



Functional and Radiological outcomes of arthroscopic microfracture for Osteochondral lesions of the talus

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Faculty Disclosure Information

- The authors have no relevant financial or non-financial interests to disclose.
- The authors have no conflicts of interest to declare

Aim of our study

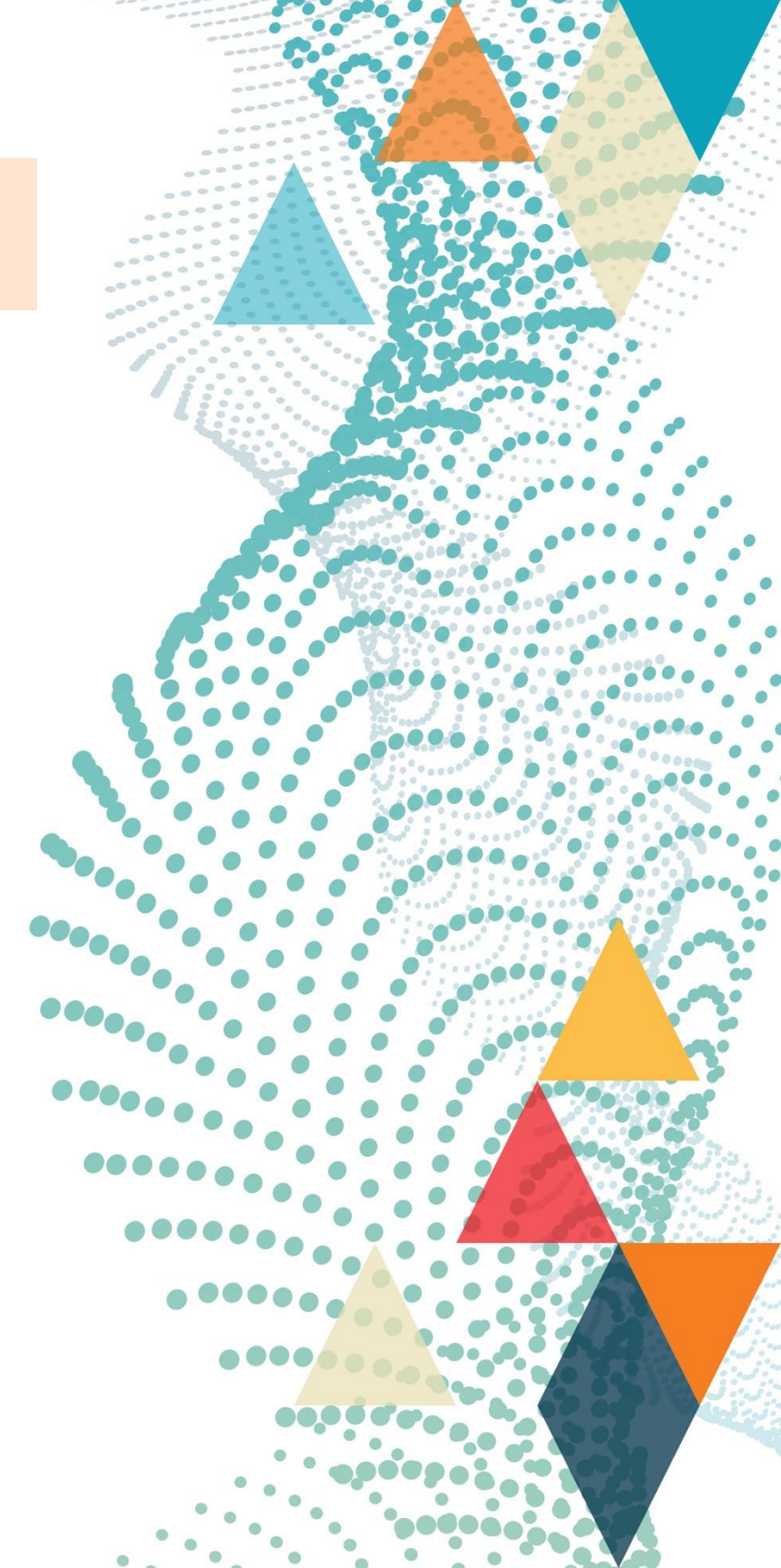
- Analyze improvement in pain(VAS scores) & functional outcome(AOFAS scores)
- Analyze pre-operative factors affecting functional outcomes
- Assess the structural outcomes of Arthroscopic microfracture using MRI(MOCART 2.0 Ankle scores).



