Upper Blepharoplasty for Areola Reconstruction

Obere Blepharoplastik zur Areolenrekonstruktion

Authors O. L. Friedrich, J. Heil, M. Golatta, C. Domschke, C. Sohn, M. Blumenstein

Affiliation Gynäkologie und Geburtshilfe, Universitätsfrauenklinik Heidelberg, Heidelberg

Key words
- areola reconstruction
- upper blepharoplasty
- patient satisfaction

Schlüsselwörter
- Areolenrekonstruktion
- obere Blepharoplastik
- Patientenzufriedenheit

Abstract

Blepharoplasty is one of the most common rejuvenating facial plastic surgery procedures. The procedure has been described many times and has very few complications. The tissue removed from the upper eyelid during blepharoplasty can be used as a skin graft for areola reconstruction due to the tissue's similarity to the areola's natural skin. The present study investigated the use of upper blepharoplasty for areola reconstruction. Criteria were patient satisfaction, objective measurements and the assessment of cosmesis by a panel of physicians. All eight patients included in the study were very satisfied with the cosmetic result. Objective measurements and assessment by a panel of physicians using photographs of the reconstructed nipple-areola complex showed very good aesthetic results.

Zusammenfassung

Die Blepharoplastik ist eine der am häufigsten durchgeführten plastisch-ästhetischen gesichtsverjüngenden Operationen weltweit. Der Eingriff ist weltweit mehrfach beschrieben und gilt in der Regel als sehr komplikationsarm. Das bei der Blepharoplastik entnommene Gewebe des Oberlids kann als Transplantat für die Rekonstruktion der Areola verwendet werden, da es von seiner Beschaffenheit der natürlichen Brustwarzenhaut stark ähnelt. Im Rahmen unserer Studie wurde die Methode der oberen Blepharoplastik im Rahmen der Areolenrekonstruktion untersucht hinsichtlich Patientinnenzufriedenheit, objektiven Maßen und ärztlicher Panelbefragung hinsichtlich des ästhetischen Outcomes. Die 8 teilnehmenden Patientinnen zeigten sich allesamt sehr zufrieden mit dem kosmetischen Ergebnis. Die objektiven Maße sowie eine ärztliche Panelbefragung anhand Fotos der rekonstruierten Brustwarze ergaben ein insgesamt sehr gutes ästhetisches Ergebnis.

Introduction

The choice of treatment and the therapeutic options available to patients with breast cancer are constantly increasing [1,2]. Breast reconstruction after mastectomy is usually done in several stages. Reconstruction using foreign/own body tissue is followed, after an average period of 8–12 weeks, by breast reconstruction. Reconstruction of the areola complex can be done using skin grafts obtained from various areas of the body, such as the upper eyelids, the groin, the inside of the upper thigh, the labia minora or the contralateral areola. As with all types of skin transplants, morbidity in the donor skin graft area (scarring, pigmentation changes) remains a factor which must also be taken into consideration when making a decision about the most suitable surgical method [3]. Another method for reconstruction of the nipple areola complex (NAC) consists of reconstructing only the nipple, followed after a few weeks by tattooing of areola complex. With the exception of the procedure used to tighten the upper eyelid (upper blepharoplasty), all other methods mentioned above have been compared in different comparative studies [4,5]. The ideal NAC reconstruction includes optimal position of the nipple, with the nipple consistent in size, consistency and pigmentation with the contralateral side.

According to the American Society for Aesthetic Plastic Surgery, blepharoplasty was the third most common cosmetic plastic surgery performed in 2003. The main goal of surgery, if car-

received 17.11.2012
revised 21.4.2013
accepted 1.5.2013

Bibliography
DOI http://dx.doi.org/10.1055/s-0032-1328723
Geburtsh Frauenheilk 2013; 73: 720–723 © Georg Thieme Verlag KG Stuttgart · New York · ISSN 0016-5751

Correspondence
Dr. Olivia Laura Friedrich
Universitätsfrauenklinik Heidelberg
Gynäkologie und Geburtshilfe
Voßstraße 9
69115 Heidelberg
olivia.friedrich@med.uni-heidelberg.de

ried out as a single procedure, is visible facial rejuvenation [6]. If upper blepharoplasty is used as an adjunct to areola reconstruction, NAC reconstruction can be combined with cosmetic facial surgery.

