

The ECLiPSE Procedure as an Alternative to Mastopexy following Implant Removal

Nicholas Wilssens, MD*

Apresh Singla, MD*

Stuart Hoffman, MD*

Susannah Graham, MD, FRACS†

Nipu Jayatilleke, MD, FRACS†

Sepehr Lajevardi, MD, FRACS*†

Anthony Barker, MD, FRACS*†

Anand K. Deva, MD, FRACS*†

Background: With the rise in number of breast implant removals for a variety of indications, strategies to improve aesthetic outcomes, while minimizing scars and operating time, will prove to be of benefit. We present here a novel periareolar sickle skin excision as a good option for women with mild to moderate ptosis and central loss of breast volume following implant removal/capsulectomy.

Methods: The ECLiPSE (Explant, Capsulectomy, Lift using Periareolar Sickle skin Excision) was utilized in 53 patients with a median follow-up of 24 weeks.

Results: The majority of these patients had breast implants for cosmetic augmentation and the most common indication for implant removal was capsular contracture (n = 47, 88.7%). Forty-six patients (86.8%) scored a high or very high satisfaction with the outcome of the procedure.

Conclusion: We believe that the ECLiPSE procedure is a useful option that can produce a reasonable aesthetic outcome following implant removal/capsulectomy while minimizing visible scarring. (*Plast Reconstr Surg Glob Open* 2021;9:e3713; doi: 10.1097/GOX.0000000000003713; Published online 27 July 2021.)

INTRODUCTION

Although breast augmentation remains the commonest cosmetic surgery procedure performed both in the United States and worldwide, the most recent statistics have reported a drop in demand.¹ In 2019, the total number of cosmetic breast augmentation procedures fell by 4.1%, compared with that in 2018.¹ By contrast, breast implant removal, although representing only around 10% of augmentation procedures, rose by 15% over the same period.¹ Implant rupture and capsular contracture remain the most common indication for breast implant removal. The demand for removal has been further amplified by the recent regulatory action removing a number of textured devices due to their link with breast implant associated anaplastic large cell lymphoma² and the possible link between breast implants and systemic disease.³ Many women are now opting not to replace their implants and so plastic surgeons face significant challenges trying to correct for lost breast volume and/or excess skin.

Methods to optimize aesthetic outcome following explantation/capsulectomy have been addressed before

using a variety of parenchymal/dermal flaps⁴⁻⁶ and lipofilling.^{7,8} We present a novel technique—the ECLiPSE (Explant, Capsulectomy, Lift using Periareolar Sickle skin Excision)—as a means of addressing limited ptosis and central volume loss providing a reasonable aesthetic outcome with minimal scarring.

METHODS

The ECLiPSE acronym describes the different stages in this multi-step approach.

1. Explant with Capsulectomy
2. Temporary Lift of the areola/skin using skin staples to confirm good position and symmetry of the nipple areolar complex (NAC)
3. Perioareolar skin marking using a Sickle shaped pattern
4. Skin Excision with subsequent dermal cautery to shrink the gap and gathered suturing to provide central autoaugmentation

Detailed Description of the Technique

Clinical Assessment

All patients were assessed clinically before their surgery. In addition to demographic details, details of their prior breast history, risk factors for breast cancer and surgery as well as indication for breast implant surgery and implant and operative details were recorded. The presence of local breast and implant pathology was assessed clinically and radiologically, with ultrasound and mammography. When

From the *Department of Plastic & Reconstructive Surgery, Macquarie Health, Macquarie University, Sydney, Australia; and †Integrated Specialist Healthcare Education & Research Foundation, Sydney, Australia.

Received for publication April 16, 2021; accepted May 27, 2021.

Copyright © 2021 The Authors. Published by Wolters Kluwer Health, Inc. on behalf of The American Society of Plastic Surgeons. This is an open-access article distributed under the terms of the Creative Commons Attribution-Non Commercial-No Derivatives License 4.0 (CCBY-NC-ND), where it is permissible to download and share the work provided it is properly cited. The work cannot be changed in any way or used commercially without permission from the journal.

DOI: 10.1097/GOX.0000000000003713

Disclosure: The authors have no financial interest to declare in relation to the content of this article.

indicated, magnetic resonance imaging was used as an additional investigation.

