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Original Research Article

Gynecomastia our surgical experience using liposuction and minimal invasive surgical excision and its psychological benefits to young patients

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ABSTRACT

Background: Gynecomastia is a benign enlargement of the male breast usually bilateral sometimes unilateral resulting from proliferation of glandular component of the breast. It is defined clinically by presence of rubbery or firm mass extending from nipple. The glandular tissue grows under influence of hormonal stimulation and is tender. Gynecomastia frequently presents social. Psychological, difficulties as low esteem and shame to sufferer. During adolescence many young males have gynecomastia and they are eager to do surgery of gynecomastia. Aims and objectives of the study was to correct deformity restoring normal contour to the chest, maintaining viability of nipple and areola. Also avoiding excess scarring and preventing saucer type deformity. To relieve emotional discomfort, psychological distress, and intolerable pain, to relieve shame in going to society, social gathering even doing marriage. To study effect of adding liposuction to surgical excision.
Methods: This is two-year study of 20 cases of gynecomastia. Clinical and Laboratory findings were normal. preoperatively patients are selected by their complaints, discomfort, psychological effects, shame, depression, anxiety and size of gynecomastia. In surgery, we have done is liposuction thoroughly after infiltration with adequate amount of ringer solution and Inj adrenaline 1:100000 concentration. In gynecomastia with group 1 and 2 we used websters incision, in group 2b we used extended websters incision if required. In very large gynecomastia with skin excess we have done breast reduction with liposuction and free nipple grafting in one case and medial pedicle based, superiorly based flap in two cases, two cases with circumareolar skin excision and liposuction in group 2 b case. In rest 16 cases we have done liposuction, excision through websters incision.
Results: In our study of 20 cases done in two years, in our department of plastic surgery at NKPSIMS, one was unilateral and rest 19 were bilateral gynecomastia cases. In all cases liposuction as treatment modality used and has given satisfactory outcome in 18 (90%) cases out of 20, 3 (10%) cases want more liposuction and if possible re excision. Average hospital stay was 2 days. Post-operative recovery was good in majority cases but in 2 ((10%) cases post op numbness and ischemia at margin of areola occurred treated conservatively. In one case (5%). dehiscence of wound healed Conservatively. All cases of breast reduction were healed well. All cases benefited psychologically by surgery and their self-image in society improved lot.
Conclusions: The problem of excessive fat and fibroglandular tissue is managed by liposuction and excision through websters incision. In high grade gynecomastia of grade 3 we have done breast reduction. This has corrected deformity, restoring normal contour to majority of patients and they improved psychologically, and their self-image improved and so their social life.

Keywords: Gynecomastia, Liposuction depression and anxiety, Male breast, Psychological benefit, Reduction, Surgical reduction

INTRODUCTION

Gynecomastia is a benign enlargement of male breast. It is a common condition with prevalence in young age patients is high.[1] The condition is caused by an increase in the effective oestrogen-testerone ratio, which can be either physiological or pathological.[2] In most cases of physiological gynecomastia reassurance is needed. Treatment of underlying cause if it's there is necessary.

Like testicular tumors specific treatment of the enlarged breasts is needed when gynecomastia causes sufficient pain, embarrasment, emotional discomfort to interfere with patient's daily life.[3,4] Two treatment options are medical therapy and surgical excision.[5] Medical therapy is probably most effective during the active proliferative phase of gynecomastia. Danazol, Clomiphene, Testolactone and Tamoxifen have been used. But if medicine treatment is in effective and or if gynecomastia is present since many years and if causing negative impact on male self-esteem, social health, gynecomastia surgery is indicated.

Surgical treatment includes, liposuction, excision of fibroglandular tissue if palpable fibroglandular tissues after liposuction palpable. In cases of excessive skin, skin reduction surgery be done. In more excessive skin with gynecomastia, skin reduction with free nipple graft can be done.

The minimally invasive therapy by using Liposuction for the treatment of fatty gynecomastia (pseudo gynecomastia), particularly simon grade 1 and 2. Table 1 is much preferable as males are more conscious about scarring in chest area, in addition avoiding of the several side effects of open surgery as wound infection, long recovery period and ischemia of nipple and areola complex. Sensory changes in nipple and areola, painful scar, contour deformity, skin redundancy, seroma, hyperpigmentation, hematoma are other complications they can occur after surgery.

