COMBINED BONE MARROW ASPIRATE AND PLATELET-RICH PLASMA FOR CARTILAGE REPAIR
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DISCLOSURES

The authors have no disclosures
BACKGROUND

- Promising early clinical results of bone marrow aspirate concentrate (BMAC) for cartilage repair with or without platelet-rich plasma (PRP)\(^1\)

- One-step alternative to Autologous Chondrocyte Implantation (ACI)

- Aim: to evaluate BMAC and PRP for cartilage repair in a prospective cohort study
MATERIALS AND METHODS - PATIENTS

- 10 patients enrolled:
  - Symptomatic focal chondral lesions between 2-8 cm²
  - ICRS grade 3-4
  - Lesions: Seven patella, two trochlea, one medial femoral condyle

- Follow-up (1 and 2 years):
  - MRI (Magnetic resonance observation of cartilage repair tissue (MOCART))
  - Second-look arthroscopies (8 patients) and biopsies (7 patients)
  - Patient Reported Outcome Measures (PROMs) (KOOS, IKDC and NRS)
MATERIALS AND METHODS - PREPERATION

- 30-60mL of bone marrow is aspirated from the iliac crest (1B)
- The bone marrow is the centrifuged for 15 minutes (1C) to yield 3-4mLs of BMAC (1E)
MATERIALS AND METHODS - SURGERY

- The cartilage defect is identified (2A) and debrided (2B)
- A collagen scaffold is fitted to the defect and BMAC added (2C)
- PRP prepared (2D) to be added to scaffold and BMAC
MATERIALS AND METHODS - SURGERY

- Scaffold with BMAC and PRP (3A) is inserted into the defect (3B)
- The scaffold is then sutured into the surrounding cartilage (3C) and sealed with fibrin glue (3D)
RESULTS - MRI

- One year MOCART: 36.5 (95%CI: 22.5-50.5)

Pre-OP: Cartilage lesion in medial femoral condyle

Two years:
RESULTS - BIOPSIES

- ≈ 1 year
RESULTS - BIOPSIES

Histomorphometry

<table>
<thead>
<tr>
<th>Tissue type</th>
<th>Hyaline</th>
<th>Fibrocartilago</th>
<th>Fibrous</th>
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<td>Fraction</td>
<td>0</td>
<td>40</td>
<td>80</td>
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- Hyaline
- Fibrocartilago
- Fibrous
RESULTS - PROMS

KOOS

- Pre
- 12 months
- 24 months

Mean score

Months

Symptoms Pain ADL S&R QOL

IKDC

NRS rest

NRS activity

Mean score

Months

Pre 3 12 24

Pre 3 12 24

Statistically significant difference compared with pre-OP
CONCLUSION

- Treatment of chondral lesions with BMAC and PRP seems to improve clinical scores after two years.

- On average 60% of the repair tissue is fibrous.

- There is a need for more patients and longer follow-up before effects of this treatment method can be concluded.
REFERENCES