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Methodology

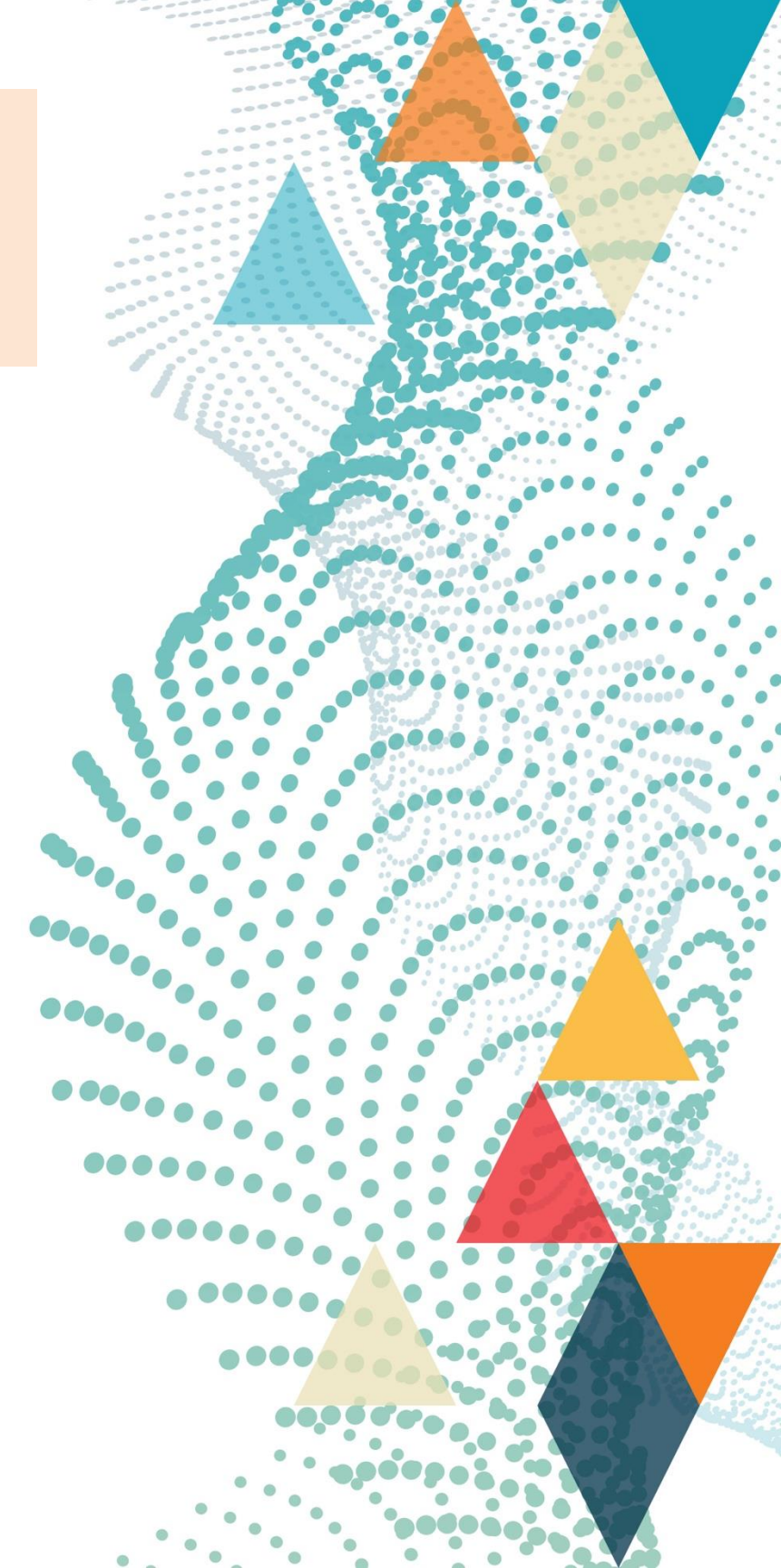
Approval was obtained from the institutional review board (IRB)

Retrospective analysis

Patients undergoing AM for Unstable OLT between 2017 to 2023 were included in the study.

Exclusion criteria:

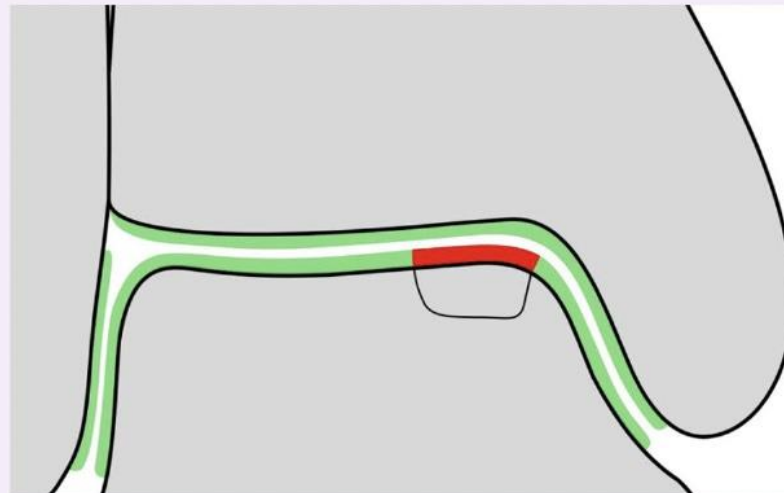
- Patients undergoing concurrent ligament repair,
- Lesion size $>1.5\text{cm}^2$,
- Associated inflammatory joint disease,
- Bipolar lesions/ Ankle OA features
- < 6 months of follow up



MRI analysis (MOCART 2.0 Ankle scores)

The MOCART (magnetic resonance observation of cartilage repair tissue) 2.0 ankle score

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Variables	Scoring
Volume fill of (osteo)chondral defect	20
Integration into adjacent cartilage and bone	20
Surface of the repair tissue	5
Signal intensity of the repair tissue	15
Bony defect or bony overgrowth	20
Presence of edema-like marrow signal	10
Presence of subchondral cysts	10
MOCART 2.0 Ankle Score	100

The MOCART 2.0 ankle score demonstrates good intra- and interrater reliability in the assessment of cartilage repair in the ankle joint.