Women who had ptosis of the NAC more than 5 cm below the inframammary fold (IMF) were excluded as it was felt that these women would benefit from a vertical or Wise pattern mastopexy. All patients were seen twice before their scheduled procedure and informed educated consent was obtained.

Preoperative Markings

The patients were marked in a standing position. The suprasternal notch, xiphoid, chest midline, inframammary fold, breast meridian, and previous access incision were marked. Nipple and areola placement was not marked before surgery and was measured intraoperatively.

Surgical Technique

All procedures were performed under general anesthesia with intercostal anesthetic blocks using 10 cm³ of Ropivacaine (1%). An additional 10 cm³ of bupivacaine (0.5%) with adrenaline (1 in 200,000) was injected into the incision sites. The implant and capsule were then removed. Where possible, a total precise explant and capsulectomy was performed either in continuity (the so called “en bloc” removal) or with the implant removed initially and subsequent excision of the capsule—usually in the setting of rupture. After securing hemostasis of the pocket, the surgical space was irrigated with saline and then subsequently with full strength betadine with a minimum contact time of 5 minutes. The access incision was closed in layers. The patient was then positioned upright to determine the position of the NAC in relation to the IMF (Fig. 1A). The areolar is lifted and secured using skin staples and aligned to the breast meridian (Fig. 1B). Symmetry and position are assessed from right to left (Fig. 1C). The new position and skin outline is marked, and the patient returned to the horizontal position. The skin staples are removed, and a sickle shaped skin excision is marked (Fig. 1D) and removed (Fig. 1E). The remaining dermal layer is cauterized by punctate monopolar diathermy, to shrink the size of the defect (Fig. 1F). Wound edges are approximated using separate 4/0 Monocryl sutures (Ethicon, Johnson & Johnson, N.J.) in a wagon wheel pattern. The skin closure is completed using a subcuticular 4/0 Stratafix (Ethicon, Johnson & Johnson, N.J.) and dressings/support garments are then applied (Fig. 1G).

Follow-up

All patients were scheduled to be seen at 1, 2, and 6 weeks post procedure and at between 6 and 18 months following completion of the procedure. Patients were asked to rate their satisfaction with the appearance of their breasts, on a scale from 0 to 10.

RESULTS

A total of 53 patients were included in the ECLiPSE study with a median follow-up of 24 weeks and a minimum of 12 weeks. The mean age of the cohort was 43.9 years, ranging from 23 to 81 years old. The majority of implants removed had previously undergone insertion for cosmetic reasons (N= 41; 77.4%). Other indications were

reconstructive surgery (symmetrizing procedure following contralateral breast cancer reconstruction, no radiation therapy) (N = 9; 17.0%), correction of asymmetry (N = 2; 3.8%), and correction of tuberous breasts (N = 1; 1.9%). Contracture (clinically Baker 3 or 4) was a common factor in the clinical presentation in 88.7% (N = 47) of our patients, with other symptoms including displacement (N = 5), pain (N = 20), rupture detected on ultrasound (N = 22), benign seroma (N = 4) and the presence of systemic symptoms (N = 2). The majority of implants (N = 28, 52.8%) were manufactured by Allergan. The mean duration of implant exposure was 7.6 years (range 1–30 years). These data are summarized in Table 1.

A total capsulectomy was performed in 62.2% (n = 33) of patients, with subtotal capsulectomy performed in the remaining patients. All patients had the capsule sent for histopathology and culture. Intraoperatively, 24.5% (n = 13) of implants were found to be ruptured, which was diagnosed preoperatively in 10 of these patients. In three patients in whom a preoperative ultrasound examination revealed an implant rupture, intraoperative evaluation demonstrated intact implants. All patients progressed to good healing with this technique.

The overall satisfaction with the postoperative results is shown in Table 2. 60.4% (n = 32) of women reported very high satisfaction (≥9 of 10), 86.8% (n = 46) of women reported high satisfaction (≥7 of 10) with the results overall. One patient was very dissatisfied with her outcomes (score 2/10) and cited significant upper pole volume loss. She was a patient who presented with systemic symptoms related to her breast implant which did not resolve after her implant removal. She then elected to undergo re-augmentation and lipofilling 6 months after her ECLiPSE procedure to restore her original breast contour/volume.