Surgical therapy is indicated for long standing gynecomastia, at least more than 18 months, which is unlikely to subside spontaneously with medicines. From surgical point of view, Simon et al divided gynecomastia into four grades as follows [6,7]

Table 1: Grades of gynecomastia.

Grades	Findings	Skin redundancy
Grade 1	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

METHODS

The current study was conducted in plastic surgery department in NKPSIMS, Nagpur under Nasik university. during 2015 to 2017.

It includes 20 patients that were presented by gynecomastia. Patients with chronic liver and liver and renal disease, hypothyroidism, alcoholics and patients on medical treatment are excluded.

Patients history, the grade of gynecomastia, the presence of skin excess, causative factors, duration of symptoms, surgical procedures, complications were recorded. Each patient assessed for overall satisfaction rate and improvement of chest shape and self-confidence. An informed consent about surgery, possible outcome and complications was obtained.

Operative techniques

Preoperative marking of the patient in the upright position and under general anaesthesia, the breast tissue was infiltrated with a solution of ringer lactate. Ringer lactate, 1% lignocaine and 1:1000 adrenaline. All patients received one dose of intraoperative intravenous broad-spectrum antibiotics.

Procedures without skin reduction

Liposuction: suction assisted liposuction (SAL)

After a superwet tumescent infiltration technique, infiltration solution as mentioned above is injected.[8-10] In both breasts, we wait for 15 minutes, and liposuction started by continuous movement of the canula, in long strokes starting deep and working superficially, with special efforts to disrupt inframammary fold. The endpoint is determined by loss of tissue resistance and appearance of tissue aspirate. Breast tissue become small.

Excision through semicircular periareolar incision

A semicircular incision extending from3'0 clock position to 9 '0 clock position along inferior margin of the areola was used. Through this incision, the whole glandular tissue is excised, only 1cms disk was left on undersurface of the areola to avoid the saucer deformity. The tissues were closed in layers with absorbable sutures. The semicircular incision is called Websters incision.[11-13] and if it needs extension it is called extended websters incision. Figure 1 and 2, websters incision extends along the circumference of the areola in the pigmented portion. Care is taken to leave layer of fat below the skin flap in order to preserve flap circulation. Hemostasis achieved Romovac drain is placed and the incision is sutured in two layers by 5.0 vicryl and 5.0 ethilon cutting needle. Antibiotic ointment is placed over suture line followed by 10x10gauze and pad. Drains were removed after 24hours if drain is less than 25ml. Sutures are removed after

1week. A commercially available compressive vest (pressure garment.) is used for six weeks Postoperatively.

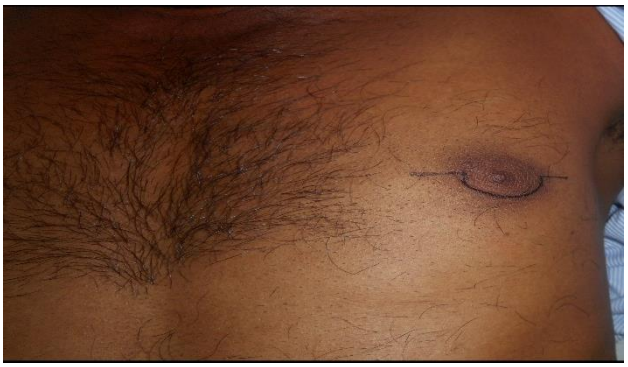

Figure 1: Websters incision: in the pigmented part of inferior aspect of areola, gives good cosmetic result with minimum scarring.

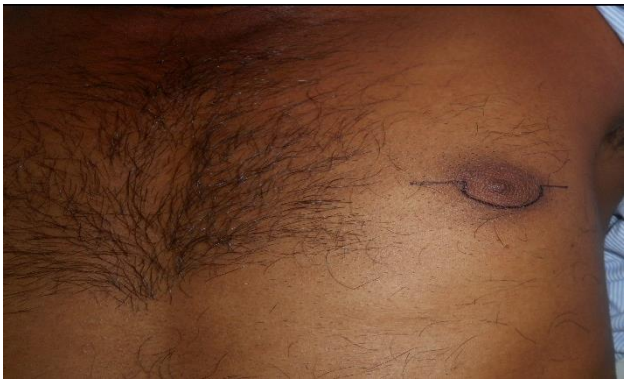

Figure 2: Extended Websters incision: In large gynecomastia sometimes websters incision may need extended to excise bigger gland.

