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ROUND-BLOCK TECHNIQUE IN MANAGEMENT OF CONSERVATIVE BREAST SURGERY.

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ORIGINAL ARTICLE

Round-block Technique in Management of Conservative Breast Surgery

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Abstract

Background: **A periareolar doughnut incision is used in the circular block procedure, which is a novel method of breast resection. However, it requires more technical skill and takes longer to complete.**

Method: **The purpose of this trial was focus upon the use of round-block technique in conservative oncoplastic breast cancer surgery as a form of treatment option regarding oncological safety, efficacy, the final cosmetic results on the quality of life, the contentment of the individual receiving treatment, and advantages and disadvantages. This was an observational cross-sectional study that was conducted on 40 patients with early breast cancer treated by conservative breast surgery (round-block technique). The duration of the study was two years.**

Result: **Among our studied patients, lack of symmetry occurred in 22.5% of patients followed by unacceptable scar and pain in the treated breast in 17.5%, then seroma and areola depigmentation were developed in 15% for each followed by feeling of numbness or tingling in 12.5%, then restricted arm movement and local infection in 10%, then hematoma and delayed wound healing in 7.5%, and hypertrophic scar in 5% of cases.**

Conclusion: **The round-block approach is viable as well as oncologically safe for the initial stages of carcinoma of the breast. It also produces desirable cosmetic effects without adding any additional layers of complexity to the treatment process.**

Keywords: Breast cancer, Conservative breast surgery, Oncoplasty

1. Introduction

Through the use of a periareolar doughnut incision, the round-block method is a one-of-a-kind breast resection treatment that involves the removal of breast tissue and the subsequent reshaping of the breast. It offers the benefit of a less noticeable postoperative scar and a more aesthetically pleasing result to breast patients with cancer, which is a significant advantage. As an added bonus, the doughnut incision used in this method offers greater exposure for tissue excision and remodeling than the circumareolar incision does, without compromising the attractive effect. However, the complexity of this method makes it challenging to implement in oncologic breast surgery.[1]

Breast cancer is a devastating as well as fatal illness. It accounts for over twenty-three percent of all cancer diagnoses and is the most common malignancy in women.[2] Operation is the gold standard for treating breast cancer, as evidenced by decades of experience. Women all around the world have been terrified of having breast surgery since Halsted's groundbreaking research in the late 1880s, when it was first performed.[3] Options for treatment such as breast conservation therapy and mastectomy along with oncologic reconstructive surgery are all safe and have comparable success rates.[4]

As a result, both doctors and patients are increasingly concerned about things like aesthetics and satisfaction with care.[5]

Breast lesions can be surgically removed or reduced in size using oncoplastic breast surgery,

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which combines oncologic and plastic surgical reconstructive procedures. Better cosmetic outcomes can be attained alongside complete resection of local disease. Numerous minimal-incision treatments have emerged in response to the rising desire for scar minimization. There have been many advances in oncoplastic operations for treating malignancies in the breast's core region.[6]

In an effort to prevent breast scarring altogether, numerous periareolar procedures have been developed. The round-block approach was an effective oncoplastic method for removing tumors from the middle of the breast.[7]

Correcting ptosis in tiny to moderately sized breasts with the round-block technique is a minimally invasive breast lift treatment. The excess skin of breast ptosis can be removed, the breast tissue can be manipulated, as well as the nipple can be raised by making an incision only along the border of the areola. Individuals with breast cancer who have this surgery can have their tumors removed. The round-block method, although visually appealing, is more difficult and time-consuming to implement than the radial or circumareolar methods. The complexity of the operation necessitates waiting to perform the technique until standard oncoplastic procedures have been mastered.[7]

In recent years, new surgical treatments, so-called oncoplastic approaches, have been created to improve the cosmetic outcomes of breast surgery while minimizing the risk of local recurrence. Oncological operations in which plastic surgical methods are employed, typically for reconstructive and cosmetic purposes, are known as oncoplastic surgery. Oncoplastic surgery for breast cancer offers the potential for a more extensive tumor removal along with a positive cosmetic outcome.[8]

Successful oncoplastic breast cancer surgery requires meticulous patient selection and preoperative planning. The surgeon can decide whether a radical or conservative approach is best along with choosing the most successful surgical strategy based on an accurate preoperative evaluation of clinical and biological features of the tumor in addition to the morphological elements of the breast.[9]