Our study focussed on the satisfaction of patients who underwent upper blepharoplasty for areola reconstruction as part of general breast reconstruction after surgical resection and on cosmesis after surgery.

Material and Methods

We report here on eight patients who had upper blepharoplasty for areola reconstruction between 1 December 2010 and 31 January 2012. All patients were s/p breast reconstruction after mastectomy for breast cancer. After receiving a patient information leaflet, all patients were requested to present themselves to our Department for clinical examination between April and June 2012. The patients had previously received a questionnaire developed specifically for our study to record their subjective assessment of the surgical outcome (breast and upper eyelids). The questionnaire aimed to investigate the satisfaction of patients with the surgical outcome of nipple reconstruction and with the appearance of the upper eyelids after surgery and included detailed questions on patient satisfaction with the reconstructed nipple with regard to skin pigmentation, shape, size and overall symmetry. Patients were additionally asked whether the surgical results corresponded to their preoperative subjective wishes/ideas and whether they would opt for this form of areola reconstruction again. All patients were carefully measured and the operated areas were closely inspected. The investigation protocol consisted of inspection of the operated areas for signs of infection, scarring and pigmentation, as well as the measurement of three fixed distances for both breasts (breast–jugulum, inframamary fold–breast, [central] sternum–breast) to assess symmetry. A scoring system with points was used to assess the answers to the individual questions in the questionnaire, the inspection criteria and the measurements (**Table 1**). In seven patients, the reconstructed breast-areola complex and the eye area (eyes closed and eyes open) were documented photographically using close-up and long-shot images (**Figs. 1** to **4**). The selection of patient photographs for publication was random. Subsequently, 3 gynaecological and obstetric surgeons from the department which carried out the study assessed the photographs of the reconstructed breast of patients (information given included the time when surgery was performed but not the patients' previous medical history) with regard to cosmesis using a points system (5 = best cosmetic result, 0 = worst cosmetic result). All findings in this study are presented purely descriptively.

Results

Mean age of the patients included in this study was 53 years. On average, upper blepharoplasty for areola reconstruction took 69 minutes. No relevant surgical complications such as secondary bleeding or impaired healing occurred either in the area where blepharoplasty was done or at the site of the reconstructed areola.

Patients recorded their subjective satisfaction with the surgical method using a questionnaire (0 = very dissatisfied to 9 = very satisfied). The mean satisfaction score was 7.9 ± 0.8 standard deviation (range 7–9).

An examination score was compiled to create an objective criterion for cosmetic outcome with a particular focus on symmetry (0 = very poor cosmetic result to 9 = very good cosmetic result). The average score was 9.1 ± 1.5 (6–11). A very good cosmetic result (9–11 points) was achieved in 6 patients and a moderate cosmetic result was achieved in 2 patients (6 and 8 points, respectively) (**Table 2**).

Assessment by the panel of 3 physicians resulted in a mean value of 3.8 ± 0.9 (2–5) (0 = worst cosmetic result to 5 = best cosmetic result).

Table 1 Scoring systems. Score 1 is used to assess patient satisfaction and Score 2 to assess the objective outcome after surgery.

Scoring systems	Criterion	Point scores		
1st score	Patient satisfaction	0–3 points: very dissatisfied	4–6 points: moderately satisfied	7–9 points: very satisfied
2nd score	Objectively verifiable result (inspection, measurements)	0–3 points: very poor cosmetic result	4–8 points: moderate cosmetic result	9–12 points: very good cosmetic result

Table 2 Patient characteristics. Table 2 lists patient characteristics, the subjective and objective scores for the individual patients and information on the surgical procedure(s).

Patients	Age (years)	Measurement score	Satisfaction score	Time between first operation and NAC reconstruction (years)	Duration of surgery (minutes)
1	52	10	8	1	58
2	69	6	8	1	55
3	43	9	9	1	67
4	50	11	7	0.5	76
5	54	9	7	0.25	68
6	50	10	9	4	75
7	58	10	8	29	70
8	52	8	7	2.5	84

Fig. 1 53-year-old patient, 20 months postoperatively, s/p nipple reconstruction of the right breast using a star flap and bilateral upper blepharoplasty for areola reconstruction.

