

Open Tangential Excision of Gynecomastia. A Surgical Option for Revision Gynecomastia Surgery. Case report and literature search

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ABSTRACT

Background:

Gynecomastia is a common aesthetic surgical procedure carried out by Plastic Surgeons and various approaches and procedures have been described. Revision surgery following gynecomastia is not uncommon, however there is a paucity of surgical approaches described to correct this known complication. Open tangential excision is a new technique to correct residual gynecomastia following under corrected procedures.

Methods:

A ten years retrospective chart analysis was performed, a total of 41 patients (39 primary and 2 secondary) were treated for gynecomastia by the author. Simon's classification was used and 19 patients had type I, 11 type IIa, 5 type IIb and 4 type III. 2 patients were secondary gynecomastia belonging to Type I and IIb and had their surgery elsewhere. Of the 39 primary surgeries, 37 were treated using suction assisted lipectomy alone without gland resection and 2 patients, with type III grade gynecomastia, had vertical scar bipedicle flap along with suction lipectomy and glandular resection.

Two secondary revisions had tangential excision of residual parenchymal tissue along with suction assisted lipectomy. Of the two secondary cases, one patient had lower hemiareolar approach and other had periareolar markings for skin resection with a medially based flap.

Results:

Of the 39 primary gynecomastia, four patient required revision surgery. Of the four revisions, one belonged to type IIa and required complete excision of parenchymal tissue, one patient belonging to group IIb, was treated with further suction assisted lipectomy and two patients, belonging to group type III, required excision of dog-ears with out further parenchymal resection. Both secondary revisions were treated with tangential excision of residual gland with suction lipectomy.

Conclusion:

Revision surgery following gynecomastia is not uncommon and true prevalence rate is not known. Revision surgery may be required to remove residual parenchymal tissue or redundant skin envelope, or both, depending on the degree of the problem at the time of presentation, surgical approach and patient's preference. Tangential excision is a new technique to treat such under corrections.

Key Words:

Gynaecomastia, medially based flap, double pedicle flap, periareolar approach, vertical scar approach.

INTRODUCTION:

Male chest surgery or surgery for gynecomastia is one of the common aesthetic procedures performed by Plastic Surgeons in males today. The deformity or feminisation of the male breast is due to multiple factors and are broadly categorized as congenital, developmental or acquired and may present as unilateral or bilateral. Among the congenital causes, Klinefelter syndrome is a known and rare cause. Developmental gynecomastia is the commonest variety and shows three peaks at neonatal, adolescent and adults stages and with an uncommon prepubertal variety.¹ The more common adolescent variety is seen in young adolescent boys between the age of 14 to 15 and can exist in up to 65% of boys.² Acquired causes are due to relative pharmacologic imbalance either due to excess or deficiency of estrogen or androgen respectively or up or down regulation of their receptors may manifest as secondary changes on male breast tissue. Testicular insufficiency or medical treatment of prostate cancer can equally contribute to feminisation of male breasts.³ Obesity or life style is an im-

portant contributory factor in the development of acquired form of Gynecomastia.⁴ Presentation may either be due to the excess of parenchymal tissue, lipodystrophy or both and may be associated with or without overlying skin excess. Though it is difficult to include all variations in a single classification, most commonly used classification used is by Simon et al⁵ and includes Type 1, glandular excess without overlying skin excess. Type IIa include moderate glandular enlargement without skin excess. Type IIb comprises of moderate glandular and overlying skin excess. Type III, has a significant coexistence of gland and overlying skin. Tuberos breasts along with skin and glandular excess has been proposed to be added as IIIa to Simon classification.⁴ Regardless of the control of the primary cause, gynecomastia once fully developed, can only respond to surgical intervention.⁶ The only exception being puberty onset variety which settles in majority of the cases.² Surgical approaches and procedures are designed to address the extent of gynecomastia at the time of presentation. The condition is either due to lipodystrophy or parenchymal excess, either alone or in combination, with or without skin excess. These deformities can be dealt with liposuction, excision or combination of both. A minority or advanced grade of gynecomastia with significant skin excess will require simultaneous

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skin excision, periareolar skin excision being more preferred than inverted T wise pattern. All available techniques are described for the treatment of primary gynecomastia and there is a paucity of procedures described for under treated cases. These under treated gynecomastia, like their primary condition, may comprise of residual lipodystrophy or parenchymal tissue and may be associated with redundant skin. Tangential excision of gynecomastia is a technique used by the author to treat these under treated cases, for better pectoral contouring and aesthetic results. In both reported cases of tangential excision simultaneous liposuction was performed to harmonize the chest as an aesthetic unit. One of these patient required periareolar skin excision to address skin excess and to reposition the nipple areolar complex to an aesthetically acceptable position.