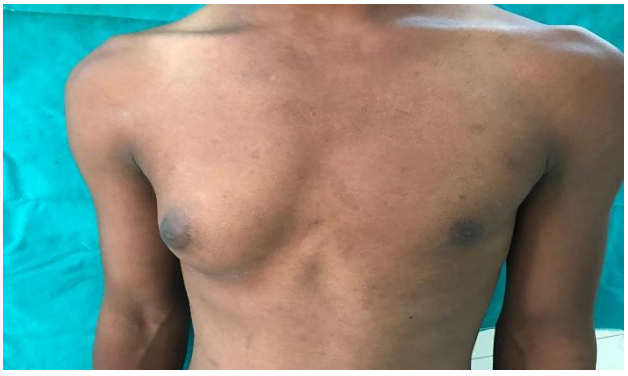

Figure 3: Incision sites for liposuction, one at anerior axillary line and in Websters incision.

For moderate to severe gynecomastia two stage surgical procedures may be option.in first stage liposuction and excision of glandular tissue through websters or extended websters incision and removal of gland fat fibrous tissues to obtain nice contour. Second stage to be done after six months, when skin reduction done if required by various methods.

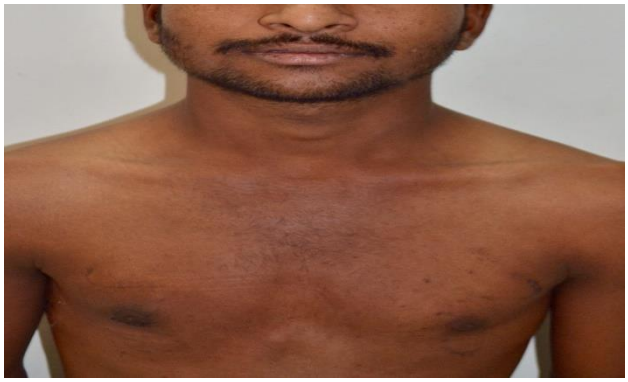

Figure 4: Case 1 Pre-operative and postoperative views of gynecomastia surgery with genital hypogonadism.

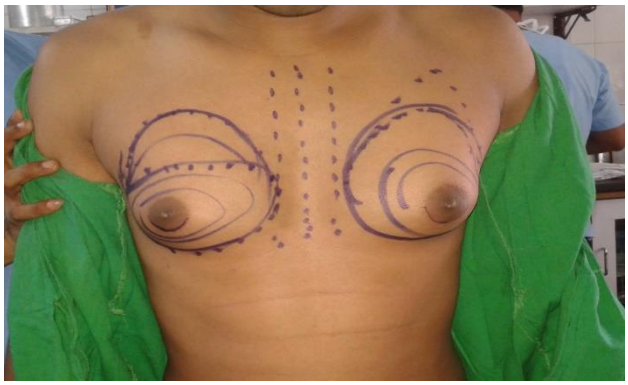

Figure 5: Case 2 Unilateral gynecomastia treated with bilateral liposuction and excision in right breast through websters incision.

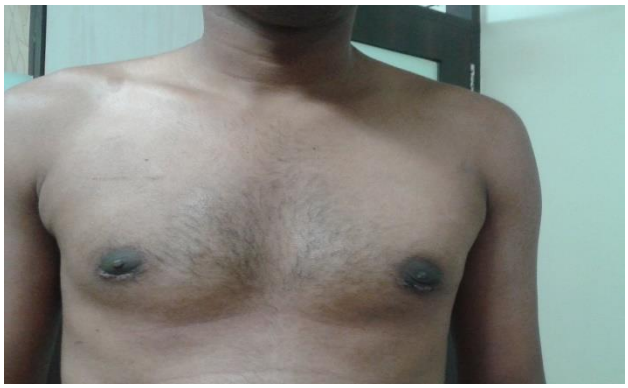

Figure 6: Case 3 The operative and postoperative view of gynecomastia with liposuction and excision of tissue through websters incision.