Illustrative Case

The first case in our series was a 32-year-old woman who had bilateral cosmetic breast augmentation surgery 10 years before our first encounter. She could not recall the volume of the inserted implant. She presented with moderate intermittent pain on both sides and altered breast shape over the last few months. Clinical examination showed ptotic breasts grade 2 according to Regnault and grade II capsule according to Baker (Fig. 2). Ultrasound examination confirmed rupture of both implants. She was scheduled for a single stage explant/mastopexy with complete capsulectomy. The ECLiPSE technique was utilized as she was not keen to have a vertical scar and she had moderate ptosis. She was very satisfied with the postoperative result both at the second postoperative consultation six weeks after surgery (Fig. 3) and after 14 months of follow-up (Fig. 4).

DISCUSSION

Removal of breast implants and capsulectomy inevitably impacts overall breast shape and contour. Once the implants are removed, the nipple areola descends causing breast ptosis. This is especially noticeable with anatomically shaped implants that are designed to lift the lower pole of the breast.

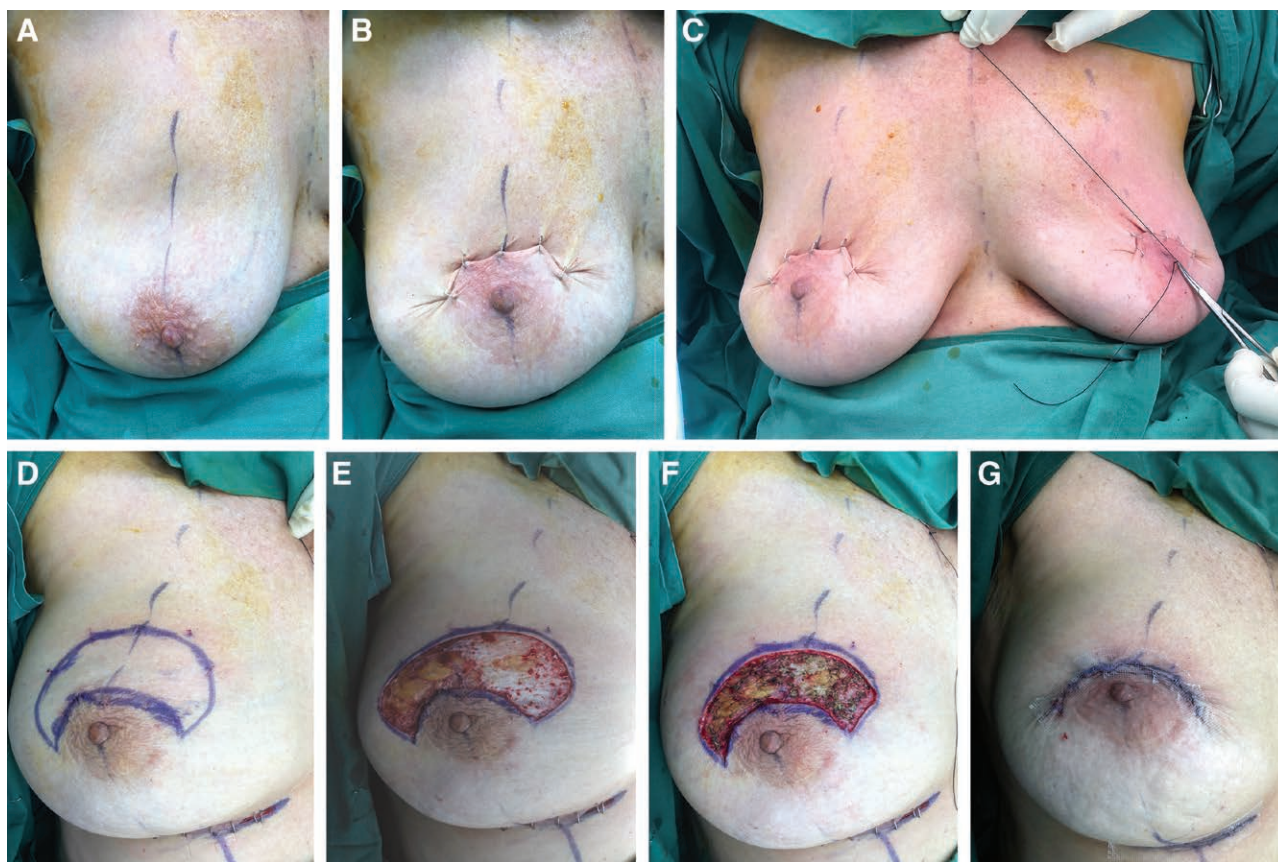


Fig. 1. Operative sequence for ECLiPSE. A, Following explant and capsulectomy, the patient is placed in an upright position to mark NAC in relation to IMF. Note the central defect following implant removal. B, Securing of areolar lift using staples. C, Symmetry and position are assessed from right to left. D, Outline of the sickle is marked. E, Removal of the skin. F, Point cautery of the dermis. G, Closure/dressings.

Table 1. ECLiPSE Patient Cohort Characteristics (N = 53)

Clinical Presentation	n (%)
Contracture/pain	20 (37.7)
Contracture/rupture	22 (41.5)
Contracture/displacement	5 (9.4)
Benign seroma	4 (7.5)
Systemic symptoms	2 (3.8)
Implant type	n (%)
Allergan	28 (52.8)
Mentor	7 (13.2)
Silimed polyurethane	6 (11.3)
Eurosilicone	3 (5.7)
Dow corning	3 (5.7)
