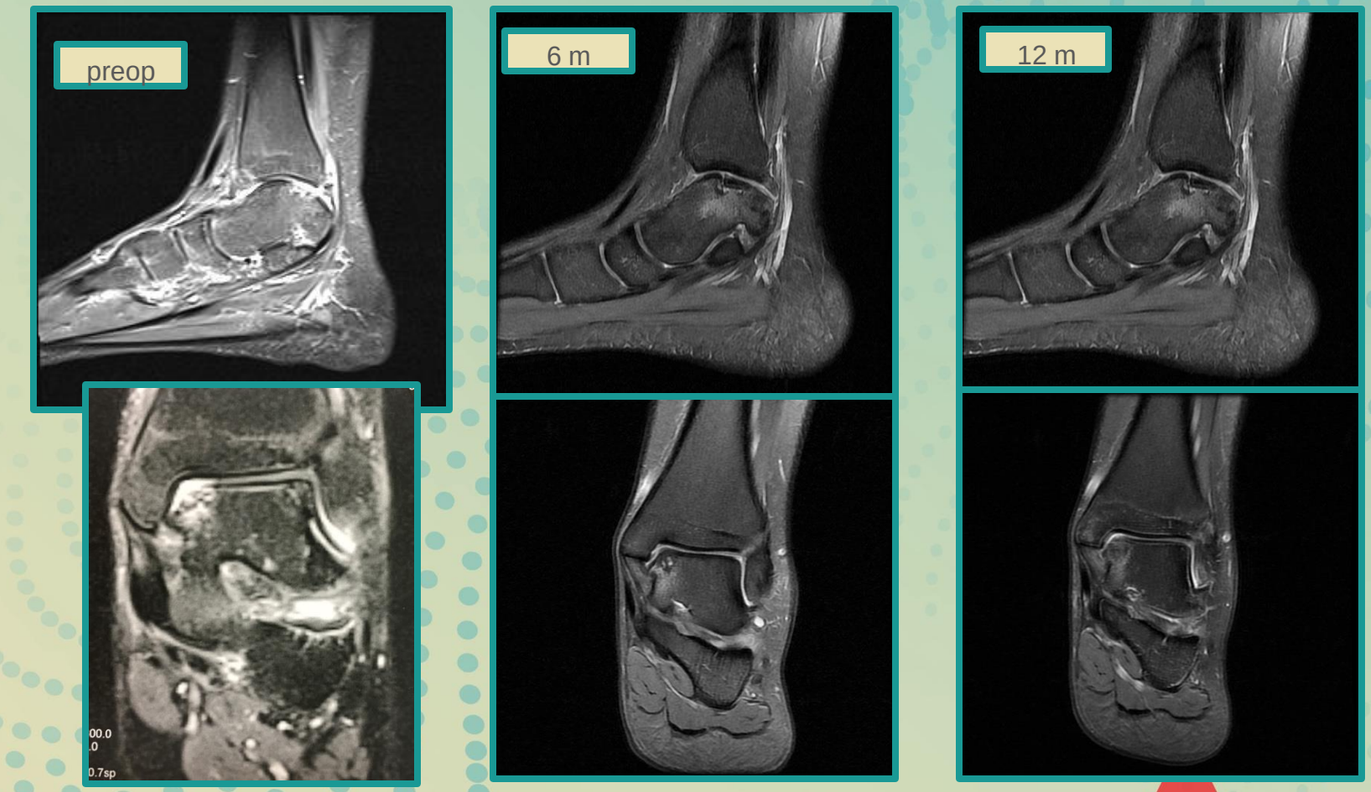
69,7 % same level pre-lesion

Results (III)

- A non-significant tendency towards MOCART improvement was found between pre-operative and post-operative values,

- Mean ± SD values
  - Preoperative 35.42 ± 17.38
  - Postoperative 51.25 ± 16.67 (p = 0.065).

- Short serie, small sample
- Longer follow-up improvements?



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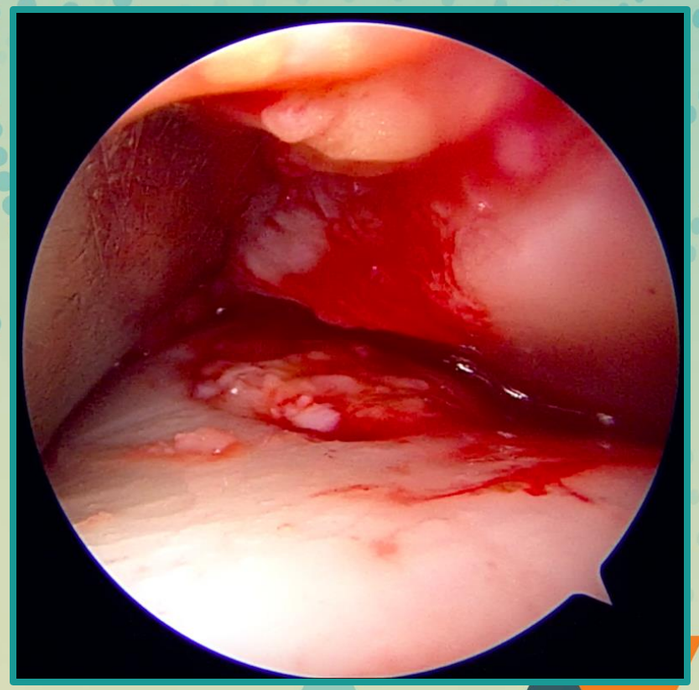
Conclusions

- The use of PACI-PRP in athletes with osteochondral talar dome injuries has shown promising radiological results over the time with clinical improvements.
- Further studies with larger cohorts and extended clinical data and longer follow-ups will be necessary in order to confirm the tendences showed in the present study.



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