

Persistent Reduced Pigmentation of Areola after Breast Reconstruction with Brava-assisted Autologous Fat Grafting

Anders Klit, MD*

Caroline H. Olsen, MD†

Christina S. Gramkow, MD*

Summary: A 17-year-old healthy woman treated for unilateral hypoplastic breast anomaly with Brava-assisted fat grafting experienced persistent reduced pigmentation of the areola on the treated breast. The reduced pigmentation was confirmed at 6-month postoperative follow-up and verified by histological examination of comparable biopsies from both areolas. (*Plast Reconstr Surg Glob Open* 2014;2:e261; doi: 10.1097/GOX.000000000000226; Published online 3 December 2014)

Breast reconstructions using fat graft are an established treatment.¹⁻⁴ Recent studies showed high degree of patient satisfaction and low complication rate after treatment with fat graft for hypoplastic breasts anomalies.^{5,6} The Brava system (Brava, LLC, Miami, Fla.) is used together with fat grafting to improve survival of the fat graft in breast reconstruction and augmentation. The Brava system applies negative pressure within a breast-shaped plastic dome fitted specifically for each patient. The vacuum acts as an external tissue expander by preparing the skin of the breast for the following fat grafting procedure. Moreover, it is believed that the negative pressure generates a vascular scaffold inside the breast improving the recipient site susceptibility. The Brava system is expected to enhance the fat graft survival, enabling higher transplantation volumes. We describe a single patient case treated with Brava-assisted fat grafting for unilateral breast hypoplasia, which resulted in reduced pigmentation of areola on the treated breast.

CLINICAL REPORT

A 17-year-old healthy woman suffered from unilateral hypoplastic breast anomaly (Grolleau type 3).⁷ The woman had body mass index 20 (normal weight) and was considered suited for fat grafting. As the volume difference between the breasts exceeded 200 ml, she was assigned for Brava-assisted fat grafting. She was committed to the extended reconstruction procedure including pre- and postoperative preparation of the right breast with the Brava vacuum system.

The woman was treated with 1 surgical intervention and wore the Brava vacuum system as recommended by the manufacturer. The surgery was performed under general anesthesia. The woman had suitable donor sites in the flanks and lower abdomen. The fat was collected using water-jet-assisted liposuction equipment (Body-jet; Human Med AG, Schwerin, Germany) ad modum BEAULI.⁸ The fat graft was centrifuged at 3000 rpm for 3 minutes ad modum Coleman¹ to obtain a rather dense fat graft. The purified fat was isolated and transferred to 10-ml syringes. The fat was injected in multiple sites at the inframammary fold and periareolar region by 2-mm transfer cannulas. No fat was injected under areola as the volume defects were located elsewhere. The fat was grafted in multiple layers until the desired volume was achieved, including an overcorrection on approximately 20% of the desired end volume due to expected fat reabsorption. A total of 300 ml purified fat was injected in the right breast. The elevated inframammary fold was loosened by performing a 3-dimensional mesh release. The pa-

From the *Department of Plastic Surgery, Roskilde University Hospital, Roskilde, Denmark; and †Department of Pathology, Roskilde University Hospital, Roskilde, Denmark. Received for publication August 18, 2014; accepted October 2, 2014.

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Fig. 1. Photographs depicting preoperative stage—right-side unilateral hypoplastic breast, Grolleau type 3, volume difference 200 ml.

tient experienced no surgical complications at either donor site or recipient site in terms of infection, hematoma, or fat necrosis. In the early postoperative period, the patient observed reduced pigmentation of the right areola. The woman was photographed preoperatively (Fig. 1). At 3-month postoperative follow-up, the reduced pigmentation of areola on the treated side was described, and it remained unchanged at 6-month follow-up without any sign of recovery (Fig. 2).

At 6 months postoperatively, the woman was interviewed for a separate study (presented elsewhere by the same authors) and reported no regrets in terms of the chosen reconstructive technique, and she sustained her preference of fat graft breast reconstruction instead of implant-based breast reconstruction. She even stated that she would recommend the breast reconstruction using fat grafting to other women in the same situation although the reduced pigmentation had persisted.

