



## Original Research Article

## Optimization of surgical management of gynaecomastia: Our experience

Jitendra Mehta<sup>1</sup>, Manish Zade<sup>1,\*</sup>, Dhananjay Nakade<sup>1</sup>, Shitiz Gupta<sup>1</sup>, C.V Akhila<sup>1</sup><sup>1</sup>Dept. of Plastic and Reconstructive Surgery, NKP Salve Institute of Medical Sciences & Research Centre and Lata Mangeshkar Hospital, Dighodh, Nagpur, Maharashtra, India

## ARTICLE INFO

## Article history:

Received 15-02-2021

Accepted 16-03-2021

Available online 24-11-2021

## Keywords:

Gynaecomastia

Male breast

Liposuction

## ABSTRACT

**Introduction:** Gynaecomastia is the most common benign condition of male breast. It is characterized by hyperplasia of ductal tissue, stroma and fat cells. Commonly it occurs at infancy, adolescence and old age during the time of hormonal changes. Rarely it is associated with testicular tumours, liver diseases and medications.

**Aims:** To study the outcome of different surgical procedures for gynaecomastia selected based on the predominant tissue content of breast.

**Materials and Methods:** This prospective observational study included 20 patients with gynaecomastia. Depending on the breast tissue content patients underwent only liposuction, Liposuction with breast gland excision or only excision of breast tissue. Postoperatively patients were observed for complications and assessed for satisfaction during followup.

**Results:** Mean followup was 6 months. 18 patients out of 20 were satisfied with the outcome. One patient who underwent gland excision only developed saucer deformity and needed liposuction later on. Transient numbness over chest was commonest complication occurred in 3 patients with liposuction and breast gland excision which improved spontaneously. None of the patients developed necrosis of nipple areola complex.

**Conclusion:** Surgical procedure for correction of gynaecomastia should be tailored according to type of breast. Liposuction with excision of breast gland through subareolar incision is an effective treatment modality in patients with soft to moderately firm breasts.

This is an Open Access (OA) journal, and articles are distributed under the terms of the [Creative Commons Attribution-NonCommercial-ShareAlike 4.0 License](https://creativecommons.org/licenses/by-nc-sa/4.0/), which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

For reprints contact: [reprint@ipinnovative.com](mailto:reprint@ipinnovative.com)

## 1. Introduction

Gynaecomastia is the most common benign condition of male breast which generally occurs secondary to proliferation of the glandular tissue of breast and local fat deposition.<sup>1</sup> Gynaecomastia is also defined as the presence of >2 cm of palpable, firm, subareolar gland and ductal breast tissue.<sup>2</sup> True gynaecomastia is characterised by increased glandular tissue rather than deposition of fat tissue. Pseudogynaecomastia is the enlargement of breast due to deposition of fat in the breast area and is commonly

seen in obese and elderly men. There is increase in adipose tissue alone without any glandular proliferation.

Gynaecomastia may be manifested as sudden tender enlargement of one or both the breasts or may present as slow, progressive enlargement of the breast which is painless. In majority of cases, it is asymptomatic, however in some patients it can cause mild pain and physical discomfort. Disturbed body image can lead to psychological impairment and may have a negative impact on self-confidence usually in young males. It has been estimated that 30% to 60% of boys exhibit gynaecomastia during adolescence and majority of patients show spontaneous regression in size.<sup>3-5</sup> Older age group shows highest

\* Corresponding author.

E-mail address: [drmanishzade@gmail.com](mailto:drmanishzade@gmail.com) (M. Zade).

prevalence of gynaecomastia, when it is detected in up to 65% of men.<sup>6,7</sup>

Gynaecomastia is caused by imbalance in the ratio of estrogen to androgen activity when there is predominance of female hormones.<sup>8</sup> A detailed medical history and examination is essential to rule out etiologies like cancer and liver diseases. A recent onset gynaecomastia requires a more detailed evaluation including laboratory tests to establish the underlying cause.<sup>9–11</sup>

Treatment of gynaecomastia depends on the underlying cause if any. In cases of drug induced gynaecomastia, the offending drug may need to be withdrawn or may require alternative medical therapy. Idiopathic cases require surgical treatment in the form of combination of surgical excision through a periareolar incision and liposuction.<sup>12</sup>

**Table 1:** Classification according to the size of the gynaecomastia simon(1973).<sup>13</sup>

<b>Grade 1</b>	Minor but visible breast enlargement without skin redundancy
<b>Grade 2 A</b>	Moderate breast enlargement without skin redundancy.
<b>Grade 2 B</b>	Moderate breast enlargement with minor skin redundancy.
<b>Grade 3</b>	Gross breast enlargement with skin redundancy that simulates a pendulous female breast.