When a new periareolar mammoplasty was proposed, round-block technique was applied in numerous sorts of breast operation, for example, ptosis or hypertrophy, and hypotrophy and tumor excision Benelli in 1990. In the process of tumor removal, this approach resulted in a less noticeable scar and a more natural breast contour.[10] Round-block mammoplasty is reported as an alternative method in mammary reductions. It was modified and presented as a prudent option for surgical treatment for all quadrant-located breast cancers in small-to-medium-sized breast with good aesthetics results.[11]

The overall objective of this research was to focus upon the use of round-block method in conservative oncoplastic surgical treatment of breast cancer regarding oncological safety, efficacy, the final cosmetic results on quality of life and patient satisfaction, and advantages and disadvantages. The current study included 40 patients; their age ranged between 34 and 59 years with mean value of 47.125 ± 0.017 years and their BMI ranged between 26 and 31 with mean value of 28.475 ± 1.319. This is an observational cross-sectional study that was performed on 40 patients with early breast cancer. The duration of the study was two years.

2. Patients and methods

The study was carried out on 40 Egyptian women suffering from early breast cancer. Patients were managed in Al-Azhar University Hospitals. The study was controlled prospectively. All patients were consented to share in the trial.

Ethical approval from the local ethics committee of surgery department was obtained. All patients received a full course of radiotherapy post-operatively for local control of the disease. Patients with hormonal receptors + ve received hormonal therapy.

Additionally, the individuals in the high-risk group who had positive lymph nodes were given adjuvant chemotherapy for the systemic control of breast cancer for a total of six cycles. This chemotherapy consisted of the drugs cyclophosphamide, methotrexate, and 5-fluorouracil.

Patients with operable primary breast cancer diagnosed at an early stage up to the age of 60 years old were included in the study. The patients were all girls and were in a relatively healthy state overall. Patient select stage: cT1-2, N0-1, M0 with an intraductal component that is less than 25% and with a breast mass that is positioned at least 1.5 cm from the nipple–areola complex. The preoperative work up consisted of each patient providing personal history information, including their name, age, marital status, smoking status, history of the current illness, family history, and previous history of tumor in the other breast or previous radiation treatment.

General examination aimed to detect the clinical data suggestive of distant metastasis, any associated disease, and the assessment of the general condition of the patient, including vital signs (pulse, blood pressure, and temperature), general appearance (jaundice, pallor, and cachexia), head, neck, chest,

abdominal, limbs and back, and calculation of the BMI was performed. Local examination of the breast, including bilateral inspection and palpation of the entire breast and lymph node-bearing areas.

All patients were subjected to laboratory investigations: complete blood count (CBC), complete liver function, coagulation profile, kidney function tests, and blood sugar level. Radiological investigations were done on all patients such as bilateral mammography, breast ultrasound, chest x-ray, and abdominal ultrasound. All patients in this study were subjected to core needle biopsy (CNB) from primary tumor to confirm diagnosis before surgery. CNBs were acquired with the use of an ultrasound-guided core needle of either fourteen- or sixteen-gauge. In the traditional method, four to six samples would be taken from the same patient, ranging from the center to the periphery of the lesion. These samples would then be fixed in four percent neutral formaldehyde for eight to 12 h. Electrocardiography (ECG) for cardiac assessment and other tests or consultations as indicated (e.g., respiratory function tests) were also done.

3. Result

The current study included 40 patients; their age ranged between 34 and 59 years with mean value of 47.125 ± 0.017 years and their BMI ranged between 26 and 31 with mean value of 28.475 ± 1.319 (Table 1, Figs. 1 and 2).

Table 1. The age and BMI characteristics of the studied population.