Insights
into Imaging

Insights Imaging (2024) Schreiner MM, Raudner M, Winalski CS et al.
DOI: 10.1186/s13244-024-01696-7



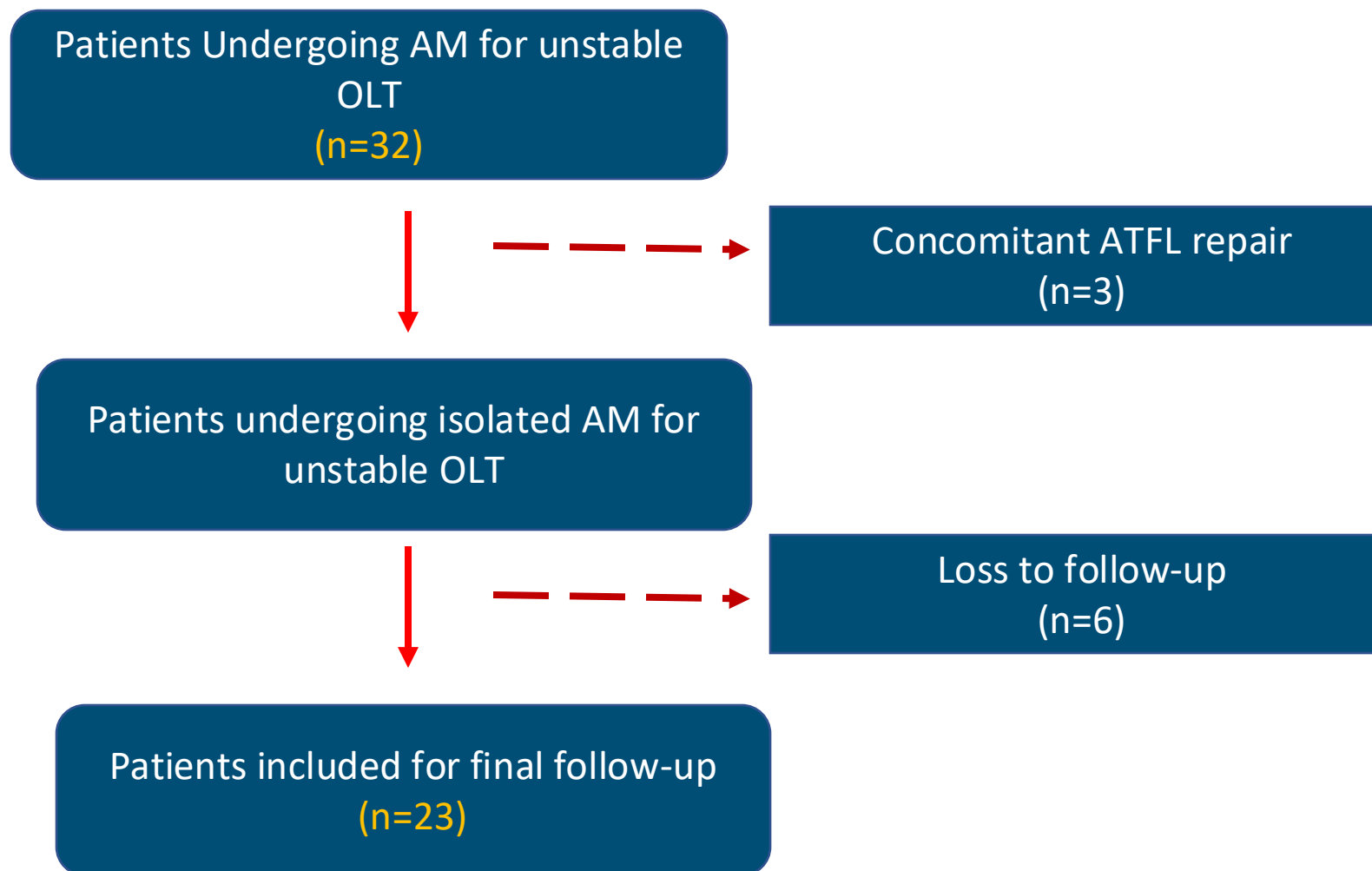
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Schreiner, M.M., Raudner, M., Winalski, C.S. et al. The MOCART (magnetic resonance observation of cartilage repair tissue) 2.0 Ankle Score. Insights Imaging 15, 126 (2024).