## 2. Aim of Study

The aim of our study was to evaluate selection of appropriate surgical modality depending on the tissue content of breast and discuss the outcome of patients with gynaecomastia being managed by liposuction alone; excision with liposuction and excision alone. The study was conducted to demonstrate our experience with these procedures.

## 3. Materials and Methods

The study was conducted in the department of Plastic and Reconstructive Surgery at a tertiary care hospital in Nagpur, India. It was an observational study with prospective design. The role of liposuction assisted management of gynaecomastia was studied in 20 patients with age range of 21-50 years treated from August 2011 to July, 2020. All cases following up in OPD were taken in the study as per the mandatory inclusion and exclusion criteria. Exclusion criteria consisted of patients with biopsy suggestive of carcinoma breast, testicular tumour, immuno-compromised patients and patients with chronic illness.

Total number of patients included in the study were 20, out of which only liposuction was done in 3 cases; Excision with liposuction was done in 12 cases and excision alone was done in 5 cases.

### 3.1. Pre-operative work up

A detailed history was taken from all patients. A detailed emphasis was given on the onset and duration of breast enlargement, associated symptoms (e.g. pain), sexual functioning, drug history/abuse (e.g. anabolic steroids, alcohol, heroin, marijuana etc.). A detailed family history of gynaecomastia was taken in all the cases. A thorough breast examination and general examination was done to rule out testicular and liver pathology. All routine blood investigations including hormonal profile were also done pre-operatively. Ultrasonography (USG) or mammography of breasts was also done in cases with suspicious or unilateral breast enlargement. In addition, USG of testes was done in cases with abnormality on examination.

### 3.2. Technique

The marking of extent of breast was done in the upright position. General anaesthesia was used in all cases. All areas to be suctioned were infiltrated with tumescent technique. This technique was followed for infiltration of breast in all the cases of our study undergoing liposuction, liposuction with excision and excision alone. Patients with fibro-fatty tissue were managed by liposuction alone. Patients with fibro-fatty tissue and palpable glandular tissue were managed by liposuction with open excision through subareolar incision. Patients with large palpable glandular tissue with minimal fatty tissue were managed by open excision through periareolar incision.

All areas to be suctioned were infiltrated with solution of 1 ampule of adrenaline (1:1000) diluted in 200ml of normal saline. Appropriate quantity as per body weight of the patient, local anesthesia (2% lignocaine) was also added in the solution of normal saline and adrenaline. The solution was infiltrated along the incision lines and into the subcutaneous fat, causing the breast tissue to become tumescent. The lignocaine in the tumescent solution provides local anesthesia and post-operative pain relief. Adrenalin decreases surgical bleeding during tumescent liposuction due to localized vasoconstriction and thereby ensures bloodless surgery. All patients were given one dose of intravenous broad-spectrum antibiotic intraoperatively. Post-operatively, sutures were removed on 8<sup>th</sup> postoperative day and patients were instructed to wear a pressure garment day and night for 2-3 months.

### 3.3. Liposuction

After infiltration of breasts with tumescent solution, a small submammary incision was taken and liposuction canula was inserted. Initial suction was done using 4 – 6 mm liposuction canula. The skin flap thickness was assessed intermittently by palpation with the palm of opposite hand and pinching to know the skin thickness. A 3 mm cannula was used for final contouring. The colour and volume of the

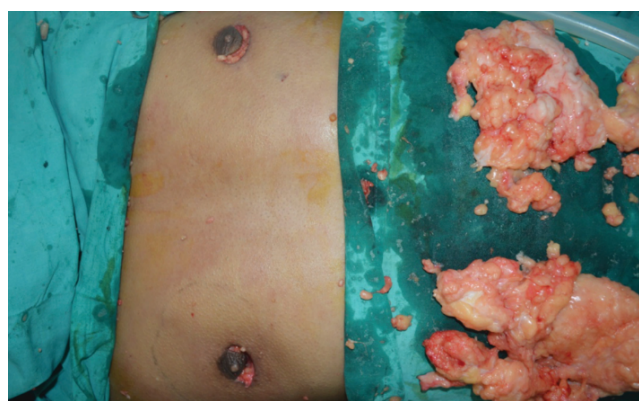
lipo- aspirate was monitored throughout the procedure. At the end of procedure, the surrounding fat was feathered to avoid a saucer deformity of the chest.