Skin reduction procedures

Skin reduction surgery procedures

Complete concentric circumareolar approach benelli type is Marking of midline, sternum, inframammary folds and areola was done with patient upright. In case of wide

areola the areola was marked to diameter of 25-30mm.[14-18]

Figure 7: Case 4 Pre-operative and postoperative view of gynecomastia operated with liposuction and excision through websters incision.

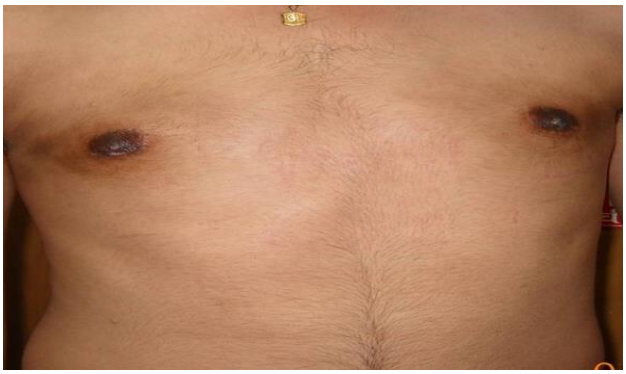

Figure 8: Case 5 Pre-operative and postopertiveview of gynecomastia patient operated with reduction by superomedial padicle (Lettermans technique).

A concentric or mildly eccentric, 20mm incision marked to include the epidermal doughnut which was then resected. Under general anaesthesia, the doughnut shape external ring deepithelialized, followed by a semicircular transdermal inferior incision, within the deepithelialized area extending from 3-9 '0clock position. Then the excessive glandular tissue was excised of adequate thickness under the nipple was left to avoid areolar retraction. Or ischemia. The breast skin was sutured to the areola inverting the segment in 2 layers. An additional circumareolar intradermal 2.0 PDS pursestring sutures was used to decrease the diameter of the breast skin border and to decrease the tension on the suture line.

Lettermans technique

Superomedial pedicle technique with vertical scar method: Vascular supply is through internal mammary artery medial branches and nerve supply by fourth intercostal nerve deep branch.[19,20]

Patient is marked in upright position. The proper nipple position is marked, Transposition of inframammary fold onto the chest and midline estimate may be used for initial marking of new nipple position. This estimate must be checked with the measurements. The nipple should be 20-21cms from the sternal notch and 10-11cms from the midline. The midline of inframammary fold is marked. The width of excision checked by retracting breast laterally and medially. Medial and lateral marks are incised, and breast tissue excised from underneath the skin flaps, the breast tissue excised from underneath pectoralis muscle and fascia, medial pedicle rotated supermodel and underlying breast tissue approximated and later sutured over drain, dressing with breast support given.

Free nipple graft techniques

Through a horizontal approach: Males with massive weight loss with significant ptosis are the ideal candidates for this procedure. This technique shortens chest and does not narrow it. The scar, while potentially visible, falls into space between chest and the abdomen, demarcating a virtual anatomic boundary. Marking is same as above for nipple position. A line is marked along the IMF and across the chest that overlies IMF, to determine tissues to be excised or deepithelialized. If this tissue is thin and moderately ptotic, the nipple may be transported superiorly on the pedicle. If there is greater degree of ptosis and significant lipodystrophy the tissue should be excised, and free nipple grafting performed. If there is significant projection of nipple on the underlying breast tissue, the NAC should be harvested as a full thickness skin graft. The NAC graft about 30mm size, wrapped in saline gauze and side is identified or marked.[21]

At the level of IMF, superior and inferior flaps are incised, extra breast tissue excised from pectoralis fascia, hemostasis achieved, bupivacaine given at intercostal spaces. The scarpas fscia approximated, then dermis and intracuticular sutures approximated over Romovac drains. The new NAC marked, 30mm diameter, nipple graft sutured and tieover dressing given. Dressing done after 1week. pressure garments given for six weeks.

