

# Role of Combined Circumareolar Skin Excision and Liposuction in Management of High grade Gynaecomastia

Arindam Sarkar, Jayanta Bain, Debtanu Bhattacharya, Raghavendra Sawarappa, Kinkar Munian, Gouranga Dutta, Ghulam Jeelani Naiyer, Shamshad Ahmad<sup>1</sup>

Department of Plastic Surgery, Institute of Post Graduate Medical Education and Research, Kolkata, <sup>1</sup>Department Preventive and Social Medicine, PGIMS & ESIC Medical College, Kolkata, West Bengal, India

Address for correspondence: Dr. Jayanta Bain, Betai, Nadia, West Bengal - 741 163, India. E-mail: jrbain212@gmail.com

## ABSTRACT

**Introduction:** High-grade gynaecomastia (Simon IIb and III) has tissue excess (skin excess, enlarged areola, and displaced nipple), which is best managed surgically; however, results of conventional breast reduction surgeries and liposuction is not very good. Aim of our study was to describe a combined technique to manage these problems to produce a good result. **Material and Method:** This was a 2-year study among 12 patients of high grade gynaecomastia. Clinical and laboratory findings were normal. Pre-operatively in standing position, diameter of breast and areola, position of nipple, and amount of skin excess were marked. Under general anaesthesia, tumescent infiltration, circumareolar de-epithelisation of skin excess, and liposuction was completed. Redundant portion of the breast was sharply dissected and pulled out. Areola was fixed over pectoralis fascia at mid humerus level, just medial to the mid-clavicular line. Outer borders of the de-epithelised area were apposed by the purse-string effect of a subdermal suture, and further apposed by few half buried horizontal mattress sutures. Drains for 24 hour and compressive dressings for 6 weeks were used. **Result:** Mean age of presentation was 25.8 year; emotional discomfort was the chief complaint. Among 12 patients, 10 patients had bilateral gynaecomastia and 8 patients had enlarged and displaced nipple-areola complex. Average hospital stay was 2.41 days and recoveries were usually uneventful. **Conclusion:** The problem of tissue excess and tissue displacement in high grade gynaecomastia can be well managed by this combined circumareolar skin reduction and liposuction technique to achieve a scar-less flat male chest.

**KEYWORDS:** Areola, breast, gynaecomastia, liposuction, nipple, tumescent

### REC Review:

Risk : 5	0 = maximum risk	5 = least risk
Efficacy : 4	0 = minimum efficacy	5 = maximum efficacy
Cost : 4	0 = very expensive	5 = least expensive

## INTRODUCTION

Gynaecomastia is the most common benign breast pathology among males<sup>[1]</sup> and it causes considerable amount of psychological and social discomfort which compels them to seek treatment.<sup>[2]</sup> Amongst the different grades of gynaecomastia, high-grade gynaecomastia

(Simon grade IIb and III) has the problem of skin excess along with enlarged and displaced nipple-areola complex, which can only be managed surgically.

Over the years surgical techniques for management of high-grade gynaecomastia have evolved a lot. Older techniques like 'breast amputation with free nipple-areolar grafting' had a devastating complication of graft necrosis. Further the conventional breast reduction surgeries where the nipple-areolar complex is preserved on a pedicle based flap, produced scars over male chest, which was aesthetically unappealing.

Scar-less techniques like 'subcutaneous mastectomy through a peri-areolar or intra-areolar incision' and 'liposuction assisted gynaecomastia reduction' is excellent for low-grade (Simon grade I and IIa) gynaecomastia, but ineffective to deal with the issue of skin excess, areolar enlargement, and nipple displacement of high-grade gynaecomastia (grade IIb and III).

### Access this article online

#### Quick Response Code:



Website:  
www.jcasonline.com

DOI:  
10.4103/0974-2077.138354

To overcome these problems, we describe this combined circumareolar skin excision and liposuction technique to produces a good aesthetic result.

## MATERIALS AND METHODS

This was a 2-year (September 2011 to September 2013) prospective observational study conducted in the department of Plastic Surgery in our institution. Before starting the study, Institutional Ethical Committee clearance was taken. During the study period, total 36 gynaecomastia patients were admitted, among them 12 patients had grade IIb and grade III gynaecomastia, and taken as the study population. With prior consent, patients were examined clinically; with hormonal assays; with mammography and ultrasonography of breasts. Pre-operative and post-operative photography were also done. [Figures 1-3] Findings of each patient were recorded separately and compared at the end of the study [Table 1].

