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Prognostic Factors Affecting Osteochondral Allograft Transplantation for Treatment of Osteochondral Lesions of the Talus

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- Institutional Review Board approval was not needed for this study and all aspects of this study were conducted ethically.
- Declarations of Interest: None

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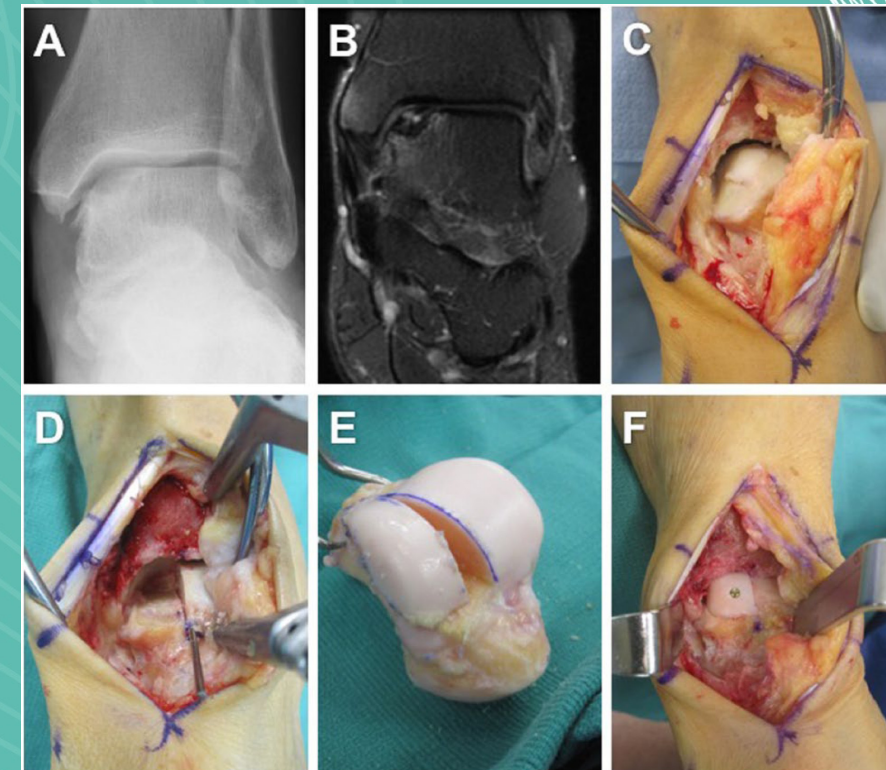
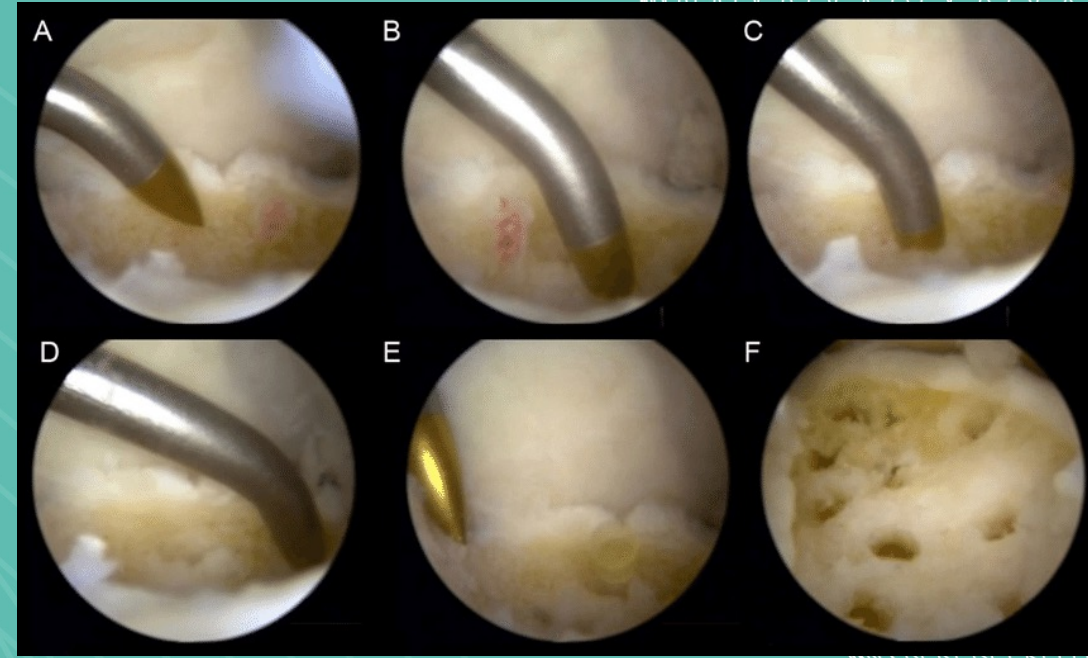
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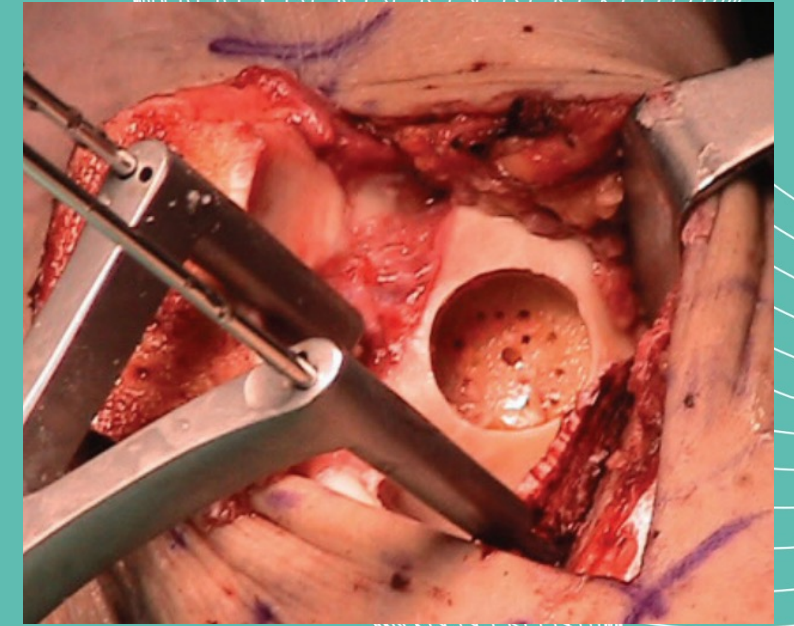
Introduction

