

## Paper #56

# PEMFS Application After Microfractures to the Knee: A 5 Year Follow Up Study.

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### Summary:

PEMFS application after microfracture of the knee can improve the effectiveness of microfracture in the long term. At 5 years after the index management, patients in the I-ONE Group had reported higher Lysholm and IKDC scores and return to sport activity compared to patients of the Placebo Group.

### Abstract:

#### INTRODUCTION

Microfracture is a commonly accepted first-line management for focal cartilage defects, which provides promising results in the short-term and mid-term. Nevertheless, outcomes worsen over time, especially in patients with concomitant pathologies such as ligament deficiency, meniscal tears. Pulsed electromagnetic fields (PEMFS) improve inflammation after surgery, relieve symptoms, and, specifically, on cartilage, promote chondrocyte protection, and proliferation. This is a 5 year follow-up randomized controlled study comparing functional and clinical outcomes of 2 selected groups of patients who had undergone microfracture for management of grade III-IV cartilage injury of the medial femoral condyle and arthroscopic partial meniscectomy of the medial meniscus.

#### MATERIALS AND METHODS

The study included 60 patients with grade III – IV cartilage injuries of the medial femoral condyle of the knee and partial irreparable tears of the medial meniscus who had undergone microfractures and arthroscopic partial meniscectomy of the medial meniscus followed by homogenous not aggressive rehabilitation program. Thirty-four patients underwent microfractures, arthroscopic partial medial meniscectomy, and PEMFS application (I-ONE Group); 34 patients underwent microfractures, arthroscopic partial medial meniscectomy, and placebo treatment (Placebo Group). Sixty patients were assessed at the last follow-up of 5 years; 8 were lost during the study. At the last follow-up, the I-ONE Group included 28 patients (21 men and 7 women), the Placebo Group included 32 patients. All 60 patients were evaluated pre-operatively, at 2 years and at an average follow-up of 6 years (range 54 to 83 months, SD: 7.6). by independent examiner according to (IKDC) and Lysholm Knee and radiographic evaluation and statistical Analysis was performed on the data

#### RESULTS

In the I-ONE Group, the IKDC subjective score showed a minor deterioration at last follow-up ( $86.0 \pm 10.3$ ) ( $P=0.05$ ), while the Placebo group showed a marked deterioration ( $88.3 \pm 9.1$ ) ( $P<0.0001$ ), for the results at the last appointment ( $81.0 \pm 11.6$ ) ( $P=0.0005$ ).

Comparing groups, the IKDC objective scores were not significantly different after 2 years ( $P=0.49$ ); at 5 years, the percentage of patients with normal and nearly knees was greater in the I-ONE Group ( $p=0.09$ ).

With regard to the Lysholm score rating, the average Lysholm score decreased significantly to 87 (79-91) in the I-ONE group ( $P=0.004$ ) and 78 (69-89) in the placebo group ( $P<0.0001$ ), showing a significant inter-group difference ( $P<0.0001$ ).

The return to sport activity at the last follow-up, 82% in the I-ONE group and 68% in the placebo group were still

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active at the same pre-injury level. even though the percentage of patients still active at the same level they were preoperatively was greater in the I-ONE Group, the inter-group difference was not statistically significant (P=0.28)

In both groups, the patients with degenerative changes were not significantly different for Lysholm and IKDC scores, return to sport, and competition to pre-injury sport activity level.

### CONCLUSIONS

PEMFs application can improve the effectiveness of microfracture in the long term. At 5 years after the index management, patients in the I-ONE Group had reported higher Lysholm and IKDC scores and return to sport activity compared to patients of the Placebo Group.