### Preoperative marking

Size of the breast, areola, and position of the nipple was marked in the upright position pre-operatively in the operation theater.

- *Marking of Areola (1<sup>st</sup> marking)*: In cases with significant increase of areolar diameter, the areolas were marked to be reduced to 2.8-3 cm, i.e. the average diameter of male areola. The nipple position was also estimated at the mid-humerus level just medial to the mid-clavicular line.
- *Marking of Breast (2<sup>nd</sup> marking)*: The breast was marked along the inframammary fold encircling the enlarged breast tissue.
- *Marking of skin excess (3<sup>rd</sup> marking)*: This marking was done in a circular manner, depending on the size and shape of the breast, with a 2-2.2 cm width from the 1<sup>st</sup> marking [Figure 4a].

### Operative procedure

All cases were operated under general anaesthesia with endotracheal intubation. After anaesthesia,

tumescent infiltration was done. The infiltration was about 1:1 with the expected aspiration volume, and

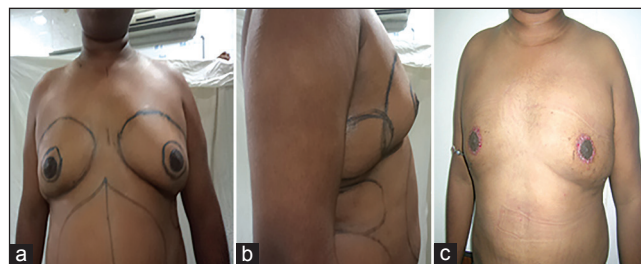


Figure 1: Pre-operative (a) Anterior, (b) Lateral, (c) Post-operative photograph of case no 1



Figure 2: Pre-operative (a) Anterior, (b) Lateral, (c) Post-operative photograph of case no 10



Figure 3: Pre-operative (a) Anterior, (b) Lateral, (c) Post-operative photograph of case no 12

Table 1: Clinical profiles of the study population

Name; age	Presenting complain	Simon's grade	Nipple areolar complex	Hospital stays	Complications	Patient satisfaction
TC; 24 yr	Em, So	B/L Gr.III	B/L Enlarged and Displaced	2 days	Nil	Good
BT; 43 yr	Em	B/L Gr.III	B/L Enlarged and Displaced	3 days	U/L Seroma	Good
BJ; 28 yr	Em, So	B/L Gr.III	B/L Enlarged and Displaced	3 days	U/L Haematoma	Good
DB; 26 yr	Em, So	B/L Gr.IIb	B/L Enlarged and Displaced	2 days	Nil	Good
MD; 23 yr	Em	B/L Gr.III	U/L (Rt) Enlarged B/L Displaced	2 days	Nil	Excellent
SC; 25 yr	Em	B/L Gr.IIb	B/L Enlarged	2 days	Nil	Excellent
RK; 36 yr	Em	B/L Gr.IIb	B/L Enlarged	4 days	B/L Seroma	Good
PS; 14 yr	Em	B/L Gr.IIb	B/L Enlarged	3 days	Nil	Good
MA; 15 yr	Em	B/L Gr.III	B/L Enlarged and Displaced	2 days	Nil	Good
CH; 23 yr	Em	U/L Gr.III	U/L (Rt) Enlarged and Displaced	2 days	Nil	Excellent
TP; 27 yr	Em, So	U/L Gr.III	U/L (Rt) Enlarged and Displaced	2 days	Nil	Excellent
KD; 26 yr	Em, So	B/L Gr.II	B/L Enlarged	2 days	Nil	Excellent

Em: Emotional, So: Social, B/L: Bilateral, U/L: Unilateral, Rt: Right

covered the marked area of the chest with additional area for feathering from the clavicle to below the inframammary fold.

After infiltration is complete, de-epithelisation of the marked area (between 1<sup>st</sup> and 3<sup>rd</sup> markings) was done in circular manner [Figure 4b] and liposuction is started with a 3 mm Mercedes Benz cannula through a small stab incision made along the outer lateral margin of the de-epithelised area.