	$N = 40$
Age (Y)	
Range	34–59
Mean ± SD	47.125 ± 0.017
BMI	
Range	26–31
Mean ± SD	28.475 ± 1.319

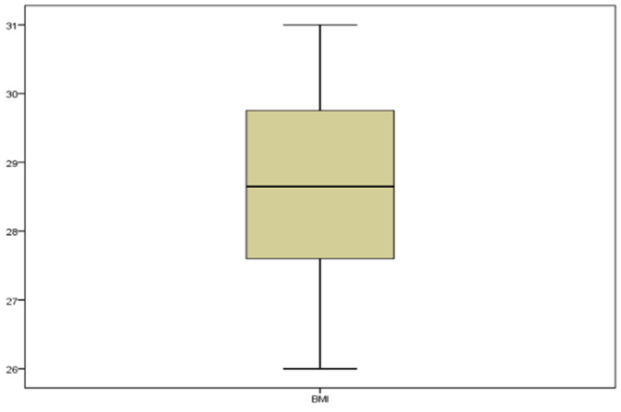

Fig. 1. BMI of the studied groups.

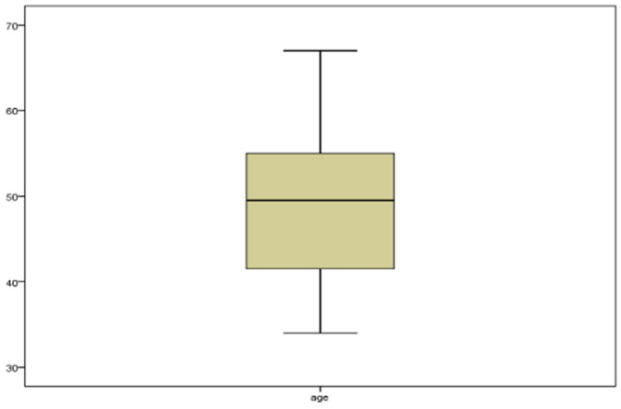

Fig. 2. Age of the examined groups.

Among our included patients, 70% have left breast tumor, whereas the remaining 30% have right breast tumors. The commonest location of tumor was in the upper outer quadrant in 55% followed by the upper inner quadrant in 20%, then reduced outer quadrant in 15%, and smaller inner quadrant in 10%, Table 2, Figs. 3 and 4.

The current study included 40 patients: 25% were stage I, whereas 75% were stage II, Table 3, Fig. 5.

Among our studied patients, local recurrence and distant metastases were developed in 2.5% (1 case) for each, whereas isolated regional lymph node

Table 2. The clinical characteristics of the studied population.

	$N = 40$ N (%)
Site of malignancy	
Left breast	28 (70%)
Right breast	12 (30%)
Location of tumor	
Upper outer quadrant	22 (55%)
Lower outer quadrant	6 (15%)
Upper inner quadrant	8 (20%)
Lower inner quadrant	4 (10%)

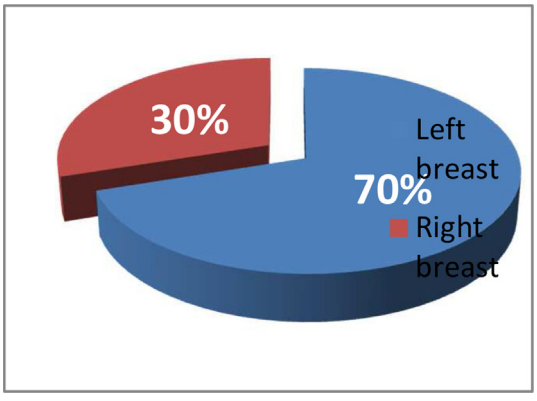

Fig. 3. Site of malignancy in the studied population.

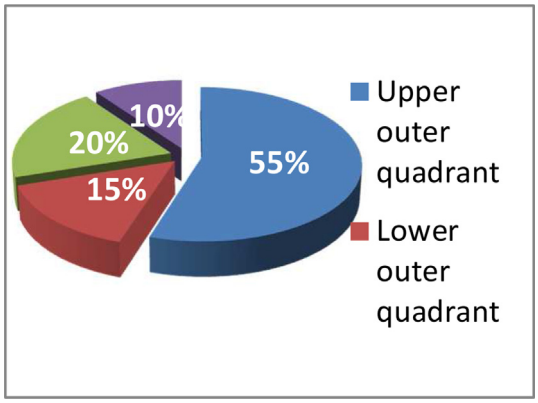

Fig. 4. Location of malignancy in the studied population.

Table 3. The malignancy stage of the studied population.