RESULTS

This study conducted in NKPSIMS in Nagpur during 2015 to 2017. 20 cases done in our department of plastic surgery studied for possible etiology, method of surgery, intraopfindings, post op recovery, post op result and post op patient satisfaction and improvement in his self-confidence.

Out of 20 cases we studied, age group was 22yrs to 30yrs male. Average age in our study is 25.6yrs, Patient with lipo suction only were 2 cases (10%), patients with websters incision and liposuctioned combined method are 13 cases (65%), patient with circumareolar technique of breast reduction rBennellis type, with liposuction are 2 cases (10%), Lettermans technique, superomedial pedicle rotation technique. 2 cases (10%), Free nipple graft in

ptotic gynecomastia in case massive weight loss after bariatric surgery one case (5%).

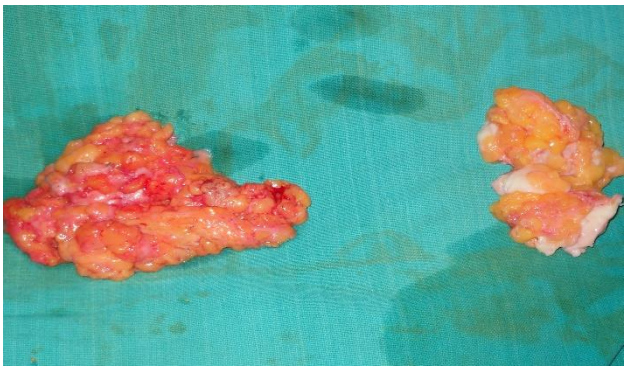

Figure 9: After liposuction fibrograndular tissue excised the webstrs incision

Figure 10: Normal liposuction canula 3-4 mm.

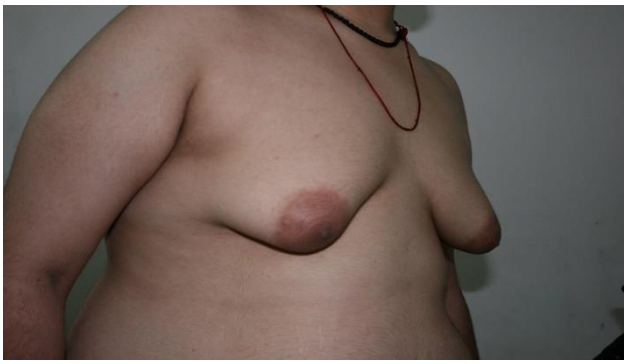

Figure 11: Pre op case 6.

Two of our cases (10%), shows nipple ischemia, 1 case (5%) has shown dehiscence of suture lines, 1 case 5%. Shown drain site pain after drain removal. 17 cases (85%) cases in our study has shown improvement in self-image and self-confidence, 2 of our cases (10%) and one case (5%) of webster incision excision of gynecomastia and liposuction has shown less improvement after liposuction only technique and they want second stage surgery after six months. None of our patients developed hematoma postoperatively, 2 cases developed skin discoloration ischemia of nipples which resolved after seven days. No case of skin necrosis, nipple necrosis or hematoma seen in our study. slight numbness seen in 4 cases (20%).

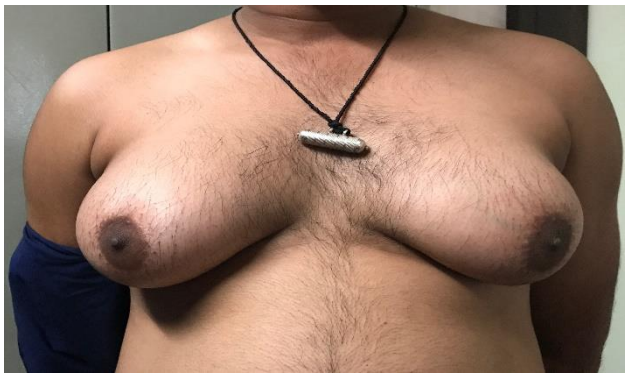

Figure 12: Case of bilateral synccornastia gr. III after taking drug for HIV.

In all cases we have used postoperatively, pressure garments and which helped us giving good cosmetic result. We have used neosporin ointment on scar locally applied for two weeks then Vaniza gel (silicone gel) for three months which has given good scar in majority cases.