METHODS:

A ten years retrospective chart analysis was performed, a total of 41 patients (39 primary and 2 secondary) were treated for gynecomastia by the author. Simon's classification was used and 19 patients had type I, 11 type IIa, 5 type IIb and 4 type III. Two patients were treated for secondary gynecomastia belonging to Type I and IIb respectively and had their primary surgery performed elsewhere. Of the 39 primary surgeries, 37 had suction assisted lipectomy without gland resection and 2 patients with type III grade gynecomastia, had vertical scar bipedicle flap along with suction lipectomy and glandular resection.

Both secondary revisions had tangential excision of residual parenchymal tissue along with suction assisted lipectomy through lower hemiareolar and periareolar marking respectively.

RESULTS:

Of the 39 primary gynecomastia, four patient required revision surgery, one patient belonged to type IIa and required complete excision of parenchymal tissue, one patient belonged to type IIb and was treated with further suction assisted lipectomy and two patients from type III required excision of dog-ears with out further parenchymal resection.

Both secondary revisions were treated using tangential excision of residual gland with simultaneous suction lipectomy. One patient required skin resection for correction of skin excess and repositioning of nipple areolar complex.

Case Reports.

Case 1. A 37-year-old health professional had a laser-assisted liposuction of chest and abdomen after a major weight loss. The procedure left him with excess skin and residual parenchymal tissue. Patient tried to tone up the skin by regular workouts in the gym but with out much success. He was seen by the author on 21.4.2010 for corrective surgery of under treated gynecomastia and examination revealed excess skin on both sides, more on the right more than the left. Nipple areolar complex was positioned at 21.5 cm from suprasternal notch and also had bilateral residual parenchymal tissue excess, more on the right than the left.

Patient was conscious of the natural shape of his pectoral region and wanted to get the surgery done in a way

that it could complement rest of body. Tangential excision of the gland, suction assisted lipectomy with periareolar skin excision for mastopexy was planned.

TECHNIQUE.

Markings. With patient in standing position, a new point for nipple areolar complex was marked at 19.5 cm along with a periareolar ellipse of 4.5cm x 5cm in horizontal and vertical plane respectively. Parenchymal excess and area for further liposuction was also delineated and marked after careful examination. Fig1a

Operation was performed under local anaesthetic with sedation as a day case with patient in supine position and arms abducted less than 90 degree. Superwet solution was prepared using 500 cc physiological saline, 30 ml of 1% lidocaine and 1mg of adrenaline in 1:1000 concentration. Both side of the chest were infiltrated with 190 cc of solution using 2mm infiltration needle mounted on a 60 cc syringe. Suction assisted lipectomy was performed using 3mm cannula and 175cc of lipoaspiration performed out on each side. Marked periareolar incision was infiltrated using 10 ml of 1% xylocaine with adrenaline 1:200,000 and skin de-epithelialised leaving 3cm areola (Fig 1b) and a 3 cm wide medially based pedicle dissected with adequate subdermal support. Periareolar approach allowed direct access and visualisation of the parenchymal tissue for excision. Dissection begins from the peripheral rim of the parenchymal tissue and proceeds to the middle. Knife is kept parallel to the plane of chest and pectoralis major and as the dissection proceeds to the middle, thicker layer of tissue is engaged in a graduated manner with the aim to leave the deeper layer of parenchymal tissue to blending with the superficial layer of pectoralis major for better chest wall contouring. No attempt is made to completely excise the under corrected parenchymal tissue. Infiltration of the adrenaline containing solution and suction assisted lipectomy results in adequate vasoconstriction and honeycombing of the parenchymal tissue and allows excision in a blood less field (Fig 1c-e). Single intravenous dose of second generation Cephalosporin is given and wound closure is performed using 2-0ethylon purse string suture and 4-0 vicryl interrupted subcutaneous and a continuous intradermal layer. After routine wound dressing, a surgical vest was applied for three weeks. Follow up showed a good result with a happy patient (Fig 2a-f)

Case 2

A 38-year professional bodybuilder had an open excision of gynecomastia with suction assisted lipectomy through infra-hemiareolar incision and was unhappy with the residual parenchymal tissue and shape of the chest, especially on the left lateral fold area. The author saw him and an open tangential excision of residual parenchymal tissue with simultaneous liposuction was planned.