After the liposuction was completed, the lateral margin of stab incision for liposuction was extended 2-2.5 cm further. Through this window, the redundant portion of the breast tissue was removed by sharp dissection keeping 1.5-2 cm breast tissue under the nipple-areola complex.

The margin of the areola was then fixed at mid-humerus level just medial to the mid-clavicular line with pectoralis fascia at 10, 2, and 6 o'clock position with 3-0 monocryl. Outer border of the de-epithelised area was sutured by subdermal 3-0 monocryl suture, which gave a purse-string effect and made close contact of the two incision lines. These two lines were further apposed by few half buried horizontal mattress sutures [Figure 4c].

A suction or a small corrugated rubber drain were inserted through a separate stab incision over anterior axillary line and usually removed after 24 hr. Compressive dressing were used for 6 weeks.

## RESULTS

Total number of patients with high-grade (Simon's grade IIb and III) gynaecomastia was 12. Mean age of presentation was 25.8 year (range 14-42 years). All of these 12 patients presented before us because of emotional discomfort; among them, five (41.6%) patients also had difficulties in entering into social relationships like marriage. Ten (83.3%) patients had bilateral and two (16.7%) patients had unilateral high-grade (Simon's grade IIb and III) gynaecomastia. Regarding Nipple Areolar Complex (NAC), four patients had bilateral

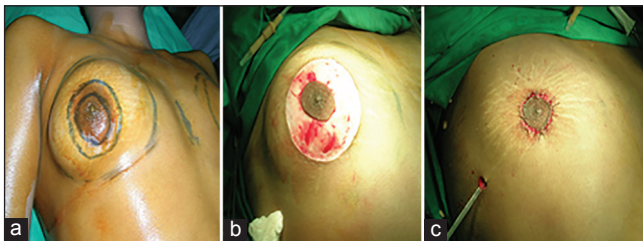


Figure 4: (a) Pre-operative marking of areola, breast and skin excess, (b) De-epithelisation of skin excess, (c) Fixation of areola and closure of the de-epithelised area

enlarged with mild displaced NAC; five patients had bilateral enlarged and displaced NAC; two patients had unilateral enlarged and displaced NAC; one patient had a very unique presentation, unilateral (right) sided enlarged areola with bilateral displaced NAC.

Simultaneously with this operative procedure, six patients underwent liposuction of other areas of body also (mainly abdominal). Average hospital stay was 2.41 days (range 2-4 days). In terms of complications, two patients had seroma formation, which responded well to conservative management like needle aspiration and pressure garments; one patient developed haematoma which was evacuated through the drain site. In some cases where the size of areola was very large with excess skin, there was puckering of skin along the incision line due to purse-string effect of subdermal suture, but they gradually disappeared with time. All patients expressed their satisfaction after the procedure.

## DISCUSSION

Gynaecomastia is the benign proliferation of the ductal tissue, stroma, and fat in the male breast. Though it can present in any age, the age of presentation in our study was found to be from 14 years to 43 years. Adolescent patients' had significant emotional distress due to enlarged breast and did not take their shirts off in public places for fear of being mocked.

There are many potential causes for gynaecomastia; among them, imbalance between estrogens and androgens is strongly suspected; however, in many cases, an exact aetiology is uncertain.<sup>[3]</sup> As in our study, no such cause was found and was considered as idiopathic verities. Obesity has a definitive correlation with gynaecomastia<sup>[4]</sup>, and in our study six patients were found to be obese and along with this breast reduction surgery they underwent liposuction of other areas also.

Surgical therapy is indicated for long-standing gynaecomastia, at least more than 18 months, which is unlikely to subside spontaneously or with medication.<sup>[4]</sup>

From the surgical point of view, Simon *et al.*<sup>[5]</sup> divided gynaecomastia into four grades as follows:

- Grade I: Small visible breast enlargement- no skin redundancy
- Grade IIa: Moderate breast enlargement without skin redundancy
- Grade IIb: Moderate breast enlargement with skin redundancy
- Grade III: Marked breast enlargement with marked skin redundancy



According to their opinion, in grade IIb and grade III where there is ptosis of breast with skin excess, it is difficult to get a good result without skin excision.

