

Fibrin glue and demineralized bone matrix effect on autologus cartilage graft in microtia reconstruction

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Abstrak

Background: Microtia reconstruction is a challenge for ENT Head and Neck surgeons. Various surgical techniques using autograft cartilage have been done to perform auricular reconstruction. Knowledge of cartilage graft concerning resorption process that affected the size, form, and aesthetic subunit of the ear is mandatory. **Purpose:** To evaluate the success of cartilage autograft by identifying chondrocyte apoptosis, tissue degradation based on cell character, matrix homogeneity, fibrosis, proteoglycans, collagen and Transforming Growth Factor β (TGF β ;) expression in application of Fibrin Glue (FG) and or Demineralized Bone Matrix (DBM) after 12 weeks in microtia reconstruction by Nagata technique. **Methods:** Quasi-experiments. FG and/or DBM were applied on the rest of the 12 ear cartilage framework which was implanted on mastoid area. Apoptosis was examined by TUNEL. Safranin O staining and modified Mankin's score was used to evaluate cartilage degradation and TGF β expression by ELISA. **Results:** FG or DBM on cartilage graft showed significant increase in chondrocyte viability compare with control group ($p=0.00$). Minimal fibrosis, more homogeneous extracellular matrix, decreased proteoglycan and minimal thickening of collagen, had significant differences compared with control or FG-DBM group. Structure differences occurred among cartilage graft after 12 week implantation whereas FG showed minimal fibrous tissue, normal cell character, proteoglycan, collagen, and tissue homogeneity ($p < 0.05$). **Conclusion:** FG is highly recommended to reduce degradation of cartilage graft in microtia reconstruction. DBM can be still used to maintain chondrocyte viability, proteoglycans, and collagen.

Keywords: cartilage graft, fibrin glue, demineralized bone matrix, transforming growth factor β ;, Mankin score.