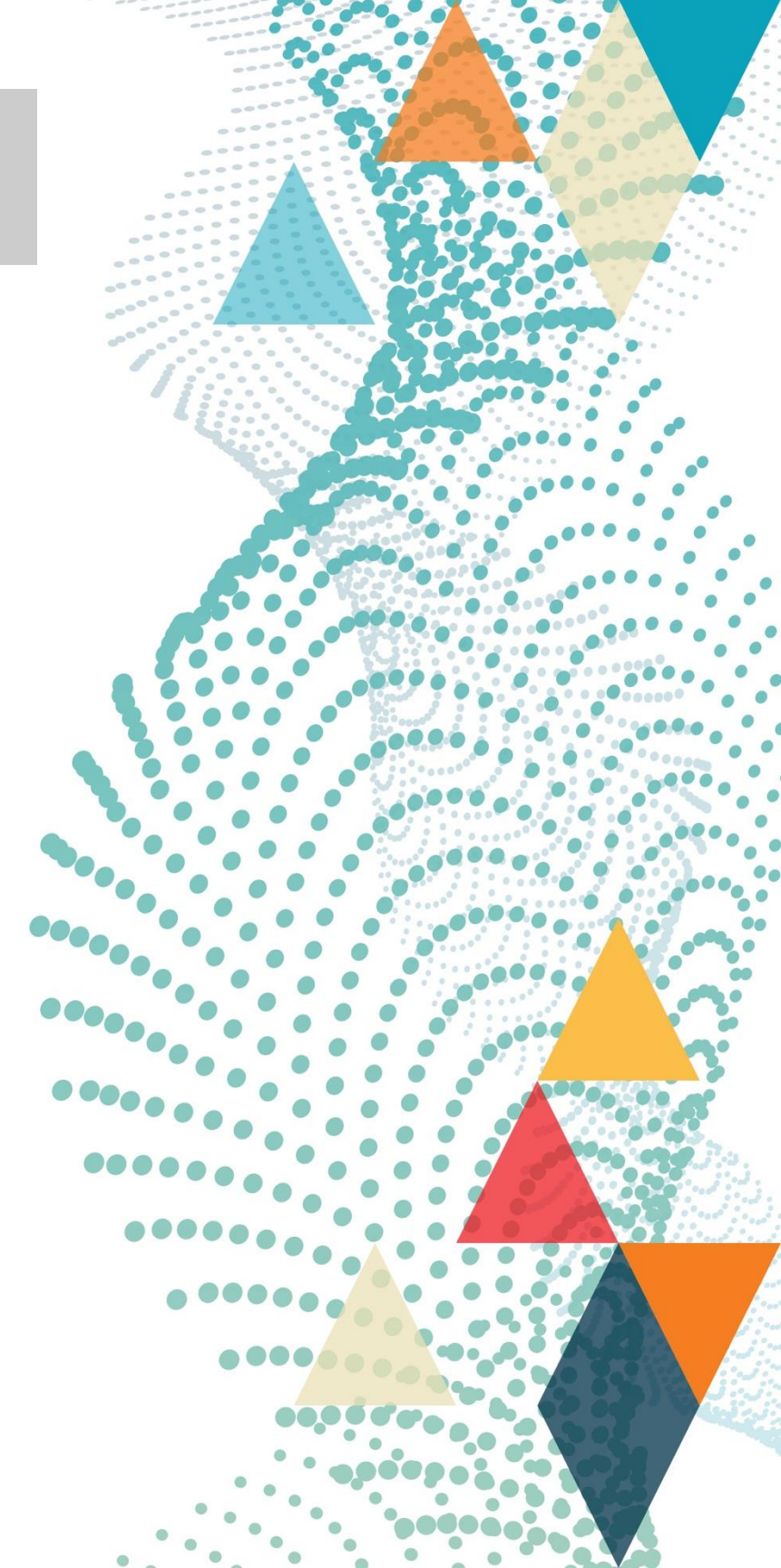
Study Population



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Pain and Functional Improvement

	PRE-OPERATIVE SCORES Mean (SD)	POST- OPERATIVE SCORES Mean (SD)	P value
VAS	7.9(0.8)	1.6(1)	<0.001
AOFAS-TOTAL	66(9.8)	87.3(9.3)	<0.001

9: Excellent Outcome, 8 : good outcomes, 5: Fair outcomes

One patient out of 23 required a revision procedure in the form of open Mosaicplasty