Nagor	3 (5.7)
Polytech polyurethane	2 (3.8)
Unknown (overseas)	1 (1.9)
Indication for Implant	n (%)
Cosmetic augmentation	41 (77.4)
Breast reconstruction	9 (17.0)
Assymetry	2 (3.8)
Tuberous breast	1 (1.9)

A variety of different mastopexy techniques have been reported but no clarity exists on when best to use these techniques.⁹⁻¹¹ Andrews et al¹² was the first to describe a periareolar approach for aesthetic breast surgery, which led to the first description of a concentric mastopexy by Bartels¹³ in 1976 and the first circumareolar “donut” mastopexy by Gruber.¹⁴ Since then, this technique gained

Table 2. ECLiPSE Patient Satisfaction Scores (N = 52)

1-2 Very Dissatisfied	3-4 Dissatisfied	5-6 Neutral	7-8 Satisfied	9-10 Very Satisfied
1 (1.9%)	0 (0%)	6 (11.3%)	14 (26.4%)	32 (60.4%)

popularity because of the favorable position of the scar and several eccentric skin excision designs have been described. Good results were obtained in patients with mild to moderate ptosis, but due to flattening of the breast, areolar deformity, and scar widening, lift is usually limited to 2 cm.^{9,15-18} Benelli popularized the “round block” technique using periareolar skin excision.¹⁹ However, Rohrich et al recognized the unique characteristics of this specific explant-mastopexy patient population.²⁰ We believe that these limitations that are true for the “normal” mastopexy patient might be less strict for patients undergoing explant surgery in which tension on the breast skin actually lessens with removal of the implant. Furthermore, by using a superior periareolar sickle, the imbrication of the dermal layer offers some autoaugmentation of the central and upper breast.

A survey performed by Rohrich et al revealed that even though physician satisfaction was the lowest with the periareolar technique, it was still the third most popular technique after inverted T and limited inverted T

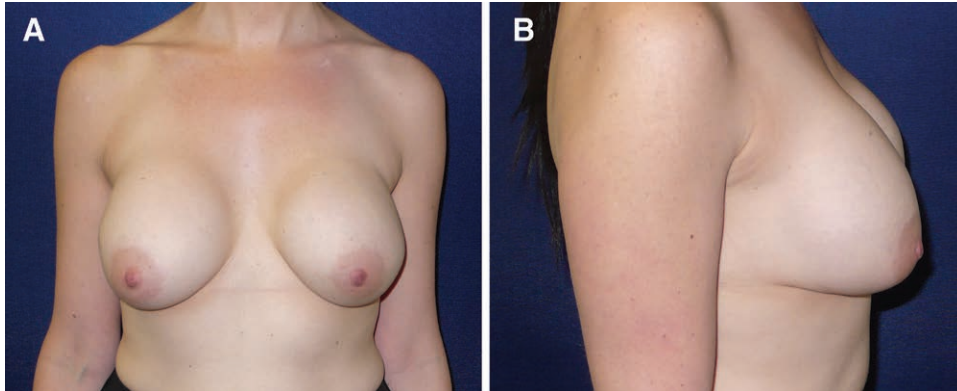


Fig. 2. Preoperative images of illustrative case.