Fig. 3 70-year-old patient, 23 months postoperatively, s/p nipple reconstruction of the left breast using a star flap and bilateral upper blepharoplasty for areola reconstruction.

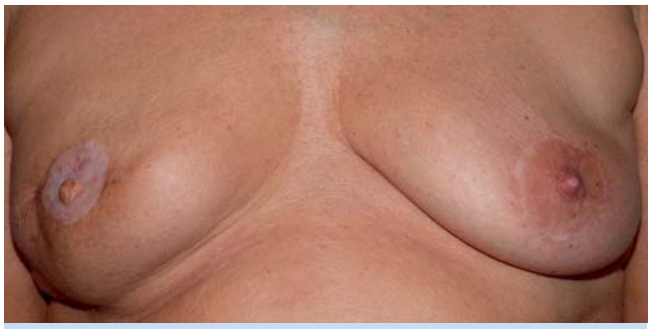

Fig. 2 53-year-old patient, 20 months postoperatively, s/p nipple reconstruction of the right breast using a star flap and bilateral upper blepharoplasty for areola reconstruction after mastectomy of the right breast for breast cancer. The patient had previously rejected tattooing of the areola to achieve a colour match. Status post periareolar lift on the left side.

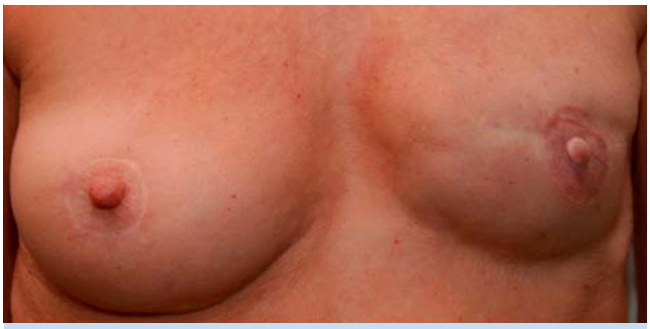

Fig. 4 70-year-old patient, 23 months postoperatively, s/p nipple reconstruction of the left breast using a star flap and bilateral upper blepharoplasty for areola reconstruction of the left breast after previous mastectomy for breast cancer. Status post periareolar lift on the right side.

Discussion

Blepharoplasty is one of the most common plastic surgery procedures performed worldwide. The main goal of the operation, if it is carried out as a single intervention, is visible facial rejuvenation, but the intervention can also lead to functional and cosmetic improvement of the periorbital region [6]. Complications arising from this procedure are rare and generally transient and mild, usually consisting of haematomas and chemosis. In a case series of 10 patients, Beier et al. reported a very low complication rate with good to very good cosmetic results for areola reconstruction using local flap plasty or nipple sharing together with full-thickness skin grafts from the upper eyelids [7]. In 2009, Kruavit reported a complication rate of 3.8% (only mild complications) after blepharoplasty procedures in 6215 patients over a period of 18 years. No serious complications were reported in the study [8]. However, the literature does include reports on a number of complications. They can include blindness but also complications requiring repeat surgical intervention such as eversion of the eyelid and eyelid or brow ptosis [9]. In a retrospective study of 200 patients who underwent blepharoplasty between January 2007 and January 2009, Patrocinio et al. reported that most complications can be avoided if the surgical procedure is preceded by careful preparation, including a detailed patient history (co-morbidities, current medication, previous medical conditions affecting the eye area) and careful physical examination. In addition, it is important to explore any patient-specific psychological aspects preoperatively, for example the patient's preoperative expectations about the outcome after surgery [10]. Both the diagnosis and the surgical procedure should be done by a surgeon trained in aesthetic plastic surgery to minimise the complication rate and morbidity associated with the intervention. When potential patients are selected, it is also important to inquire into their previous medical history with regard to deficits in wound healing or scarring, as atrophic scarring tends to be associated with a better cosmesis.

