

# Volume retention of fat grafting used to correct head and neck contour defects

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## Introduction:

Autologous fat grafting is useful to improve contour defects of the head and neck. However, predicting long-term volume retention is difficult. The purpose of this study was to quantify volume retention from fat grafting in head and neck contour defects using 3D photography.

## Methods:

Consecutive patients undergoing head and neck fat grafting by a single surgeon from 2012-2015 were evaluated. Fat was harvested using a modified Coleman technique, centrifuged for purity, and injected using 1cc micro-aliquots. The volume of fat injected was recorded. 3-D photographs were taken pre-operatively as well as immediately, 6, and 12 weeks post-operatively. Two independent evaluators determined volume retention using 3dMDvultus software.

## Results:

Eighteen patients (mean age=41) undergoing 20 grafting procedures were evaluated. The most common causes of prior fat loss were post-cancer extirpation (44%) and congenital syndromes. Five patients had previous radiation to the recipient site. Mean volume of fat injected per procedure was 31.5 cc (SD±13.9). Sixty percent of procedures were done under local anesthesia with the abdomen as the most common donor site (65%). Six-week post-operative 3D photographs demonstrated a mean volume correction of 18cc (SD±13.5) and mean volume retention of 55% (SD±23.6) compared to twelve-week photographs, which demonstrated a mean volume correction of 12 cc (SD±8.1) and mean volume retention of 42% (SD±19.6) ( $p=0.001$ ). Radiation did not affect retention volumes at 6 ( $p=0.25$ ) or 12 ( $p=0.31$ ) weeks.

## Discussion:

Microinjection of autologous fat is an effective method of correcting contour defects of the head and neck. We demonstrated that 55% of volume injected will be retained at 6 weeks and 42% of volume injected will be retained at 12 weeks post-injection.