Co Relation of Pre-operative Patient factors

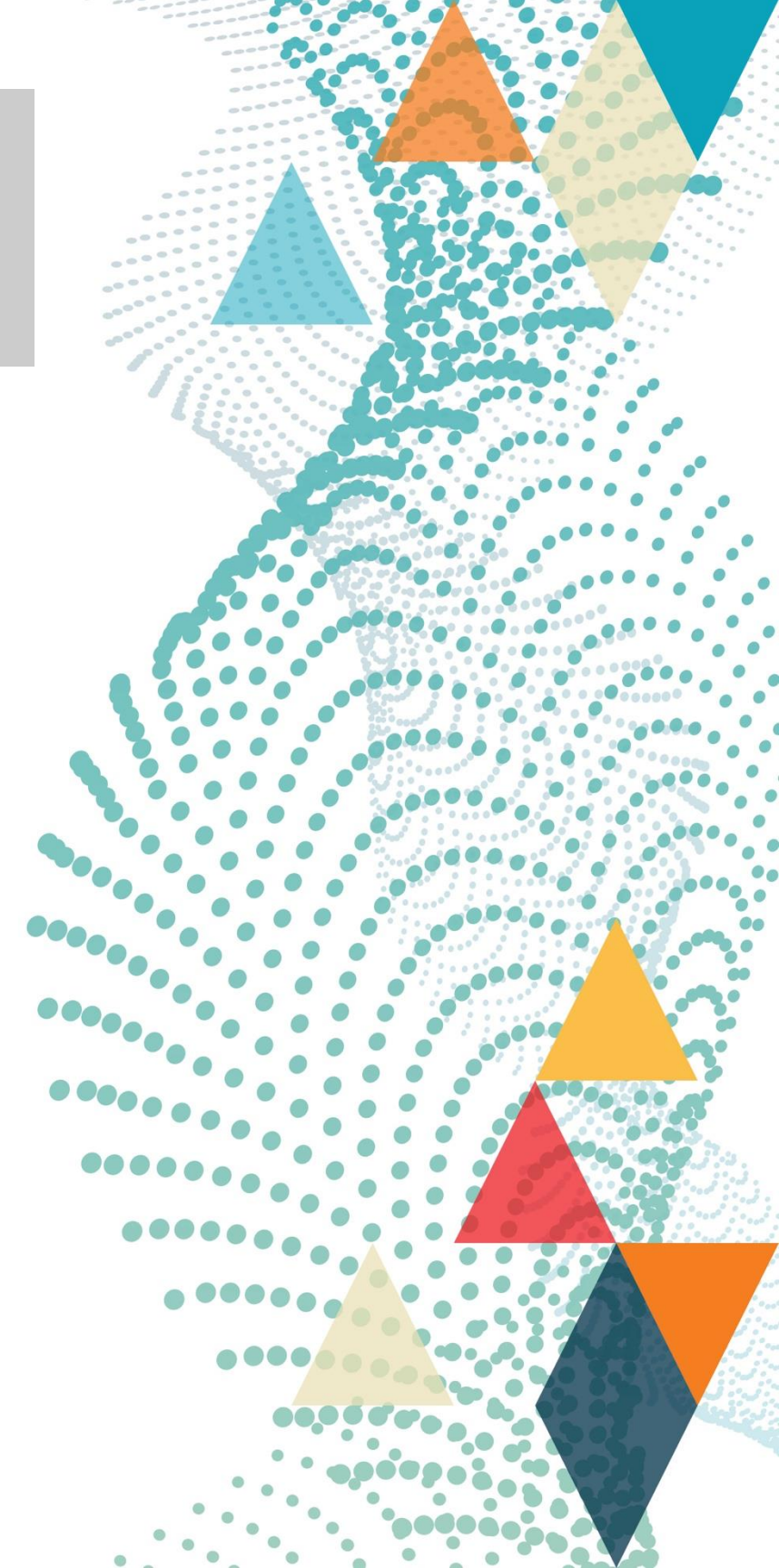
Pre-operative factors		Delta AOFAS-Total
Age	Pearson Correlation	-0.1
	Sig. (2-tailed)	0.6
BMI	Pearson Correlation	-.002
	Sig. (2-tailed)	0.9
Duration of symptoms (MONTHS)	Pearson Correlation	0.3
	Sig. (2-tailed)	0.1



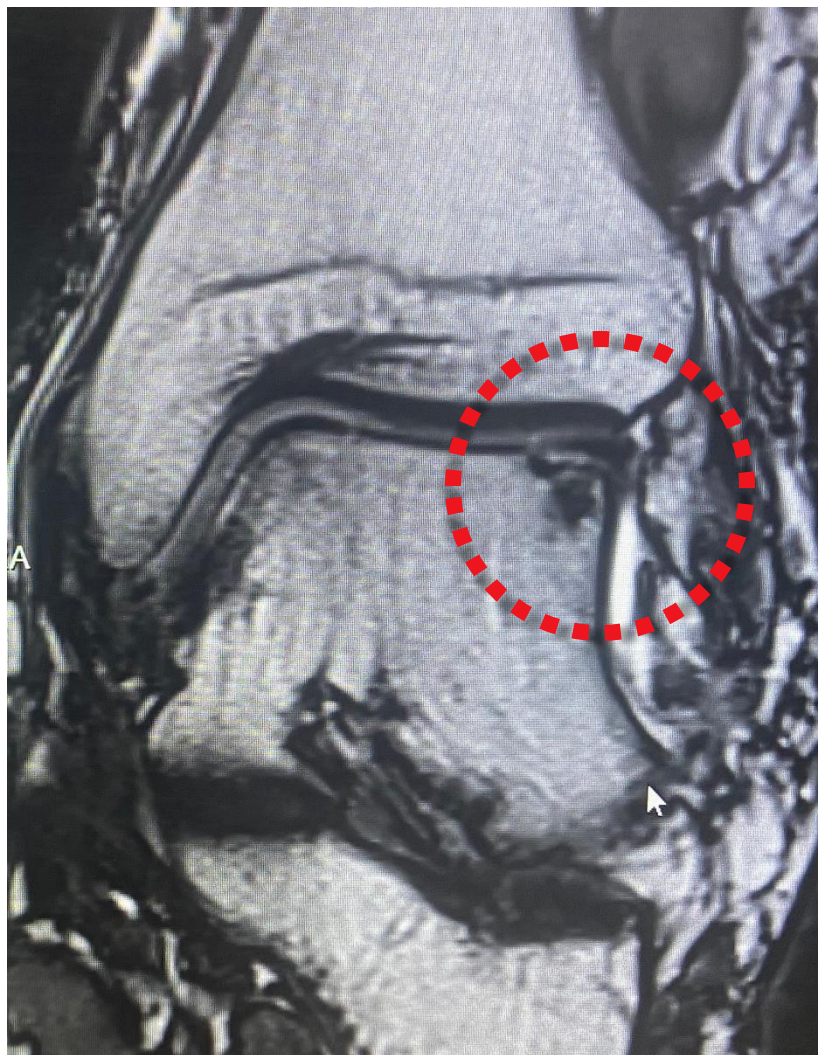
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Post-Op MRI at 2.6 years



1. Volume fill of cartilage defect: **20**
Complete filling/Minor hypertrophy
2. Near Complete integration: **15**
3. Surface of repair tissue: **5**
Slightly irregular
4. Structure : Homogenous **10**
5. Signal intensity: **10**
Minor hyperintensity
6. No bony defect/overgrowth: **10**
7. Minor edema like marrow signal: **15**