DISCUSSION

The first reported surgical treatment of gynecomastia belonged to Paulus Aegineta (625-690AD), who used a lunate incision below the breast and for larger breasts he used two converging incisions, to excise excess skin.[11-13,22,23] Webster later in 1946, described an operation with a semicircular intra areolar, infraareolar incision which became the standard operation for excision of gynecomastia. Later on, another method has been introduced, in which skin is removed as an ellipse and the nipple is transposed on a pedicle or repositioned as a full thickness graft.

To avoid extra areolar scars the redundant skin has also been excised concentrically around the nipple, leaving it on superior or central pedicle. In 1970, Illouz introduced suction assisted lipectomy, has improved the treatment of gynecomastia, because it enabled the breast contouring in male breast which are diffusely enlarged with minimum or small incision 3 to 4mm, so small scars.[24,25] In late, Zocchi developed ultrasound assisted liposuction, procedure that allows, selective destruction of adipose tissues.[26,27] Recently laser assisted liposuction and laser lipolysis without liposuction are the methods available for gynecomastia surgery.[28]

Surgery is the mainstay of treatment of gynecomastia. In all patient's liposuction was planned as a first step of liposuction. The majority of patients were treated by liposuction alone initially but, in patients after liposuction, if fibrous firm fibroglandular tissue remained after fat liposuction, we used special cannulas for liposuction. If fibroglandular tissues remains even after

that then we have used Websters incision or extended websters incision, to excise fibroglandular tissues. Conventional lipo excision first described by Teimour (1983).

It has become widely popular because liposuction alone has difficulty in removing glandular tissues. Rosenbergs allows 2-3mm lipocannulas for liposuction. Special cutting cannulas for cutting fibroglandular tissues are sharp and traumatic to nerves and blood vessels. If skin excess is there we have used two types of treatment options Wait for six months after excision and liposuction.

Same time skin reduction by A. Concentric pursestring suturing after excision of excess skin. B. Liposuction and Leijours method of breast reduction, C. Liposuction and medial pedicle (superomedial) pedicle technique of breast reduction. D. Elliptical excision of excess breast tissues and skin and free nipple grafting.

In patients treated with conventional method of liposuction alone, the most common complication was residual lump, which was associated with psychological discomfort in patients. Some patients were not satisfied with the result, even if contour of the chest was improved. In group in which liposuction and excision of glandular tissues was done together, were more satisfied. The longer semicircular scars at the periareolar margin was well accepted and is usually faded with time. Therefore, during correction of gynecomastia by liposuction the threshold for conversion to open procedure should be low, because it is giving more satisfactory result to patients with no disadvantages.

It is important that the incision is exactly on the margin between the skin and areola, which usually leaves the patient with minimum or almost invisible scars. Decision to convert to open procedure can be made intraoperatively, because clinical examination sometimes cannot decide whether the breast contains only fat or both fat and fibroglandular tissue. Therefore, all the patients undergoing liposuction need consent for open excision also.

If well performed open excision can give excellent results in smaller breasts enlargements, with distinct subareolar breast nodules. In more diffuse enlargements, and larger breasts, it is more difficult to achieve good result without liposuction and only by surgical excision.

Three categories of our treatment are

- Grp 1: Cases in which liposuction done alone, were 10% cases
- Grp 2: Cases in which liposuction and surgical excision of glandular tissue done without excision of skin are 65%
- Grp 3: Cases in which liposuction, local excision and skin reduction done if excess skin were 25% in our study.

The pretunneling and suction achieved with liposuction before open excision, because they help to taper the peripheral contour, define the glandular tissues, and make the excision easier (8b).

We do not have laser assisted liposuction or ultrasound assisted liposuction in gynecomastia surgery, but different studies show that they are beneficial over conventional liposuction methods in gynecomastia. Fruhstorfer B H et al, found that liposuction of gynecomastia by ultrasound assisted method is easier, less strnous. In some cases, excision can be avoided when ultrasound assisted liposuction is used in the treatment of gynecomastia.[5]

In our setup we have got good result with conventional liposuction method and using special cannula. For fibroglandular tissue in gynecomastia excision. In few patients with moderate to large breasts it was felt intraoperatively that the skin elasticity was sufficient and thus no skin reductions was performed. Two cases left with mild degree of redundant skin below nipple areola complex.

