



AN OBSERVATIONAL STUDY EVALUATING SURGICAL TECHNIQUES AND OUTCOMES IN GYNECOMASTIA

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INTRODUCTION:

Gynecomastia is a benign condition characterized by enlargement of the male breast due to proliferation of glandular tissue. It is thought to result from a number of mechanisms including raised Estrogen : Androgen ratio, increased breast sensitivity to normal circulating estrogens levels in blood and/or an increase in Human Chorionic Gonadotropin and Luteinizing Hormone receptors in male breast tissue¹. This Condition may be unilateral or bilateral, symmetric or asymmetric. Gynecomastia is a common and clinically important condition with a reported prevalence of up to 36%². Nevertheless, major gaps in knowledge regarding its modern epidemiology exist, and it has not been proven whether the apparent rise in its incidence is true. Also, over recent decades, there has been substantial increase in the use of anabolic steroids and environmental contamination with xenoestrogens or estrogen-like substances that, at least theoretically, can stimulate glandular proliferation of the male breast³.

Because in gynecomastia males exhibit bodies not conforming to the anatomical gender norms, breasted-men may be subject to stigmatization leading to “discredited” masculinity. Data from researchers Wassersug and Oliffe (2008) show that gynecomastia in cancer patients is associated with decreased quality of life⁴. Accordingly, physio-psychological concerns associated with breast development are often the impetus for male mastectomy. The goals of surgical treatment of gynecomastia should include restoration of normal male chest contour whilst limiting scar visibility⁵. This study aims at knowing the clinical profile of gynecomastia and its management.

AIMS & OBJECTIVES:

- Clinical profile of gynecomastia.
- Surgical management –Liposuction and its outcome.
- Role of pressure garments in post operative patients.

MATERIAL & METHODS

Source of data :

This includes male patients attending the Plastic surgery OPD at MVJMC&RH with complaints of breast enlargement.

Study Design: Observational Prospective Study of all cases presenting at MVJMC&RH hospital after obtaining Informed consent and Institutional Ethical clearance

Duration of study: 18-24 months.

INCLUSION CRITERIA

➤ Male patients diagnosed with Gynecomastia irrespective of age .

EXCLUSION CRITERIA

- Pubertal gynecomastia
- Male breast cancer
- Gynecomastia secondary to chronic illness
- Medication induced gynecomastia

SURGICAL TECHNIQUE:

After admission in our department, a detail history of patient will be taken, the general condition of the case will be assessed, history , finding of examination of the cases shall be entered in the following headings :-

- 1.History: Name, age, sex, occupation, address, socio-economic status, mode, type , cause of breast swelling, and associated deformity.
- 2.Past medical or surgical history.
- 3.Personal history.
- 4.Allergic and Drug history.

General Examination:

Vitals-Pulse rate,BP,Temp

Pallor,Icterus, Cyanosis, Nailchanges ,Lymphadenopathy, Edema

CVS ,RS , CNS(Psychiatric evaluation).

Per Abdomen with genital examination.

Local examination:

Differentiating true gynecomastia from pseudogynecomastia and tumors is based on physical examination. The patient lies on his back with his hands behind his head and the physician places her/his thumb and forefinger on each side of the breast and slowly brings them together. In true cases of gynecomastia, the physician will feel a disc or firm tissue that is concentric with the nipple-areolar complex. In patients with pseudogynecomastia the fingers will not meet any resistance until they reach the nipple⁶.

In contrast, breast carcinoma usually presents as a unilateral hard, irregular mass located outside the areola, which may be accompanied by skin dimpling, nipple retraction and axillary lymphadenopathy⁷.

Grading of Gynecomastia(Simon et al⁸)

- (1) I: minor breast enlargement without skin redundancy.
- (2) IIa: moderate breast enlargement without skin redundancy.
- (3) IIb:moderate breast enlargement with minor skin redundancy.
- (4) **III: gross breast enlargement with skin redundancy, mimics female breast ptosis.**

Investigation:

1.Routine laboratory investigations including CBC, BT, CT, Blood Urea, Serum creatinine, serum electrolytes, Blood glucose etc.

a)Hormonal studies for doubtful cases(testosterone, free (bioavailable) testosterone, estradiol, hCG, LH, FSH, prolactin, T3, T4 and TSH

2.Imaging studies including Sonography,Mammogram,chest radiograph etc.

3.Other tests like FNAC,Biopsy, ECG etc.

