

Histological and immunohistochemical analysis of cutaneous and subcutaneous tissues of the abdominal region after cryolipolysis with plates

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Abstract

Cryolipolysis reduces subcutaneous fat thickness without damaging the skin or surrounding tissues. Also, cooling plates can reduce complications caused by skin suction and treat areas not clamped by other methods. This study aimed to assess the effects of cryolipolysis with plates on cutaneous and subcutaneous tissues of the abdominal region. One woman received a single session of cryolipolysis with plates (CoolSculpting), applied in two cycles of 30 minutes with three minutes of manual reperfusion) on the right infra-umbilical region, and the left side was maintained as control. Abdominoplasty was performed 60 after the session, and tissue fragments were removed and biopsied. Immunohistochemistry was performed for caspase 3 (CASP3), cyclooxygenase-2 (COX-2), fibroblast growth factor 2 (FGF2) and its receptor (FGFR1), peroxisome proliferator-activated receptors gamma (PPAR γ) and alpha (PPAR α), dynamin-related protein 1 (DRP1), mitofusin 1 (MFN1) and 2 (MFN2),

mitochondrial fission 1 protein (FIS1), Kiel 67 (Ki-67), and uncoupling protein 1 (UCP1). The fat tissue of the treated region was reduced, and adipocytes presented apoptosis activation and inflammatory process, observed by increased expression of CASP3 and COX-2, respectively. The treated region also increased lipid metabolism and activation of thermogenesis with adipocyte degradation. DRP1 expression was increased, indicating higher mitochondrial metabolism due to inflammation in the treated region. There was an increase the number of fibroblasts (predominately collagen type I) and the expression of FGF2 and FGFR1 indicated activation of its proliferation pathway. Cryolipolysis with plates increased the metabolic rate, collagen quantification, and expression of markers for inflammatory process and apoptosis in the adipose tissue. Thus, this method may effectively reduce localized fat and induce neocollagenesis and neoelastogenesis.

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A man in a dark shirt is looking upwards and to the right. The background is a dark blue digital space filled with glowing data visualizations, including a large circular chart in the top left, a bar chart in the center, and various smaller charts and data points scattered throughout. The overall aesthetic is high-tech and futuristic.

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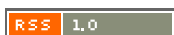
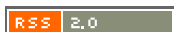
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