Reconstruction of the nipple-areola complex is the final surgical procedure of breast reconstruction surgery. The aim is to complete the external physical appearance and fully adapt the reconstructed breast to the contralateral breast; it is therefore extremely important for patients. Many different surgical procedures are used for nipple reconstruction, all of which aim to create and maintain adequate nipple projection [11]. The challenge of nipple reconstruction is to ensure that the reconstructed nip-

ple is correctly positioned and symmetrical to the contralateral side and that the scar is inconspicuous [12].

Surgery can be used to reconstruct both the nipple and the areola. While skin flaps made of local tissue are usually used for nipple reconstruction [13], there are many well-tried procedures available for areola reconstruction which use skin grafts obtained from the contralateral areola, from the groin, the upper thigh or the vulva. With all skin grafts, pigmentation of the grafted areola usually differs from pigmentation of the contralateral side, and pigmentation between the areola and nipple also differs. Even when a skin graft is obtained from the contralateral areola, a loss of pigmentation is often detectable in the long term which, in many cases, will require tattooing at a later stage to achieve a colour match [5].

Conclusion

The skin of the upper eyelid resembles that of the skin of the areola in its appearance, consistency and pigmentation, making it suitable for use in areola reconstruction. Tissue removed from the upper eyelid during blepharoplasty can be used as a skin graft in areola reconstruction. To obtain enough skin from the upper eyelid to create an areola, bilateral upper blepharoplasty is necessary. The technique combines surgical areola reconstruction with rejuvenating facial plastic surgery and generally has a high patient satisfaction score. The high levels of patient satisfaction together with the aesthetically pleasing outcome noted for the method presented in here warrant further prospective studies with greater numbers of patients.

Conflict of Interest

None.

References

1 *Kolberg H-C, Lüftner D, Lux MP et al.* Breast Cancer 2012 – new aspects. Geburtsh Frauenheilk 2012; 72: 602–615
2 *Melcher C, Jäger B, Hagenbeck C et al.* Breast cancer: state of the art and new findings. Geburtsh Frauenheilk 2012; 72: 215–224
3 *Farhadi J, Maksvytyte GK, Schaefer DJ et al.* Reconstruction of the nipple-areola complex: an update. J Plast Reconstr Aesthet Surg 2006; 59: 40–53
4 *Kargul G, Deutinger M.* [Reconstruction of the breast areola complex. Comparison of different techniques]. Handchir Mikrochir Plast Chir 2001; 33: 133–137
5 *Kolberg HC, Friedrich M, Schmolling J et al.* Techniken zur Rekonstruktion des Mamillen-Areola-Komplexes. Gynäkologe 2005; 38: 230–235
6 *Glavas IP.* The diagnosis and management of blepharoplasty complications. Otolaryngol Clin North Am 2005; 38: 1009–1021
7 *Beier J, Breuel C, Leffler M et al.* Rekonstruktion des Mamillen-Areola-Komplexes durch lokale Lappenplastik oder „Nipple-sharing“ in Kombination mit Vollhauttransplantation aus den Oberlidern. Senologie 2009; 6 – A14; DOI: 10.1055/s-0029-1224939
8 *Kruavit A.* Asian blepharoplasty: an 18-year experience in 6215 patients. Aesthet Surg J 2009; 29: 272–283
9 *Morax S, Touitou V.* Complications of blepharoplasty. Orbit 2006; 25: 303–318
10 *Patrocinio TG, Loredo BA, Arevalo CE et al.* Complications in blepharoplasty: how to avoid and manage them. Braz J Otorhinolaryngol 2011; 77: 322–327
11 *Richter DF, Reichenberger MA, Faymonville C.* [Comparison of nipple projection after reconstruction with three different methods]. Handchir Mikrochir Plast Chir 2004; 36: 374–378
12 *Mohamed SA, Parodi PC.* A modified technique for nipple-areola complex reconstruction. Indian J Plast Surg 2011; 44: 76–80
13 *Kroll SS, Reece GP, Miller MJ et al.* Comparison of nipple projection with the modified double-opposing tab and star flaps. Plast Reconstr Surg 1997; 99: 1602–1605

Deutschsprachige Zusatzinformationen online abrufbar unter: www.thieme-connect.de/ejournals/toc/gebfra.