

Utility of Objective Evaluation of Breast Mound by 3D Image Analysis in Aesthetic Breast Reconstruction Second Stage Operation

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Abstract

Purpose: We measured the reconstructed breast volume and shape using three-dimensional surface imaging system, and applied the data for aesthetic breast reconstruction. The purpose of this study was to validate the effectiveness of this system for clinical use.

Materials and Methods: Nine women who underwent 2-stage breast reconstruction using free rectus abdominis flap between 2007 and 2012 were included in this study. A 3D scanner (Danae; NEC engineering, Japan) was used for measuring breast volume and shape at the time of both second stage breast reconstruction and over 6 month after surgery. The surgeon revised the reconstructed breast mound with reference to these data to adjust the volume and shape.

Results: There was a trend of the reconstructed breast mound upward and lateral position compared to the non-surgical healthy breast. The 3D imaging system showed improvement of reconstructed breast in both volume and shape after revisional surgery.

Conclusion: Objective assessment of reconstructed breast using three-dimensional imaging system can assist the surgeon to reconstruct symmetrical and aesthetical breast.

Key words: Three-dimensional image analysis, Breast reconstruction, Breast cancer, free flap, Three-dimensional scanner