Patient was assessed in standing position and parenchymal tissue extent and proposed area for liposuction was marked after careful examination. (Fig 3 a-c)

Surgery was performed under general anaesthetic as a day case. Super wet solution was prepared as in first case and 50 cc infiltrated on each side. Hemi infra-areolar incision was marked and infiltrated with 10 ml of 1% xylocaine with adrenaline 1:200,000. Tangential exci-

sion was performed along the same lines as outlined in first case and no drains inserted.

Closure was performed using 4-0 vicryl in subcutaneous and intradermal layers and routine dressings applied. Patient was discharged home later with surgical vest for three weeks. Patient had good results giving him confidence to take part and compete in his bodybuilding contests once again. Fig 3 a-f

DISCUSSION:

Gynecomastia is the most common male breast condition treated by surgeons and one of the most common aesthetic procedure performed by Plastic Surgeons. Once established, treatment is surgical and can be achieved using suction assisted,^{6,7} power assisted⁸ or ultrasonic assisted⁹ liposuction. The surgical excision of parenchyma can be performed using complete excision, piecemeal excision,¹⁰ or using suction-assisted cartilage shaver.⁵ Surgical excision or liposuction can be performed alone or in combination. The incision usually employed are Single small puncture,¹⁰ hemiareolar¹¹ or zig-zag periareolar.¹² These incisions or marking needs to be extended when excess skin envelope reduction is required to treat Simon's type III gynecomastia. Commonly used markings for skin excision are periareolar,^{13,14} or inverted T scar.¹⁵

Author has used vertical scar double pedicle flaps to eliminate the horizontal scarring of inverted T scars in Type III gynecomastias (Fig 4a-b). Skin envelope reduction and pedicle markings are independent of each other and can be used in any combination in type III gynecomastia, depending on the surgeon's experience and patient preference.¹⁶

There are a lot techniques and approaches available for the correction of gynecomastia, depending on the degree of gynecomastia, surgeon's experience or patient preference. However there is a paucity of techniques available or described for the treatment of under or over corrected gynecomastia. For overcorrected gynecomastia, adipofascial perforator based flaps have been described to compensate for the severe soft tissue over resection resulting in obvious deformities.¹⁷ Auto fat grafting or lipofilling can be an option in these cases.

Corrective surgery for under corrected gynecomastia can be performed utilising any approach either on its own or in any combination, as discussed above. However revision surgery in athletic patients with little subcutaneous fat is challenging. Any residual parenchymal tissue can be visible or palpable and these patients can be very conscious of it. Complete excision of the residual parenchymal tissue is likely to leave skin irregularities compromising the objective of the intention. Accurate preoperative isolation and marking of the residual glandular tissue for tangential excision with an adjacent area of liposuction allows anatomical dissection on a biconvex chest, maintaining or restoring the natural shape of the chest as an aesthetic unit. Preoperative infiltration of adrenaline containing super wet solution and liposuction creates a blood less operative field and open approach allows absolute haemostasis, obviating the need for drains in these patients. Skin excision can be planned using one of the available marking depending on the degree of re-

dundant skin, surgeon's experience and patient's preference, however most of these skin envelope excision can be performed using Benelli¹⁴ periareolar incisions.

CONCLUSION:

Revision procedures surgery following gynecomastia surgery is not uncommon and its true prevalence rate is not known. The need for revision surgery may be due to the residual parenchymal tissue, under treated lipodystrophy or redundant skin envelope, either alone or in combination. Tangential excision is a suitable option when fibro fatty tissue excision is required especially in athletic individuals. The technique can be combined with suitable skin excision, depending on the skin redundancy on presentation.