MANAGEMENT OF THE CASE

General management varies with the condition of the patient, grade of gynecomastia, and associated systemic disease. Conservative approach for slight GM and mild pubertal GM with reassurance and advice for weight loss with discontinuation of causative medications if any. Surgical management was categorised on grading and patient preference if any.

Sub Cutaneous Mastectomy (Grade I)– Skin preparation was performed and wetting fluid was used (1000 ml normal saline, 20 ml lidocaine 2%, and 1 mg epinephrine) for local anesthesia. Semicircular incision was made along the inferior margin of the nipple–areolar complex. Cooper’s ligaments, which connect the dermis with the pectoral fascia, were transected using either scalpel or scissors under visual control. The removal of the hypertrophic glandular tissue was performed step by step and en bloc. Around 1cm thick tissue was preserved in nipple-areola complex to guarantee sufficient perfusion and to prevent subsequent deformity. Skin closed with fine subcuticular sutures⁹.

Liposuction and Surgical excision(Grade IIa,IIb)–All cases were performed under GA. The breast tissue was infiltrated with tumescent solution containing lactated Ringer solution (500ml), 1 mL of 1:1,000 epinephrine solution, and 20 mL of 2% lidocaine solution. The infiltration is about 1:1 with the expected aspiration volume, and covers a wide area of the chest from the clavicle to below the inframammary fold¹⁰.

A) For conventional liposuction-2 stab incisions per side were made by scalpel in the inframammary fold, 1 at the medial and 1 at the lateral aspect of the inframammary fold. Depending on the thickness of the adipose tissue layer, liposuction of the deeper layers was performed with a 4-mm cannula, followed by superficial or fine-contouring liposuction using a 3-mm cannula.³



Various types of Liposuction and infiltration cannula

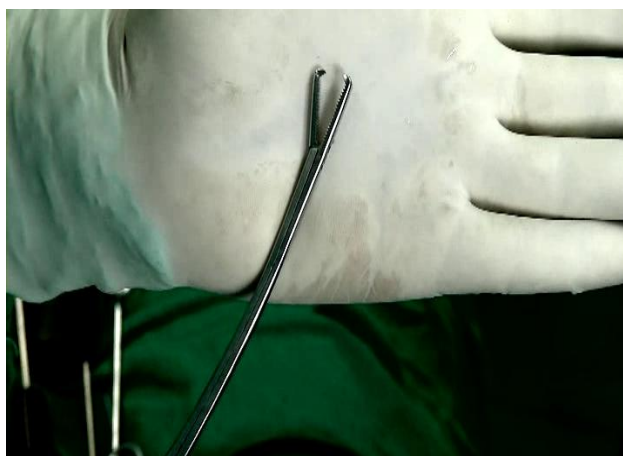
c) Ultrasound-assisted liposuction- UAL which is available in private sector(VASER) was used for conference purpose in this hospital. A hollow cannula with a protective sheath was inserted through the same stab incisions as those used for conventional liposuction. Routine safety measures to avoid thermal injuries included continuous saline irrigation through the sheath system, the use of a skin protector, wet towels around the entry site and avoidance of ‘end hits’. The endpoint for ultrasound-assisted liposuction was determined by loss of tissue resistance, aspiration volume, appearance of the aspirate and treatment time. The final evacuation and contouring was performed using conventional liposuction¹¹



VASER

After liposuction, the residual gland was removed from the retroareolar area via periareolar incision. To minimize the wound cavity and the wound surface, 3–0 absorbable adaptive and subcuticular situative sutures were placed, followed by a running intradermal 4–0 absorbable suture. Amount of volume aspirated was measured. Sterile dressing was applied and moderate pressure was administered to the thoracic wall by pressure garment vest for approximately 4 weeks, which reduces hematoma and seroma formation to improve the aesthetic outcome¹².

Liposuction and pull through(Grade IIa)-After suction was completed, straight tunnel forceps is introduced through the incision used for liposuction, and fibroglandular breast tissue is removed through this incision using a “grasp and pull” motion while the skin is pinched using the other hand. When it is difficult to remove fibroglandular breast tissue in this manner, a Toledo V-dissector cannula is used to sever the subdermal attachments of this tissue¹³.



Grasper for pull through technique

Concentric Mastopexy(Grade IIb)-The skin was resected, with deepithelialization extending from the NAC border to the normal skin. A transdermal incision was made in the inferior region of the semicircular deepithelialized area, to remove glandular elements. During glandular tissue reduction, a pad about 2 cm thick was placed chiefly in the region below the NAC. Periareolar closure was accomplished in layers, with interrupted sutures, using 4-0 and 5-0 nylon¹⁴.