But in our experience, we have found that the most of the patients' with grade IIb and grade III breast had not only skin excess but also had enlarged and infero-medially displaced nipple-areola complex. These patients needed both skin and nipple-areola complex reduction and fixation in a normal anatomical place to achieve a good aesthetic result.

Management of high-grade gynaecomastia has evolved a lot. Malbec<sup>[6]</sup> in 1945 suggested breast amputation with free nipple-areolar graft for management of breast ptosis and skin excess, but the procedure had its own limitations as there may be total loss of the free graft or there may be hypoesthesia of the nipple-areolar complex or these patients may develop hypertrophic scars over chest.

In latter times, preservation of nipple-areolar complex on a de-epithelised flap<sup>[7]</sup>, inferior pedicle reduction technique<sup>[8]</sup>, horizontal ellipse with superior pedicle flap<sup>[9]</sup>, bipedicle flap<sup>[10]</sup> etc were described to keep the neuro-vascular supply of the NAC complex intact, but these surgical techniques usually produce scars over male chest, which is aesthetically unappealing.

Scar-less techniques like subcutaneous mastectomy through an intra-areolar incision of gynaecomastia was described by Leon Dufourmentel<sup>[11]</sup> in 1928 and latter by Jerome Webster<sup>[12]</sup> in 1946. With this technique, the hypertrophied gland could be removed without leaving a significant scar, but in cases of grade III gynaecomastia, this intra-areolar incision may be too small, a lateral and medial extension may be needed, and later a second surgery may also be needed to excise the redundant skin.

Tashkandi *et al.*<sup>[13]</sup> described single-stage subcutaneous mastectomy and circumareolar concentric skin reduction with de-epithelialisation in high-grade gynaecomastia (Simon's grade III) but the main disadvantage of the technique was the mild residual skin redundancy.

In the past few years, liposuction assisted<sup>[14,15]</sup> gynaecomastia management has been described by several researchers. This technique gives a good result in grade I and grade IIa gynaecomastia, but the skin and areolar excess in grade IIb and grade III breasts can not be properly addressed by this technique. Thus some degree of breast ptosis still persists, which sometimes needs a second surgery. Secondly as the breast disk is not completely removed there is chance of recurrent gynaecomastia.<sup>[14]</sup>

Previously, different researchers like Persichetti *et al.*<sup>[16]</sup> and others<sup>[17,18]</sup> had described 'circumareolar skin reduction with purse-string suturing' technique to reduce the skin and areolar excess. Along with skin reduction, the excess breast parenchyma was removed by making a 'reverse omega' incision in the inferior border of the de-epithelialised area from 3-9 o'clock position (180 degree incision).

In our technique, along with this 'circumareolar skin reduction' to reduce skin excess, the simultaneous use of liposuction decreases the breast volume, so the breast disk can be removed through a very small incision (60 degree). This small incision preserves best the subdermal neurovascular plexus of the nipple-areola complex, which if injured, may lead to hypoesthesia or necrosis of nipple-areola complex. As the subdermal neurovascular supply of the nipple-areola complex is excellently preserved, not a single case of such complication was seen in our study. Along this, we have kept a minimum of 1.5-2 cm sub areolar tissue during breast disk excision, which helps to decrease the chance of 'saucer deformity'.<sup>[19]</sup>

Another advantage of our technique is that, as the liposuction of breast covers a large area, i.e. from clavicle to below the inframammary fold, it gives a better contour of the chest. Simultaneously, liposuction of other areas can also be carried out in the same sitting, which decreases economic burden of the patient, and decreases patient load on the hospital and surgeon.

The next issue of concern, i.e. repositioning of the infero-medially displaced nipple-areola complex in high grade gynaecomastia is not well described in literature. Normal position of the nipple-areola complex in male is 4<sup>th</sup> intercostal space or the mid-humerus level medial to the mid-clavicular line.<sup>[20]</sup> In this technique, we have fixed the nipple-areolar complex in its anatomical position with pectoralis fascia, which decreases the chance of displacement.

Finally, as the two incision lines are apposed to each other, the final scar merges with the areola, thus it gives a scar less appearance of the breast.

To conclude, the technique described by us is a unique combination of skin reduction and liposuction, which is minimally invasive, has a small intraoperative blood loss, has short hospital stay, and gives a scar less appearance to the male chest.