	$N = 40$ N (%)
Stages	
cT1, N0, M0	10 (25%)
cT1, N1, M0	14 (35%)
cT2, N0, M0	8 (20%)
cT2, N1, M0	8 (20%)

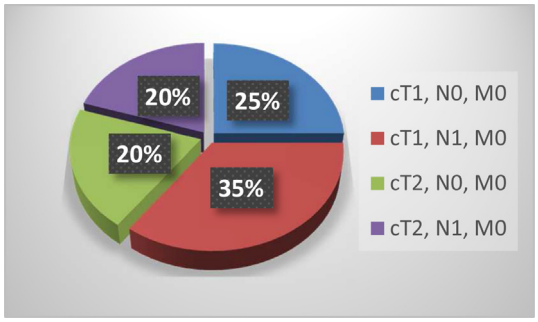

Fig. 5. Malignancy stage of the studied groups.

metastasis was developed in 5% (2 cases) of patients, Table 4, Fig. 6.

The mean value of areolar size before reconstruction was 5.307 ± 0.325 cm, after construction, it was 3.432 ± 0.337 cm, Table 5, Fig. 7.

Table 4. The oncological safety after surgery in the studied population.

	$N = 40$ N (%)
Local recurrence	
Yes	1 (2.5%)
No	39 (97.5%)
Isolated regional lymph node metastasis	
Yes	2 (5%)
No	38 (95%)
Distant metastases	
Yes	1 (2.5%)
No	39 (97.5%)

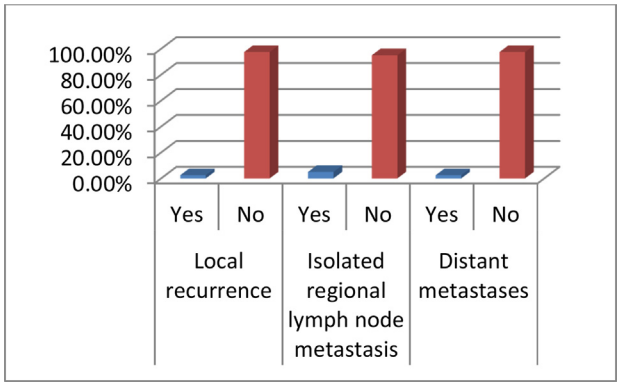

Fig. 6. Oncological safety after surgery in the studied population.

Table 5. The areola size before and after surgery in the studied population.

	$N = 40$
Areola size before (cm)	
Range	4.8–5.9
Mean ± SD	5.307 ± 0.325
Areola size after (cm)	
Range	2.9–4
Mean ± SD	3.432 ± 0.337

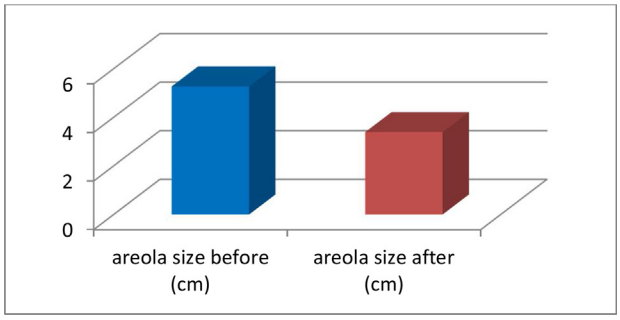

Fig. 7. Areola size before and after reconstruction of the studied groups.

Among our studied patients, 25% developed postoperative complications as in Table 6, Fig. 8.

Among our studied patients, lack of symmetry occurred in 22.5% of patients followed by unacceptable scar and pain in the treated breast in 17.5%, then seroma and areola depigmentation were developed in 15% for each followed by feeling of numbness or tingling in 12.5%, then restricted arm movement and local infection in 10%, then hematoma and delayed wound healing in 7.5%, and

Table 6. Postoperative complications in the studied population.