The patient has been offered professional areola tattooing to restore the areola pigmentation, which she so far rejected.

HISTOLOGICAL EXAMINATION

At 6-month postoperative follow-up, 2-mm biopsies were taken from symmetrical sites at both areolas. The samples were stained with hematoxylin and eosin and immunohistochemistry Melan-A marker. The tissue samples were examined with 40 \times magnification. In the hematoxylin and eosin-stained sample, it was found that the pigmentation was reduced significantly on the right side treated with Brava-assisted fat grafting compared with the left side (untreated) (Figs. 3A and B). Melan A stain showed normal and similar amounts of melanocytes in the biopsy from each breast.

DISCUSSION

The areola is probably the most important landmark of the breast and is of significant importance for the overall appearance of the breast. Areola can be



Fig. 2. Photographs depicting postoperative stage. After Brava-assisted fat grafting to the right breast, injected volume is 300 ml. Volume difference at 6 months postoperatively is 50 ml. Reduced pigmentation on areola of the right side.

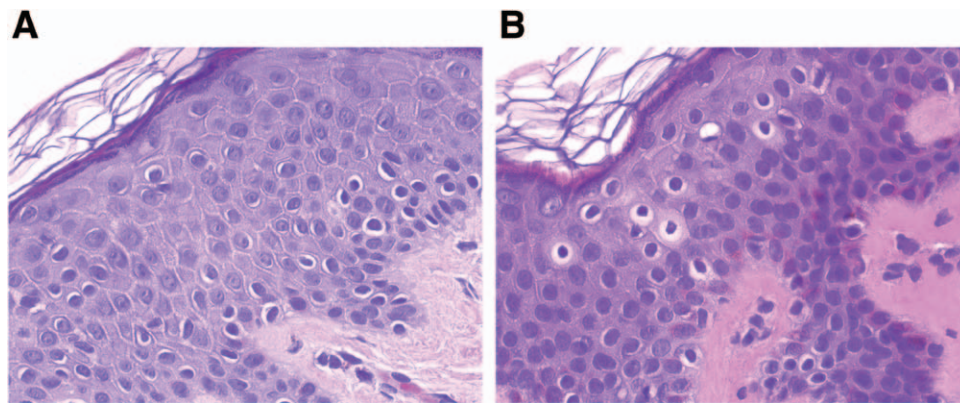


Fig. 3. A, Hematoxylin and eosin stain: right areola—2 mm biopsies taken symmetrically from each areola. The reduced pigmentation is seen as lack of melanin granules. B, Hematoxylin and eosin stain: left areola—2 mm biopsies taken symmetrically from each areola. The normal pigmentation of the areola is seen as equally distributed melanin granules.

seen in a wide range of sizes, color tones, and varying round shapes between different women, but what is foremost important to obtain harmonic appearance of the breasts is that the areolas are alike concerning shape, size, and color tone between the 2 breasts.

To our knowledge, the reduced pigmentation of areola has not been observed in other patients treated with fat grafting for breast reconstruction. Whether this phenomenon is a consequence of the fat grafting procedure including the processing of the fat graft and/or the Brava vacuum system or occurred spontaneously, we do not know. We are unable to make any assumptions of the biological origin of this phenomenon from this single case. As breast reconstructions and augmentations using lipografting are becoming increasingly frequent, other cases may appear in the future. We present this patient case to draw attention to this potential adverse effect of the treatment.

CONCLUSIONS

As the potential adverse effect consisting of persistent reduced pigmentation of areola is rather harmless, easy to rectify using conventional tattooing, and is expected to be rare, we do not suggest any precautions or limitations in the use of Brava or fat grafting to the breast.

Anders Klit, MD

Department of Plastic Surgery
Roskilde University Hospital
4000 Roskilde, Denmark
E-mail: akli@regionsjaelland.dk

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