Drain insertion was done in selective cases, Sterile dressing was applied and moderate pressure was administered to the thoracic wall by pressure garment vest for approximately 4 weeks.

FOLLOW UP

Regular follow-up visits were performed on the first postoperative day and 4 weeks.

OUTCOME AND SCORING ANALYSIS

Postoperative analysis included pre and postoperative photographic documentation, early and late

post-operative complications, and aesthetic result by the use of the qualitative evaluation scale by Kasielska and Antoszewski .

Item	Points
Breast size	- Male sized - Between 0 and 2 - Female sized,
Breast Symmetry	- Symmetrical Well positioned - Between 0 and 2 - Asymmetrical Malpositioned
NAC Shape and symmetry	- Symmetrical, and good projection - Between 0 and 2 - Asymmetrical, and deformed
Scar Visibility	- Almost invisible - Between 0 and 2 - Visible, unaesthetic

Evaluation scale of the cosmetic results after gynecomastia surgical treatment.

The Final aesthetic result was as follow (on the basis of the sum of the points): 'Very good' male like breast 0-1 point, 'Good' male-like breast between >1 to 2 points, 'Average' reoperation to be considered >2-4 points, and 'poor', reoperation >4-8.

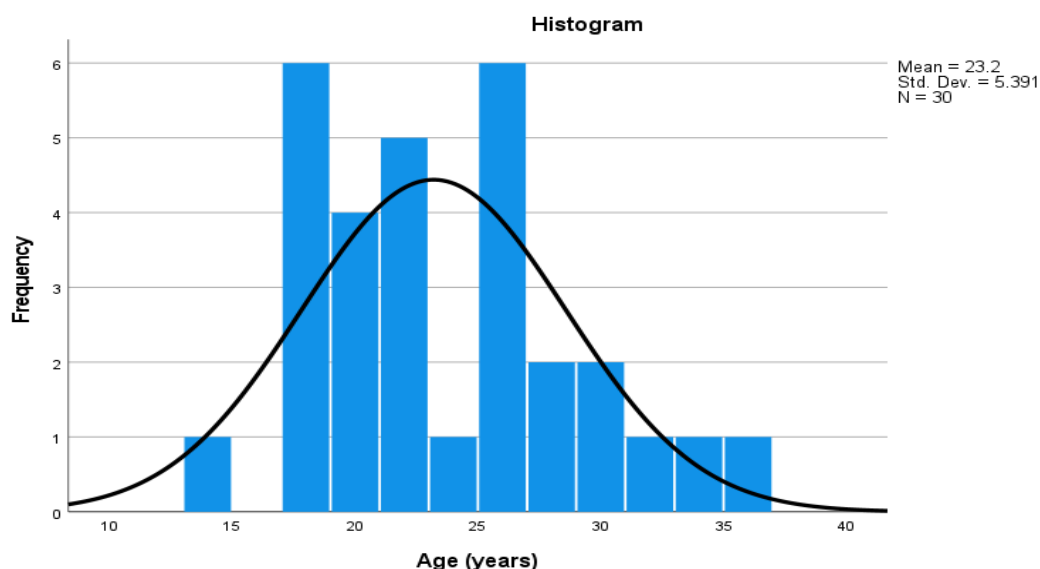
Patient satisfaction analysis was based on Likert scale which ranged from 1 (Very unsatisfied) to 5 (Very satisfied) on Day 1 and 4 weeks follow-up.

OBSERVATION AND RESULTS

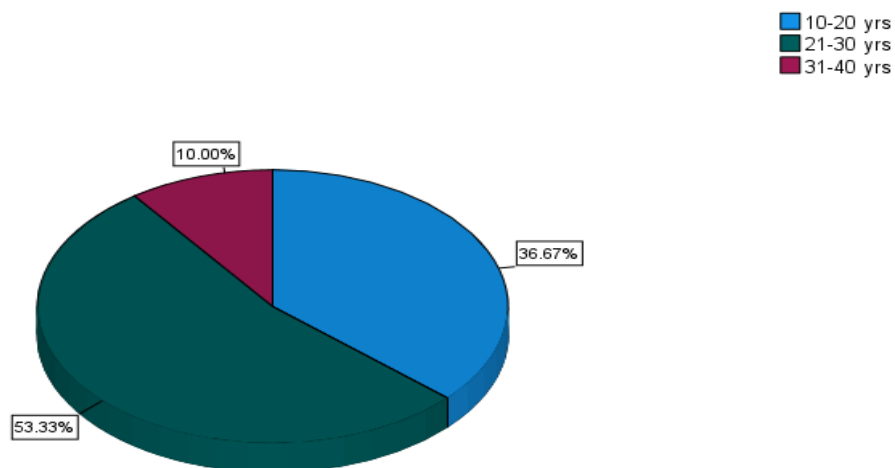
A total of 30 patients presenting with gynecomastia were included in this study. The following were the observation and results of the study.