	$N = 40$ N (%)
Postoperative complications after reconstruction	
Yes	10 (25%)
No	30 (75%)

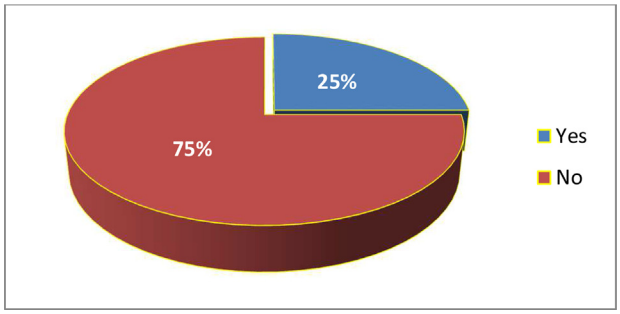

Fig. 8. Postoperative complications of the studied groups.

hypertrophic scar in 5% of cases. Other complications included wound dehiscence, arm cellulitis, and skin necrosis was developed in 2.5% for each, Table 7, Fig. 9.

Table 7. The postoperative outcomes of the studied population.

	$N = 40$ N (%)
Hematoma	
Yes	3 (7.5%)
No	37 (92.5%)
Delayed wound healing	
Yes	3 (7.5%)
No	37 (92.5%)
Wound dehiscence	
Yes	1 (2.5%)
No	39 (97.5%)
Seroma	
Yes	6 (15%)
No	34 (85%)
Local infection	
Yes	4 (10%)
No	36 (90%)
Arm cellulitis	
Yes	1 (2.5%)
No	39 (97.5%)
Skin necrosis	
Yes	1 (2.5%)
No	39 (97.5%)
Restricted arm movement	
Yes	4 (10%)
No	36 (90%)
Pain in the treated breast	
Yes	7 (5%)
No	33 (95%)
Feeling of numbness or tingling	
Yes	5 (12.5%)
No	35 (87.5%)
Hypertrophic scar	
Yes	2 (5%)
No	38 (95%)
Areola depigmentation	
Yes	6 (15%)
No	34 (85%)
Unacceptable scar	
Yes	7 (17.5%)
No	33 (82.5%)
Lack of symmetry	
Yes	9 (22.5%)
No	31 (77.5%)

NB, some patients developed more than 1 complication.

4. Discussion

Our results were supported by the study of[12] as they reported that the characteristics of the 60 patients who underwent surgical management of breast cancer using the round-block technique are listed. Their ages extended from 31 to 60 years, with a mean age of 46.9 years. The mean BMI was 23.6 kg/m^2.

Also, in the study of,[13] 20 female patients presented with stage I or II breast cancer, and they were treated using the round-block reduction mammoplasty technique as an oncoplastic tool for tumoral excision. The ages were from 25 to 75 years old. The mean age in this study was 47 years.

Cancer of the breast is an extremely prevalent instance of the disease in females and the second most common form of cancer overall. Approximately 2 million new cases were recorded in the year 2018. According to several sources of information, about 268 600 women in the United States were newly diagnosed with invasive disease in 2019, including 48 100 cases of ductal carcinoma in situ (DCIS). This number accounts for 15.2–30% of all newly diagnosed cases of cancer in women.[14]

The present study showed that as regards tumor characteristics, among our included patients, 70% have left breast tumor, whereas the remaining 30% have right breast tumors. The commonest location of tumor was in the upper outer quadrant in 55% followed by the upper inner quadrant in 20%, then lower outer quadrant in 15%, and lower inner quadrant in 10%. The current study included 40 patients: 25% were stage I,. whereas 75% were stage II.

Our results were supported by the study of[7] as they reported that 52.6% are breast cancer stage 2, 67.9% have affection in the left breast. Mass distribution is as the following: 69.2% in the upper outer quadrant, 21.8% lower outer, and 9% upper inner quadrant.

Also, in the study of,[15] all patients had small-to medium-sized breasts with A or B cups, and had tumors located in the upper half of the breast.

Furthermore,[16] demonstrated that the majority of their patients had tumor in the upper part of the breast and with grade 2.

The current study showed that among our studied patients, local recurrence and distant metastases were developed in 2.5% (1 case) for each, whereas isolated regional lymph node metastasis was developed in 5% (2 cases) of patients.