- OCD lesions of the talus
 - Most commonly single major or repetitive minor trauma
 - Young patients (20 – 35 yo), M > F
- Current Options
 - Microfracture
 - Autologous OC transplantation



Introduction

- Fresh talus osteochondral (OC) allograft transplantation
- Biomechanical properties of ankle rather than knee cartilage
- More metabolically active than knee OC autograft^{10,11}
- Viable for extended durations (~17 yrs)
- Revascularization within 1-4 years postoperatively



Study Purpose

- To identify and stratify predictors of the postoperative outcomes, healing process, and effect on activity level following fresh allograft transplantation for OCD in the talus



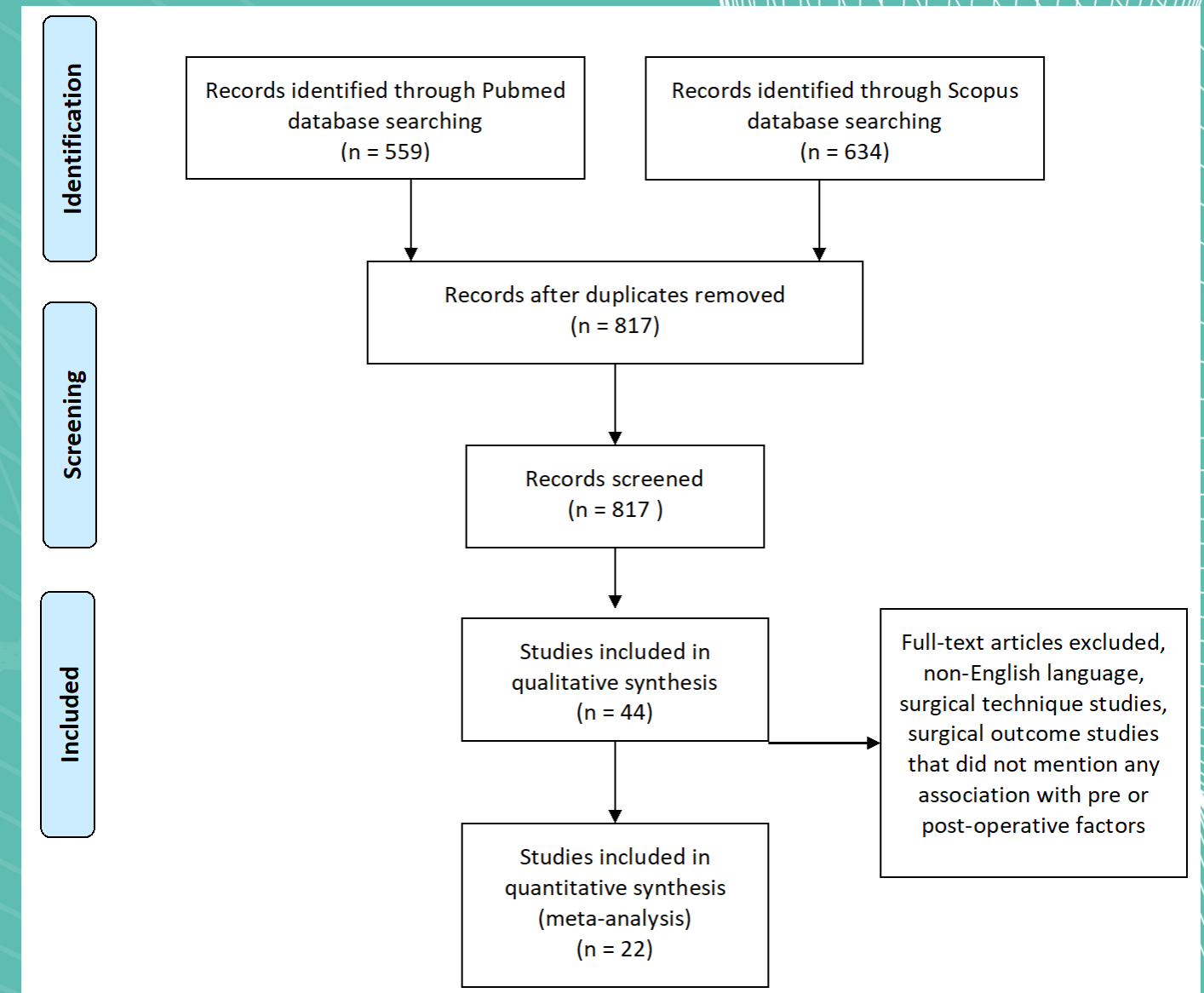
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Materials and Methods

- Scopus/Pubmed Searched
 - 1990 to March 2019
 - 22 papers after exclusion
 - 607 patients total
- 12 papers reported AOFAS
 - 469 patients with pre/post scores
- Outcomes assessed
 - PROMs (AOFAS)
 - Failure rate
 - Revision rate



Results - Demographics

- Total Patients: 607
- Sex: 57.2% (347/607) Male
- Mean Age: 39.4 years [45 – 30]
- Mean follow-up duration: 56.7 months [14 – 187]
- Failure rate: 25% [0– 100]
- Mean preoperative AOFAS: 46.6
- Mean postoperative AOFAS: 75.6



Results - Indications

- Ideal candidate: Young male (< 60 yo), good baseline ankle ROM
 - Large OCDs > 150 mm²
 - Talar shoulder involvement
 - Lesions \geq 1 cm diameter, 5 mm depth
 - Salvage after microfracture, autografting
- Contraindications