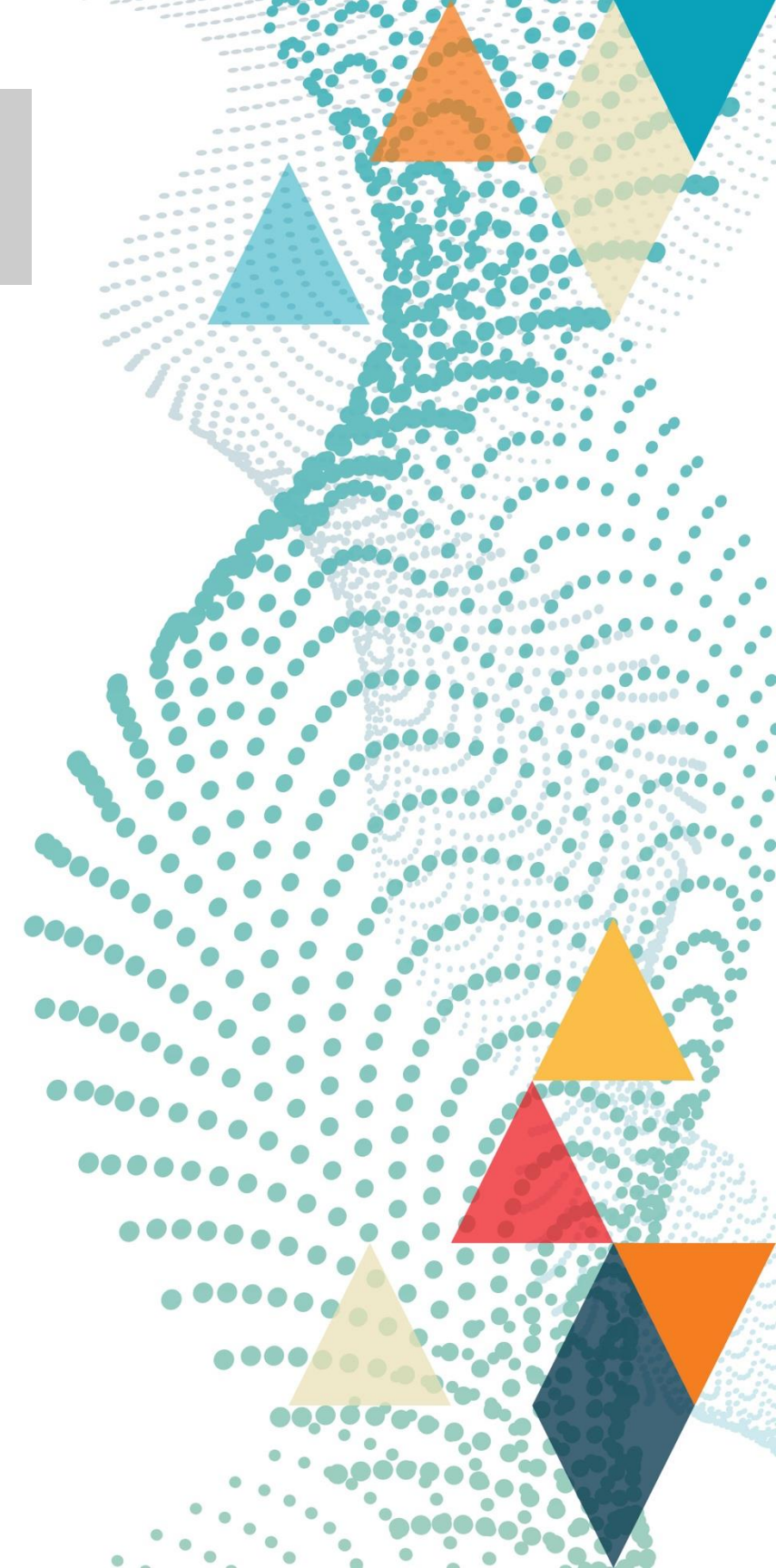
TOTAL MOCART: 85



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MRI versus AOFAS scores

MRI parameters	Scores	AOFAS scores Mean (SD)	P Value
Volume of the cartilage defect	10 15 20	82(5) 68(17) 85(4.6)	0.3
Integration into adjacent cartilage	10 15	85(4.1) 76(13)	0.1
Surface of repair tissue	5 10	78(13) 80(2.5)	0.7
Structure of repair tissue	0 10	83(5.3) 74.6(15.3)	0.7
Signal intensity of repair tissue	10 15	81.4(7.6) 71(19.3)	0.2
Bony defect /overgrowth	5 10	83.1(5.3) 75.8(14.5)	0.3
Subchondral changes	10(worser) 15(better)	56(10.4) 83.4(5)	0.02



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Most important findings of the study