In larger breasts with marked skin redundancy, excision of skin was required, many skin reduction techniques have been described. They can be divided into

- Circumferrential circumareolar. Excisions or concentric circle techniques,
- Extra areolar skin excisions.

Concentric circle techniques permit skin reduction while limiting the final scar to a circle at the periphery of the areola. This method is limited to certain amount of skin excess, skin around areola can get wrinkled. Lejour has popularized a vertical plasty technique. Breast is left with circumferential periareolar scar and only a small vertical scar. inferior and central pedicle technique is also good in large breasts reductions. Superomedial pedicle technique can be used in large pendular breast.

In pendulus breasts like in cases of post weight loss after bariatric surgery we have done eliptical incision and excision of breast tissue and free nipple grafting to avoid complications due to vascular compromise.

Simon et al classified gynecomastia according to the size of the breasts and the amount of redundant skin.[6,7] They described, four categories,

- Small enlargement no skin redundancy,
  -Moderate enlargement without skin redundancy,
  -Moderate enlargement with skin redundancy

Surgical treatment of gynecomastia, consists of three basic steps

- Liposuction,
- Open excision,
- Skin reduction.

In moderate to large breasts the markings for skin excisions should be made preoperatively, if surgeon feels that the skin elasticity is insufficient. Following liposuction, the consistency of the breasts should be reassessed, and open excision is performed if residual lump or firmness present. The threshold for conversion to open excision should be low as it is not associated with significant disadvantages. Following liposuction and open excision, the excess skin settles, to some degree depending upon the skin quality. Skin excision is indicated if there is still noticeable skin excess as it occurs in very large breasts and poor skin quality. The choice of concentric or Lejour or superomedial or inferior and central pedicle depends upon skin excess.

Men are distressed by Gynecomastia and need psychological support. More research in this area is needed. Shame, perceived stigma, vulnerability, sadness, anxiety, sense of unfairness, lonliness and fear of being marginalized or subordinated within gender hiarchies are all associated with male breast problems. The body image is disturbed for men. The chronic inhibition of emotions is felt to be a male characteristic that can negatively impact health outcomes.

Under extreme circumstances, the hypothalamic-pituatory-adrenal axis can be disturbed, leading to emotional and endocrine dysfunction with development of Psychosomatic illness. Headache, chronic fatigue, obesity, hypertensions are consequences of prolonged emotional suppressions.[29] The timing of onset of gynecomastia has also been shown to be relevant to the outcome with the greatest psychological impact occurring with onset in adolescence as compared to young childhood. Schonfeld et al in one study of 484 cases, uncomfortable anxiety, regarding masculinity, fear of developing breast cancer, insecurity regarding the psychosocial influence of their breast enlargement prompting the reproach of effeminacy and feeling unacceptable were reported.[30] Adolescents in this group often stated that they thought that their breast enlargement was some fault of their own or that their parents had wanted girl when they were born. Difficulties with parenteral relationship were often equated to being rejected due to their disfigurement. These patients universally avoided exposure of their chest. Depressive and even suicidal ideation was common in the studied group and mainly in pendulous gynecomastia.

In our study we found same findings with few of them were in severe depression and having suicidal thoughts. So, I feel gynecomastia surgery is very important and these patients need good psychological counselling if possible before and after surgery.[3]

CONCLUSION

Gynecomastia surgery by liposuction and local excision of fibroglandular tissues through websters incision gives good cosmetic result, they also improve self-confidence and psychological benefit to gynecomastia patients over 95% cases. It improved their self-body image to good extent. minimal invasive techniques, only liposuction and minimal excision through websters incision has given good result in our series. But few cases with very large gynecomastia liposuction and breast reduction is necessary if skin quality is poor and skin elasticity is low and marked excess skin.

Breast reduction like circumconcentric technique, Lejours technique, superomedial pedicle technique, inferiot central pedicle techniqueor sometimes elliptical excision with free nipplegraft technique in very severe cases can be required. Gynecomastia is a rewarding surgery and saves life of many youngsters who are in depression and who developed suicidal thoughts or ideation. So, we should guide the youngster's council them positively and give them surgical benefits.

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