 - Significant ankle/subtalar OA
 - Joint space narrowing
 - Tibial kissing lesions
 - Cystic lesion extending to subtalar joint



Results – Causes of Allograft Failure

- Two failure groups:
 - Lack of chondrocyte viability
 - Late failure from graft fracture/resorption
- Time of failure 1 – 7 years postop
- Key considerations:
 - Multiple prior operations
 - Large talar dome lesions
 - OA changes of the distal tibia, talus



Results – Activity after Surgery

- No established relationships between age, sex on clinical outcomes
- Mixed outcomes dependent on postoperative activity
 - 1 study: Walking 30– 60 mins tolerable
 - 3 studies: Satisfactory return to sports, high impact activity
 - 1 study: Low improvement in high occupational demand, military service
- Overall: Allograft may not be suitable for high demand patients



Discussion

- Patient selection, lesion location, anatomic variation, and preoperative activity levels should be strongly considered
- No significant associations between patient demographics and outcomes
- Studies with longer follow-up necessary to further elucidate effects of risk factors on graft success



Conclusion

- Fresh talus allograft presents as a promising option for talar OCD lesions
- Biologically similar, biomechanically favorable
- Consistent improvement in PROMs with extended viability and return to activity in low-demand patients
- Further studies are necessary to further identify prognostic factors, solutions for patients with high failure risk



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