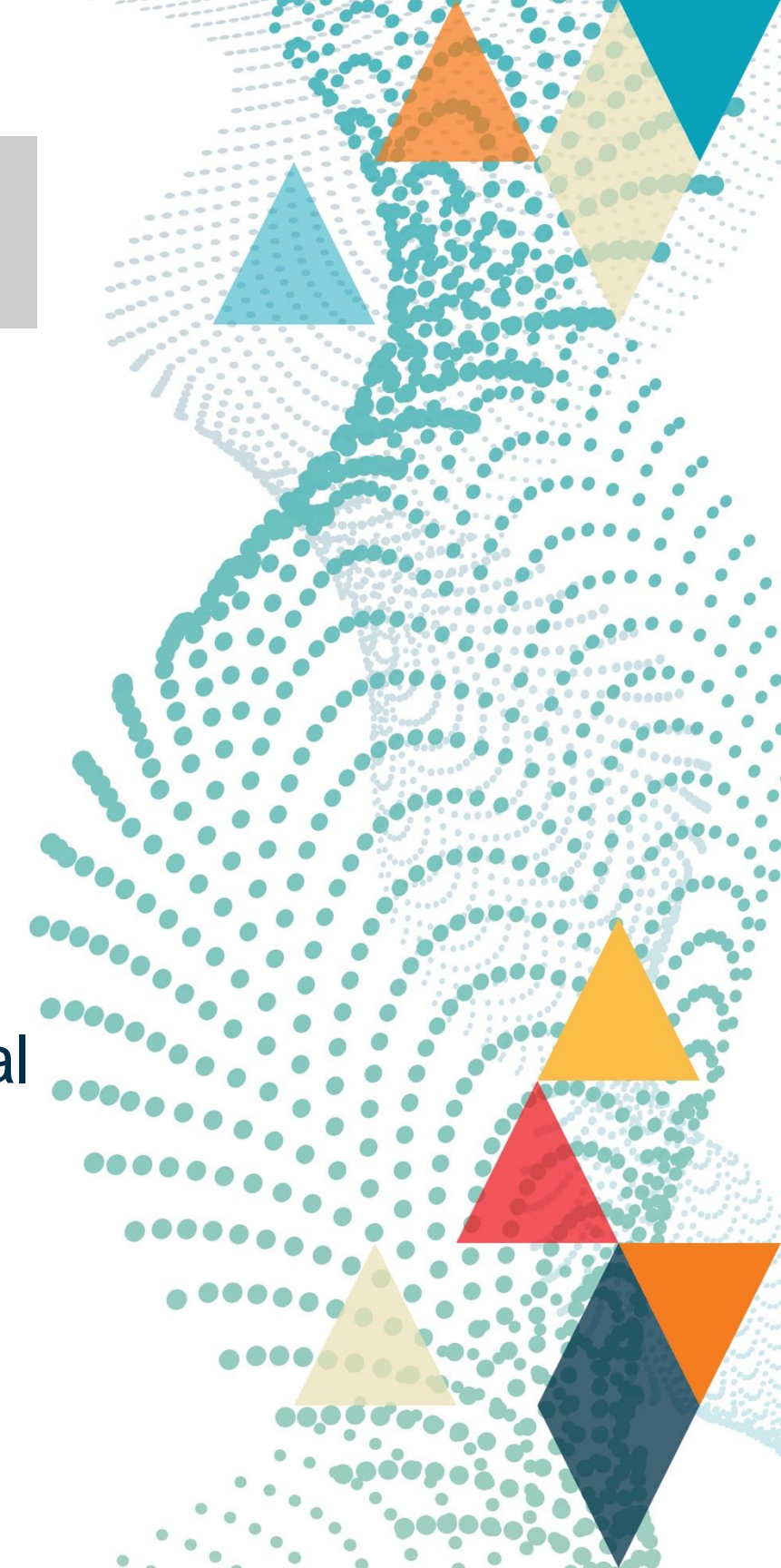
- Both pain and functional outcomes significantly improve post AM and maintained till a mean follow up of 28 months.
- Pre-operative patient factors-age, duration of symptoms, BMI have no co relation with functional outcomes
- Though MRI imaging shows some abnormality, these findings have no impact on functional outcomes except for Subchondral changes.