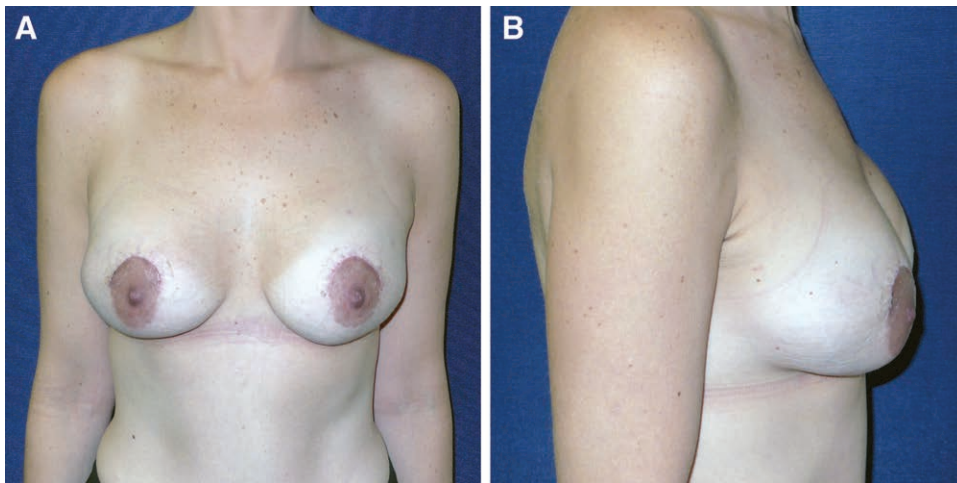


Fig. 3. Postoperative images taken 6 weeks after surgery.

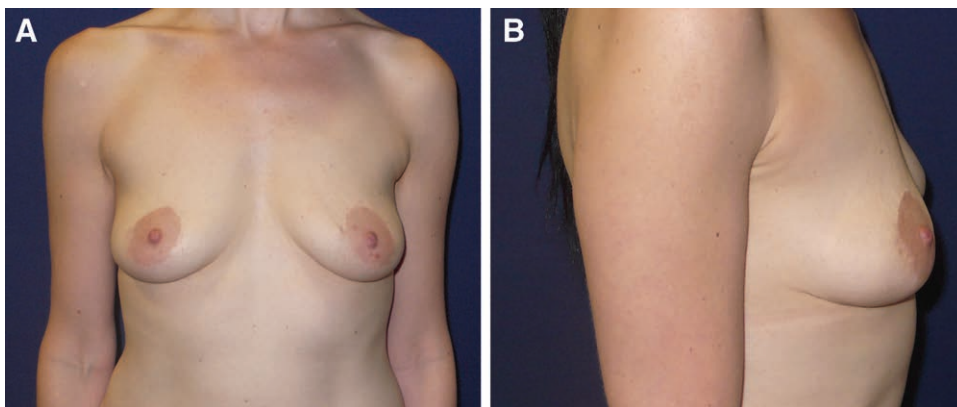


Fig. 4. Postoperative images taken 14 months after surgery.

mastopexy techniques.¹¹ There was no lower patient satisfaction reported with this technique. These results are similar to our findings with 85.7% of women in our case series reporting high satisfaction. We believe that this is also reflected in the explicit desire of patients to limit scar burden.

Complication rates associated with the periareolar technique published in literature tend to be higher.^{10,15}

Most frequently reported complications are distortion of the NAC and unfavorable scarring, both of which are related to tension on the healing skin. Unlike regular mastopexy surgery however, there is less tension on the skin due to the loss of volume when the implant is removed. Therefore, it is our opinion that a clear distinction should be made between using periareolar mastopexy with and without concurrent explant surgery.

The other benefits of ECLiPSE include a correction of central volume loss by imbrication of the dermis immediately above the superior areola. Previous publications already recognized the unique characteristics of this specific explant-mastopexy patient population.^{4–6,20}

In conclusion, we can state that the ECLiPSE technique is easy, safe, and relatively simple to learn and perform. There is no internal dissection of the parenchyma or NAC that might compromise vascularity. In our series, limiting the use of ECLiPSE to women with mild to moderate ptosis (not more than 5 cm below IMF), we have shown good patient satisfaction rates and a stable medium term result.