## ACKNOWLEDGEMENT

We acknowledge Prof. Dr. Bijay Kumar Majumdar, Professor and Head, Department of Plastic Surgery, Institute of Post Graduate Medical Education and Research, Kolkata, for his constant encouragement, guidance and supervision throughout this study.

## REFERENCES

1. Daniels IR, Layer GT. Gynecomastia. *Eur J Surg* 2001;167:885-92.
2. Kasielska A, Antoszewski B. Effect of operative treatment on psychosocial problems of men with gynaecomastia. *Pol Przegl Chir* 2011;83:614-21.
3. Karp NS. Gynecomastia. In: Thorne CH, Beasley RW, Aston SJ, Bartlett SP, Gurtner GC, Spear SL, editors. *Grabb and Smith's Plastic Surgery*. 6<sup>th</sup> ed. Philadelphia: Wolters Kluwer Lippincott Williams & Wilkins; 2006. p. 616-20.
4. Isacov R. In: Siemionow MZ, Eisenmann-Klein M, editors. *Plastic and Reconstructive Surgery*. 1<sup>st</sup> ed. London: Springer-Verlag London Limited; 2010. p. 459-66.
5. Simon BE, Hoffman S, Kahn S. Classification and surgical correction of Gynecomastia. *Plast Reconstr Surg* 1973;51:48-52.
6. Malbec EF. Ginecomastia resultados operatorios. *La Prensa Med* 1945;32:798-800.
7. Brenner P, Berger A, Schneider W, Axmann HD. Male reduction mammoplasty in serious gynecomastias. *Aesthetic Plast Surg* 1992;16:325-30.
8. Kornstein AN, Cinelli PB. Inferior pedicle reduction technique for larger forms of gynecomastia. *Aesthetic Plast Surg* 1992;16:331-5.
9. Gheita A. Gynecomastia: The horizontal ellipse method for its correction. *Aesthetic Plast Surg* 2008;32:795-801.
10. Peters MH, Vastine V, Knox L, Morgan RF. Treatment of adolescent gynecomastia using a bipedicle technique. *Ann Plast Surg* 1998;40:241-5.
11. Dufourmentel LL. Incision areolaire dans la chirurgie du sein. *Bull et mem Soc chir Paris* 1928;20:9-14.
12. Webster JP. Mastectomy for gynecomastia through semicircular intra-areolar incisions. *Ann Surg* 1946;124:557-75.
13. Tashkandi M, Al-Qattan MM, Hassanain JM, Hawary MB, Sultan M. The surgical management of high-grade gynecomastia. *Ann Plast Surg* 2004;53:17-20.
14. Voigt M, Walgenbach KJ, Andree C, Bannasch H, Looden Z, Stark GB. Minimally invasive surgical therapy of gynecomastia: Liposuction and exeresis technique. *Chirurg* 2001;72:1190-5.
15. Fruhstorfer BH, Malata CM. A systematic approach to the surgical treatment of gynecomastia. *Br J Plast Surg* 2003;56:237-46.
16. Persichetti P, Berloco M, Casadei RM, Marangi GF, Di Lella F, Nobili AM. Gynecomastia and the complete circumareolar approach in the surgical management of skin redundancy. *Plast Reconstr Surg* 2001;107:948-54.
17. Peled IJ. The concentric mastopexy and purse-string suture. *Plast Reconstr Surg* 1991;87:385.
18. Smoot EC III. Eccentric skin resection and purse-string closure for skin reduction with mastectomy for gynecomastia. *Ann Plast Surg* 1998;41:378.
19. Lanitisa S, Starrena E, Reada J, Heymanna T, Tekkib P, Hadjiminasa DJ, *et al.* Surgical management of Gynaecomastia: Outcomes from our experience. *The Breast* 2008;17:596-603.
20. Beer GM, Budi S, Seifert B, Morgenthaler W, Infanger M, Meyer VE. Configuration and localization of the nipple–areola complex in men. *Plast Reconstr Surg* 2001;108:1947-52.

**How to cite this article:** Sarkar A, Bain J, Bhattacharya D, Sawarappa R, Munian K, Dutta G, *et al.* Role of combined circumareolar skin excision and liposuction in management of high grade gynaecomastia. *J Cutan Aesthet Surg* 2014;7:112-6.

**Source of Support:** Nil. **Conflict of Interest:** None declared.