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Conclusion

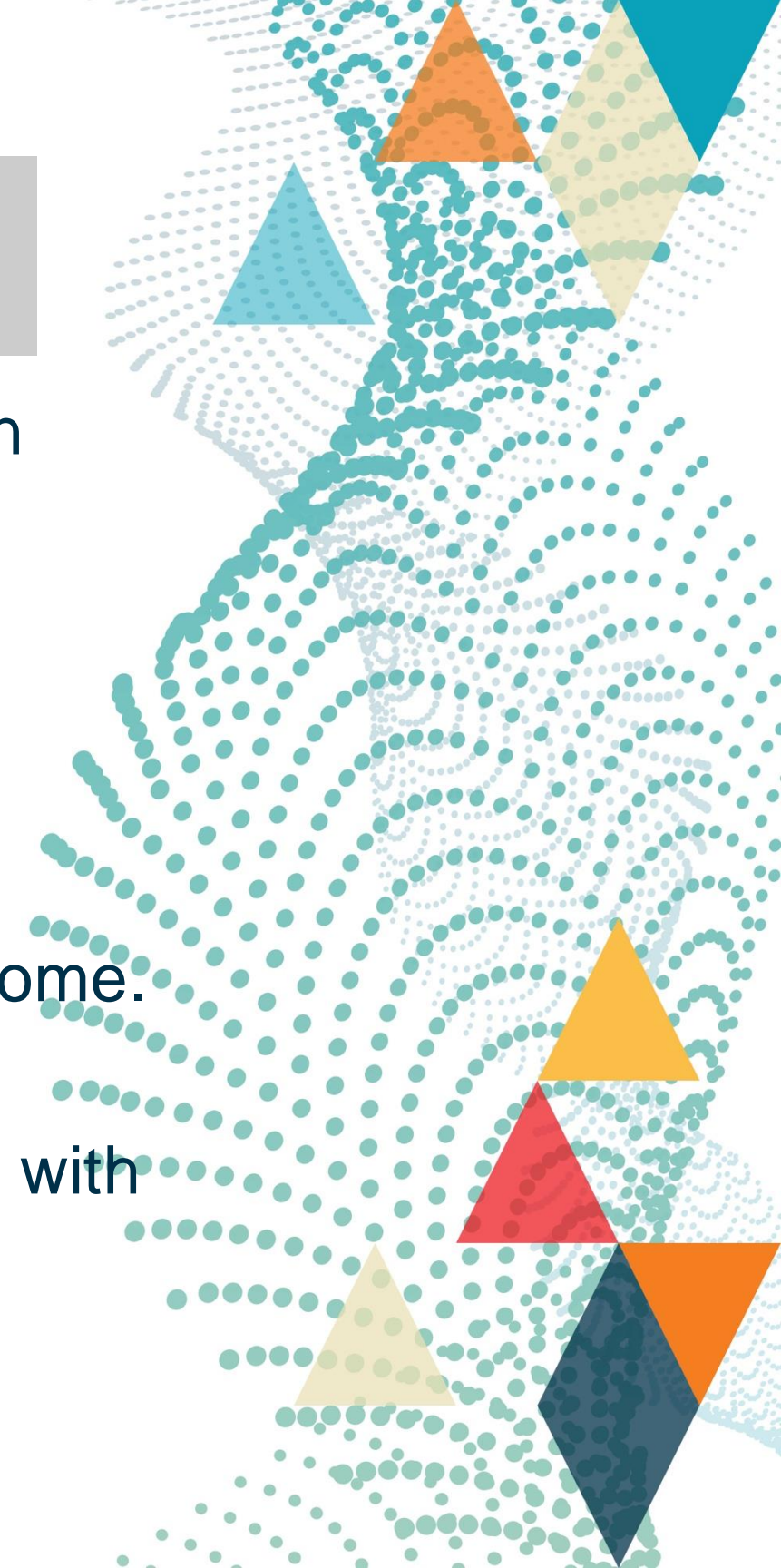
- Arthroscopic microfracture results in significant improvement in pain and function.
- Age, Duration of symptoms and BMI do not co relate with functional outcomes.
- Total MOCART 2.0 scores do not affect pain or functional outcome.
- Subchondral bone marrow changes has a negative co relation with functional outcome



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References:

1. Sundararajan SR, Dsouza TD, Rajagopalakrishnan R, Rajasekaran S (2020) Osteochondral lesions of the talus-current concepts. 1:218–225. <https://doi.org/10.25259/JASSM>
2. Toale J, Shimozone Y, Mulvin C, et al (2019) Midterm Outcomes of Bone Marrow Stimulation for Primary Osteochondral Lesions of the Talus: A Systematic Review. *Orthop J Sport Med* 7:1–8. <https://doi.org/10.1177/2325967119879127>
3. Ahn J, Choi JG, Jeong BO (2021) Clinical outcomes after arthroscopic microfracture for osteochondral lesions of the talus are better in patients with decreased postoperative subchondral bone marrow edema. *Knee Surgery, Sport Traumatol Arthrosc* 29:1570–1576. <https://doi.org/10.1007/s00167-020-06303-y>
4. Becher C, Driessen A, Hess T, et al (2010) Microfracture for chondral defects of the talus: Maintenance of early results at midterm follow-up. *Knee Surgery, Sport Traumatol Arthrosc* 18:656–663. <https://doi.org/10.1007/s00167-009-1036-1>
5. Schreiner MM, Raudner M, Winalski CS, Juras V, Aldrian S, Kolb A, Chiari C, Windhager R, Trattnig S. The MOCART (magnetic resonance observation of cartilage repair tissue) 2.0 Ankle Score. *Insights Imaging*. 2024 May 31;15(1):126. doi: 10.1186/s13244-024-01696-7. PMID: 38816593; PMCID: PMC11139805.
6. Guelfi M, DiGiovanni CW, Calder J, et al (2021) Large variation in management of talar osteochondral lesions among foot and ankle surgeons: results from an international survey. *Knee Surgery, Sport Traumatol Arthrosc* 29:1593–1603. <https://doi.org/10.1007/s00167-020-06370-1>
7. Kim TY, Song SH, Baek JH, et al (2019) Analysis of the Changes in the Clinical Outcomes According to Time After Arthroscopic Microfracture of Osteochondral Lesions of the Talus. *Foot Ankle Int* 40:74–79. <https://doi.org/10.1177/1071100718794944>
8. Corr D, Raikin J, O'Neil J, Raikin S (2021) Long-term Outcomes of Microfracture for Treatment of Osteochondral Lesions of the Talus. *Foot Ankle Int* 42:833–840. <https://doi.org/10.1177/1071100721995427>
9. Polat G, Erşen A, Erdil ME, et al (2016) Long-term results of microfracture in the treatment of talus osteochondral lesions. *Knee Surgery, Sport Traumatol Arthrosc* 24:1299–1303. <https://doi.org/10.1007/s00167-016-3990-8>
10. Choi WJ, Park KK, Kim BS, Lee JW (2009) Osteochondral lesion of the talus: Is There a critical defect size for poor outcome? *Am J Sports Med* 37:1974–1980. <https://doi.org/10.1177/0363546509335765>



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