Anand K. Deva, MD, FRACS
 Cosmetic and Plastic Surgery
 Surgical Infection Research Group
 Faculty of Medicine and Health Sciences
 Macquarie University
 Suite 301, 2 Technology Place
 Macquarie Park, NSW 2109
 Sydney, Australia
 E-mail: anand.deva@mq.edu.au

REFERENCES

1. ASPS. *Plastic Surgery Statistics Report 2019*. Published 2021. Available at <https://www.plasticsurgery.org/documents/News/Statistics/2019/plastic-surgery-statistics-full-report-2019.pdf>. Accessed March 20, 2021.
2. TGA. Update – Outcomes from the TGA’s review of breast implants and breast tissue expanders 2019. Available at <https://www.tga.gov.au/alert/breast-implants-and-anaplastic-large-cell-lymphoma>. Accessed September 26, 2019.
3. Magnusson MR, Cooter RD, Rakhorst H, et al. Breast implant illness: a way forward. *Plast Reconstr Surg*. 2019;143(3S A Review of Breast Implant-Associated Anaplastic Large Cell Lymphoma):74S–81S.
4. Borenstein A, Friedman O. Combined breast implant explantation and multilevel mastopexy technique. *Plast Reconstr Surg Glob Open* 2019;7:e2429. [published Online First: 2019/11/20]
5. Gurunluoglu R, Kubek E, Arton J. Dual pedicle mastopexy technique for reorientation of volume and shape after subglandular and submuscular breast implant removal. *Eplasty*. 2013;13:e48.
6. Gurunluoglu R, Sacak B, Arton J. Outcomes analysis of patients undergoing autoaugmentation after breast implant removal. *Plast Reconstr Surg*. 2013;132:304–315.
7. Graf RM, Closs Ono MC, Pace D, et al. Breast auto-augmentation (mastopexy and lipofilling): an option for quitting breast implants. *Aesthetic Plast Surg*. 2019;43:1133–1141.
8. Mess SA. Lipoaugmentation following implant removal preferred by plastic surgeons and the general public. *Plast Reconstr Surg Glob Open*. 2018;6:e1882.
9. Wong C, Vucovich M, Rohrich R. Mastopexy and reduction mammoplasty pedicles and skin resection patterns. *Plast Reconstr Surg Glob Open*. 2014;2:e202.
10. Hidalgo DA, Spector JA. Mastopexy. *Plast Reconstr Surg* 2013;132:642e–56e. [published Online First: 2013/10/01]
11. Rohrich RJ, Gosman AA, Brown SA, et al. Mastopexy preferences: a survey of board-certified plastic surgeons. *Plast Reconstr Surg*. 2006;118:1631–1638.
12. Andrews JM, Yshizuki MM, Martins DM, et al. An areolar approach to reduction mammoplasty. *Br J Plast Surg*. 1975;28:166–170.
13. Bartels RJ, Strickland DM, Douglas WM. A new mastopexy operation for mild or moderate breast ptosis. *Plast Reconstr Surg*. 1976;57:687–691.
14. Gruber RP, Jones HW Jr. The “donut” mastopexy: indications and complications. *Plast Reconstr Surg*. 1980;65:34–38.
15. Spear SL, Giese SY, Ducic I. Concentric mastopexy revisited. *Plast Reconstr Surg*. 2001;107:1294–9; discussion 1300.
16. Spear SL, Kassan M, Little JW. Guidelines in concentric mastopexy. *Plast Reconstr Surg*. 1990;85:961–966.
17. Rohrich RJ, Beran SJ, Restifo RJ, et al. Aesthetic management of the breast following explantation: evaluation and mastopexy options. *Plast Reconstr Surg*. 1998;101:827–837.
18. Puckett CL, Meyer VH, Reinisch JF. Crescent mastopexy and augmentation. *Plast Reconstr Surg*. 1985;75:533–543.
19. Benelli L. A new periareolar mammoplasty: the “round block” technique. *Aesthetic Plast Surg*. 1990;14:93–100.
20. Rohrich RJ, Parker TH III. Aesthetic management of the breast after explantation: evaluation and mastopexy options. *Plast Reconstr Surg*. 2007;120:312–315.