### 3.4. Open excision

Tumescent solution was infiltrated in breast tissue after doing markings. An infraareolar semicircular incision was taken and dissection of breast tissue done by elevating the inferior skin flap, preserving about 1cm thick layer of fat along the skin flap. Once the inferior margin of breast was reached, dissection proceeded in a deep plane just above the pectoralis major muscle to the upper limit of the breast. Around 1 cm thick disc of breast tissue was left on the undersurface of the areola to prevent inversion of nipple and superior skin flap elevated with thin layer of fat. Subsequently, the breast tissue was excised through the semicircular incision. Even in large sized breasts, complete gland excision was possible through infraareolar incision and didn't require submammary incision. In some cases, liposuction of the fatty tissue was followed by open excision. Figures 1 and 2



**Fig. 1:** Gynaecomastia – Liposuction and breast gland excision



**Fig. 2:** Large Breast Gland excision through periareolar incision.

## 4. Results

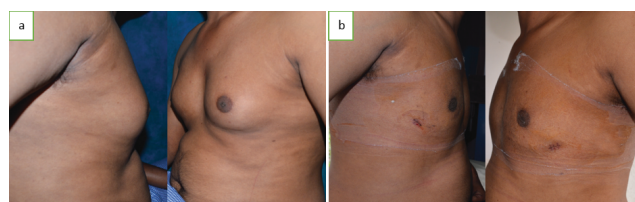
A total of 20 patients were operated for gynecomastia over a period of 9 years with age range from 21 years to 50 years. Out of these 20 patients, 3 patients with bilateral gynecomastia were diagnosed with hypogonadism which were treated by endocrinologist. In our study, 5 patients with bilateral gynecomastia were obese and rest 12 patients were diagnosed to be idiopathic.

**Table 2:** Etiology of gynecomastia

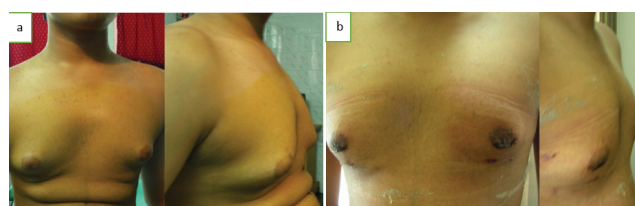
Etiology	Number of Patients
Idiopathic	12
Primary hypogonadism	3
Obesity	5
Total	20

In our study, 16 patients had bilateral gynecomastia and 4 patients had unilateral enlargement of breast. Majority of the breasts treated were Simon's Grade IIA and IIB.

Out of 20 patients operated in our study, liposuction alone was done in 3 cases; Excision with suction assisted liposuction was done in 12 cases and excision alone was done in 5 cases. Most of the patients required initial liposuction followed by open excision. The volume of fat suctioned from both breasts ranged from 70 to 250 ml, with a mean of 150 ml.



**Fig. 3: a:** Gynaecomastia treated by Liposuction alone (Preoperative); **b:** Gynaecomastia treated by Liposuction alone (Postoperative)



**Fig. 4: a:** Gynaecomastia treated by Liposuction and Gland excision (preoperative); **b:** Gynaecomastia treated by Liposuction and Gland excision (Postoperative)

The mean follow-up time was 6 months. 18 patients (90%) were very satisfied with their aesthetic outcome. Two patients with excision of breast gland alone were not satisfied with the surgical outcome. Satisfaction with

respect to improvement in chest contour and increased self-confidence was higher in patients who underwent excision with liposuction in comparison to liposuction alone or excision alone.

The scar of infraalveolar incision was fairly invisible after 6 months. Majority of patients were satisfied with aesthetic outcome and symmetry in the follow up period. Despite some early irregularity of the contour of areola and nipple, a smooth contour began to develop at 4–6 weeks postoperatively. Three patients complained of numbness over chest which improved spontaneously. Only 1 case with saucer deformity and 1 case with inversion of one of the nipples was observed in patient with large breast; undergoing excision alone. In 2 cases, marginal superficial necrosis of nipple-areolar complex suture line was observed initially, but it healed primarily without leaving any deformity. None of the patients developed necrosis of nipple-areolar complex.