Twelve out of 57 participants in the research needed additional surgery because their near margins were clear by less than 2 mm (95% confidence interval [CI], 12–33). Five individuals were able to

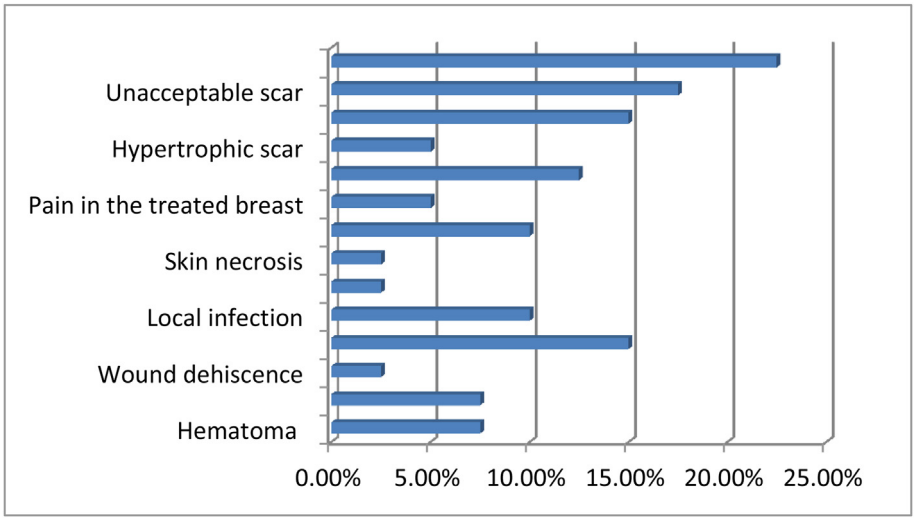

Fig. 9. The postoperative outcomes of the studied population.

have a successful broader re-excision, and seven women had a complete mastectomy, which was typically performed because of many involved margins. During the course of follow-up, there were two instances of a recurrence that occurred locally. One of them occurred in a person who had chosen not to undergo the adjuvant breast radiation that had been suggested. Four patients who developed distant metastases passed away as a result of their sickness. These patients' metastases were found in one lung, one brain, one liver, and one bone along with a bone with brain. One patient passed away due to an additional illness.

According to15, positive margins, whereby this term is defined as being beneath 2 mm, occurred in 12.5% of instances (about five in total), with four people undergoing re-excision along with one person opting for radiation therapy alone.

In the study in our hands, the mean value of alveolar size before reconstruction was 5.307 ± 0.325 cm and after construction it was 3.432 ± 0.337 cm.

In the study of,[12] the tumor distance from the nipple and areola complex ranged from 1.5 to 11 cm, with a mean of 6.25 ± 3.36 cm; this was greater than that seen in those evaluated by Chen, 2014 (2–6 cm apart from the center of the nipple) and also that reported by[17] where the average distance of the tumor from the areola was 4.72 cm, aiming at the evaluation of the efficacy of the procedure in participants with distant lesions from the nipple–areola complex.

Also, in the study of,[18] postoperative problems occurred in 11 individuals (27.5%). Antibiotics were used for conservative treatment when 4 (10%) individuals developed a superficial wound infection. They were all diabetics. A hematoma occurred in four (10%) patients and was managed with conservative care in every case. Needlestick aspiration was used to successfully treat seroma in all 3 (7.5%) individuals. With a mean score of 4.44 ± 0.6, representing 90% satisfaction ($P = 0.002$), participants reported that the cosmetic outcome of their surgery was great in 24 (60%) cases and good in 11 (27.5%) cases and fair in 5 (12.5%) cases, with no unfavorable outcomes. With a mean score of 7.54 ± 1.52, or 76% satisfaction (P equal to 0.001), surgeons indicated a score of ten in eight persons (20%), nine in seven individuals (17.5%), eight in twelve patients (30%), seven in three patients (7.5%), six in seven patients (17.5%), and five in three people (7.5%).

Our results showed that there is significant improvement of EORTC Quality of Life Questionnaire C30 (QLQ-C30) 2 years after operation than before operation in the studied population.

In the study of,[12] analysis of the questionnaire showed that as poor cosmetic results after breast surgery are a terrible result, especially for young females with ambitious goals and busy social lives, the round-block technique usually uses optimal one-stage glandular reconstruction, which is favorably received by women of a younger generation. This was supported by the relatively high satisfaction score in relation to the patients' age group included in their study (mean: 45.5 ± 10.25 years).

4.1. Conclusion

For early-stage breast cancer, the round-block approach is oncologically effectively and safely viable along with yields pleasing cosmetic outcomes as well.

Conflicts of interest

No conflict of interest.

Acknowledgments

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