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REFERENCES:

1. Hoevenaren IA, Schott DA, Otten BJ, Kroese-Deutman HC. Preburtal unilateral gynecomastia: a report of two cases. *Eur J Plast Surg Online First*. July 2010
2. Davanco RAS, Neto MS, Garcia EB, Matsouka PK, Huijsmans JPR, Ferreira LM. Quality of Life in the surgical Treatment of Gynaecomastia. *Aesth Plast Surg* 33:514-517.2009
3. Braunstein GD, Gynecomastia. *N Engl J Med* 328 (7):490-495. 1993
4. Cannistra C, Piedimonte, Albonico F. Surgical Treatment of Gynaecomastia with severe Ptois: Periareolar Incision and Dermal Double Areolar Pedicle Technique. *Aesth Plast Surg* 33: 834-837. 2009
5. Simon BE, Hoffman S, Kahan S. Classification and surgical correction for gynecomastia. *Plast Reconstr Surg* 51:48-52
6. Benito-Ruiz J, Raigosa M, Manzano M, Salvador L. Assessment of a Suction-Assisted Cartilage Shaver Plus Liposuction for the Treatment of Gynecomastia. *Aesthet Surg J* 29:302-309.2009
7. Rosenberg GJ. Gynecomastia suction lipectomy as a contemporary solution. *Plast Reconstr Surg* 80:379-385. 1987
8. Jose RM, Thomas S. Gynecomastia correction- the role of power-assisted liposuction. *Eur J Plast Surg Online first* September 2010
9. Ratnam B V. A New Classification and Treatment Protocol for Gynecomastia 29:26-31. 2009
10. Mentz HA, Ruiz-Razura A, Newall G, Patronella CK, Miniel LA. Correction of Gynecomastia Through a Single Puncture Incision. *Aesth Plast Surg* 31:244-249.2007
11. Webster JP. Mastectomy for gynecomastia through a semi-circular intra-areolar incision. *Ann Surg* 124: 557-575. 1946
12. Davidson BA. Concentric circle operation for massive gynecomastia to excise the redundant skin. *Plast Reconstr Surg* 63:350-354. 1979
13. Tu LC, Tung KY, Chen HC, Huang WC, Hsiao HT.

Eccentric Mastectomy and Zigzag Periareolar Incision for Gynecomastia. *Aesth Plast Surg* 33:549-554, 2009

14. Benelli L. A new periareolar mammoplasty: the "round block" technique. *Aesth Plast Surg* 14:93-100.1990

15. Simon BE, Hofman S, Kahn S. Classification and surgical correction for gynecomastia. *Plast Reconstr Surg* 51:48-52. 1973

16. Umar D Khan. Vertical Scar with the Bipedicle Technique: A Modified Procedure for Breast Reduction and Mastopexy. *Aesth Plast Surg* 31:337-342. 2007

17. Salim F, Chana J. Intercostal adipofascial perforator flap for reconstruction of overcorrected gynecomastia deformity. *J Plast Reconstr Aesthet Surg* 63:1385-7, 2010

Legends.

Fig 1



a. Preoperative marking completed in standing position. Innermost circle represent the skin to be de-epithelialised, middle circle represent parenchymal tissue to be tangentially excised and outermost marked area represent for suction assisted lipectomy.



b. Skin after de-epithelialisation and isolation of medially based flap.



c&d. Blood less field and honeycombing of the tissue is evident after suction lipectomy all along medial and lateral extent of dissection after tangential excision



e. Tangentially excised tissue and nearly 400cc of liposuction from both sides. Flat and even nature of excised tissue performed in a plane parallel to chest wall and pectoralis creates natural and anatomical results.

Fig 2 a-f



a-c Preoperative anterior, right and left lateral views of a 37-year patient with a history of laser-assisted liposuction with residual parenchymal tissue and skin excess resulting in ptosis of nipple areolar complex.



Fig d-e four months postoperative views after periareolar skin excision, suction assisted lipectomy and tangential excision of parenchymal tissue.

Fig 3a-f



a-c Preoperative anterior, right and left lateral views of a 38-year old bodybuilder with a history of open excision of gynecomastia with suction assisted lipectomy, presenting with residual parenchymal tissue affecting his confidence and performance.



d-f Postoperative results after six months, showing natural shape and anatomy of chest, after tangential excision and suction lipectomy

Fig 4a-b



a. Preoperative right lateral view of a 26 year old male after massive weight loss showing residual gynecomastia with excessive redundant skin.



b. Six month postoperative view after vertical scar double pedicle reduction of gynecomastia. Patient required a dog ear excision as a minor revision on both sides.