**Table 3:** Complications

Complications	Number of Patients
Numbness	3
Saucer shape deformity	1
Nipple inversion	1

## 5. Discussion

Gynaecomastia has varied etiology and treatment depends on multiple factors. Surgical treatment is not always necessary in true gynaecomastia as majority of patients show spontaneous resolution with time.<sup>14</sup> The first reported surgical treatment of gynaecomastia in literature was by Paulus Aegineta who described curved incisions below the breasts for excision of breast tissue. For larger breasts he described two curved incisions below breasts to allow excess skin excision.<sup>15</sup> Webster in 1946 described excision of breast tissue for gynaecomastia using semicircular incision in inferior half of areola.<sup>16</sup> This approach has become the standard approach in gynaecomastia surgery and is most commonly used. Larger breast tissue can be excised by giving transverse extensions at the ends of this semicircular incision. Simon et al (1973) described the circumareolar incision and skin excision for correction of gynaecomastia with ptotic breasts.<sup>13</sup> For excessively large male breasts with severe ptosis, breast amputation through inframammary incision and free nipple graft has been advised.<sup>17</sup> Increased use of liposuction in the treatment of gynaecomastia has improved the aesthetic outcome in the form of regular contouring of chest wall and decrease in size of scars. Many newer modalities of liposuction like power assisted liposuction, ultrasound assisted liposuction have been described by different authors in the treatment of gynaecomastia.<sup>18–21</sup> Ultrasound assisted liposuction has

been associated with better skin retraction in postoperative period. However, cost and availability of these sophisticated devices is the limiting factor for its wide use.

In our study, patients were assessed and examined thoroughly pre-operatively and further plan of surgical management was finalised. Patients with fibro-fatty tissue were managed by liposuction alone. Patients with fibro-fatty tissue and palpable glandular tissue were managed by liposuction with open excision through subareolar incision. Patients with large palpable glandular tissue were managed by open excision through subareolar incision. All the glandular and fatty tissue was excised in piecemeal pattern through same incision. In our study, no case was operated through sub-mammary incision. All cases undergoing liposuction alone, excision alone and liposuction with excision; used customised pressure garments for 2-3 months to achieve satisfactory skin regression and contour. All cases achieved good aesthetic outcome with high level of satisfaction. In our study, most patients were of younger age group with good skin elastic quality, so skin excision procedure was not used in our study. Cases of fibro fatty tissue with glandular tissue formed the major group, so excision with liposuction was commonly used surgical management. The tough fibrous gland was surgically excised and the surrounding fatty tissue is removed by liposuction, thus giving proper contour of chest and good aesthetic outcome and high patient satisfaction. Kim DH et al (2017) in their study of 64 patients with gynaecomastia reported significantly better outcome with respect to chest wall contour and scarring in combination group (liposuction with subcutaneous mastectomy) as compared to liposuction alone.<sup>22</sup>

Various complications reported in literature related to gynaecomastia surgery are hematoma, seroma, infection, chest wall contour irregularity, scarring, breast asymmetry and rarely necrosis of nipple areola complex.<sup>23</sup> Hematoma remains the most common complication and is associated with breast gland excision.<sup>24</sup> Transient numbness was the most common complication observed in our study, which improved spontaneously. All the patients had suction drain kept for initial 48 hours, which may be reason for absence of hematoma or seroma as complications.

## 6. Conclusion

Gynaecomastia may occur due to proliferation of ductal tissue, stroma or adipose tissue in varying proportion. Tailormade approach depending on tissue content is required to decide the surgical treatment in gynaecomastia. Combination of liposuction with excision of breast through subareolar incision is an effective treatment modality in patients with homogenous soft to moderately firm gynaecomastia and gives better aesthetic results.

## 7. Sources of Funding

No financial support was received for the work within this manuscript.

## 8. Conflicts of Interest

No conflicts of interest.

## References

- de Barros A, Sampaio MCM. Gynecomastia: physiopathology, evaluation and treatment. *Sao Paulo Med J.* 2012;130(3):187–97. doi:10.1590/s1516-31802012000300009.
- Neiwöhner CB, Schorer AE. Gynaecomastia and Breast Cancer in men. *Br Med J.* 2008;336(7648):709–13. doi:10.1136/bmj.39511.493391.BE.
- Georgiadis E, Papandreou L, Evangelopoulou C. Incidence of gynecomastia in 954 young males and its relationship to somatometric parameters. *Ann Hum Biol.* 1994;21(6):579–87.
- Nuttall FQ. Gynecomastia as a physical finding in normal men. *J Clin Endocrinol Metab.* 1979;48(2):338–40.
- Nydick M, Bustos J, Dale JH, Rawson RW. Gynecomastia in adolescent boys. *JAMA.* 1961;178:449–54. doi:10.1001/jama.1961.03040440001001.
- Niewöhner CB, Nuttall FQ. Gynecomastia in a hospitalized male population. *Am J Med.* 1984;77(4):633–8.
- Bannayan GA, Hajdu SI. Gynecomastia: clinicopathologic study of 351 cases. *Am J Clin Pathol.* 1972;57(4):431–7.
- Gikas P, Mokbel MD, Fracs MS. Management of gynecomastia: An Update. *Int J Clin Pract.* 2007;61(7):1209–15. doi:10.1111/j.1742-1241.2006.01095.x.
- Khainga SO, Wasike RW, Biribwa PK. Gynaecomastia: Management with liposuction and glandular excision. *East Afr Med J.* 2011;88(6):212–6.
- Rohrich RJ, Ha RY, Kenkel JM. Classification and Management of gynecomastia: defining the role of ultrasound assisted liposuction. *Plast Reconstr Surg.* 2003;111(2):909–23. doi:10.1097/01.PRS.0000042146.40379.25.
- Goldwyn R. *Plastic and Reconstructive Surgery of the Breast.* Boston: Little Brown; 1976.
- Bembo SA, Carlson HE. Gynaecomastia: its features, when and how to treat it. *Cleve Clin J Med.* 2004;71(6):511–7. doi:10.3949/ccjm.71.6.511.
- Simon BE, Hoffman S, Kahn S. Classification and surgical correction of gynecomastia. *Plast Reconstr Surg.* 1973;51(1):48–52. doi:10.1097/00006534-197301000-00009.
- Arya R, Rathi AK, Singh K, Srivastava A, Panda D, Parida SN, et al. Gynecomastia: A review of literature. *MAMC J Med Sci.* 2016;2(2):69–75. doi:10.4103/2394-7438.182726.
- Fruhstorfer BH, Malata CM. A systematic approach to the surgical treatment of gynecomastia. *Br J Plast Surg.* 2003;56(3):237–46. doi:10.1016/s0007-1226(03)00111-5.
- Webster JP. Mastectomy for gynecomastia through semi-circular intra-areolar incisions. *Ann Surg.* 1946;124(3):557–75.
- Botta SA. Alternatives for surgical correction of severe Gynaecomastia. *Aesthetic Plast Surg.* 1998;22(1):65–70.
- Rosenberg G. Gynecomastia: suction lipectomy as a contemporary solution. *Plast Reconstr Surg.* 1987;80(3):379–86.
- Lista F, Ahmad J. Power-assisted liposuction and the pull-through technique for the treatment of gynecomastia. *Plast Reconstr Surg.* 2008;121(3):740–7.
- Hodgson E, Fruhstorfer BH, Malata C. Ultrasonic liposuction in the treatment of gynecomastia. *Plast Reconstr Surg.* 2005;116(2):646–53.
- Wong KY, Malata CM. Conventional versus ultrasound-assisted liposuction in gynecomastia surgery: a 13-year review. *J Plast Reconstr Aesthet Surg.* 2014;67(7):921–26.
- Kim DH, Byun IH, Lee WJ, Rah DK, Kim JY, Lee DW, et al. Surgical Management of Gynecomastia: Subcutaneous Mastectomy and Liposuction. *Aesthetic Plast Surg.* 2016;40(6):877–84.
- Brown HR, Chang KD, Richard S, Siy R, Friedman J. Trends in the Surgical Correction of Gynecomastia. *Semin Plast Surg.* 2015;29(2):122–30.
- Li CC, Fu JP, Chang SC, Chen TM, Chen S. Surgical treatment of gynecomastia: complications and outcomes. *Ann Plast Surg.* 2012;69(5):510–5.

## Author biography

**Jitendra Mehta**, Professor

**Manish Zade**, Associate Professor

**Dhananjay Nakade**, Assistant Professor

**Shitiz Gupta**, Senior Resident

**C.V Akhila**, Senior Resident

**Cite this article:** Mehta J, Zade M, Nakade D, Gupta S, Akhila CV. Optimization of surgical management of gynecomastia: Our experience. *Panacea J Med Sci* 2021;11(3):512-516.