Age Distribution

The mean age of study population was 23.2 ± 5.4 yrs. The maximum age of patient was 35 yrs and minimum age of the patient was 14yrs .Majority of the patients were in 21-30yr age group(53.33%).



Age distribution of study population



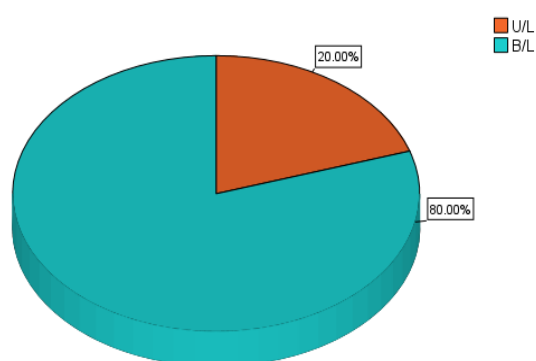
Distribution of study population into age group groups

Characteristics	Number(n=30)	Percentage
Age(years)	Mean=23.20	SD=5.4
10-20	11	36.7
21-30	16	53.3
31-40	3	10.0

Distribution of study population into age group

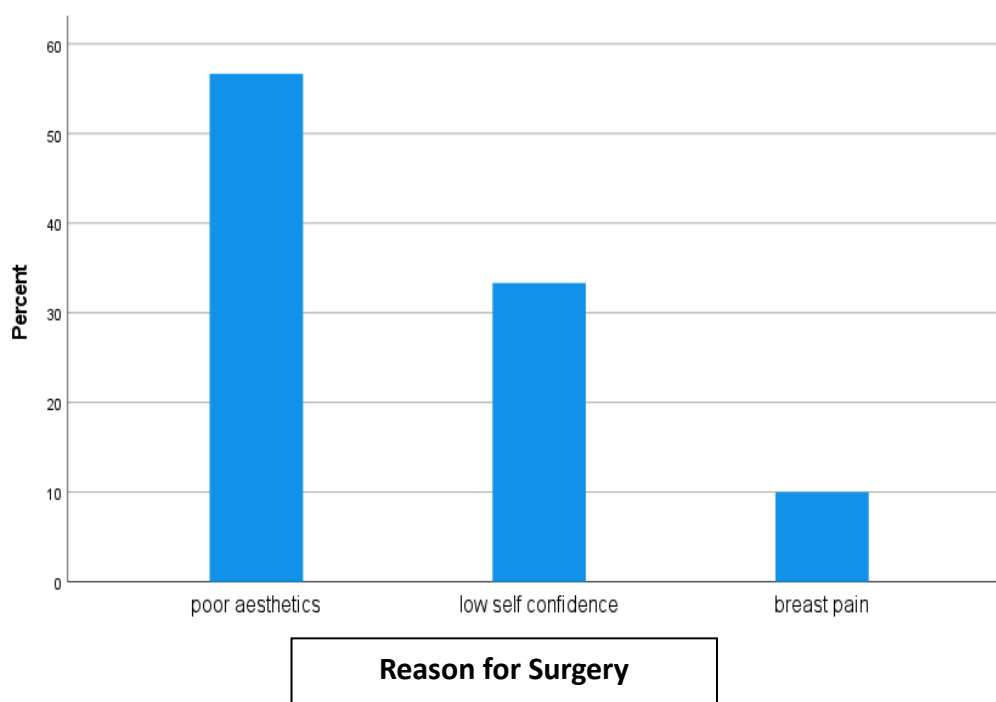
Clinical profile-

The mean duration of disease was 28.4 months. The minimum duration was 14 months and maximum was 72 months. 6(20%) patient had unilateral presentation and majority (80%) had bilateral presentation.



Laterality of presentation

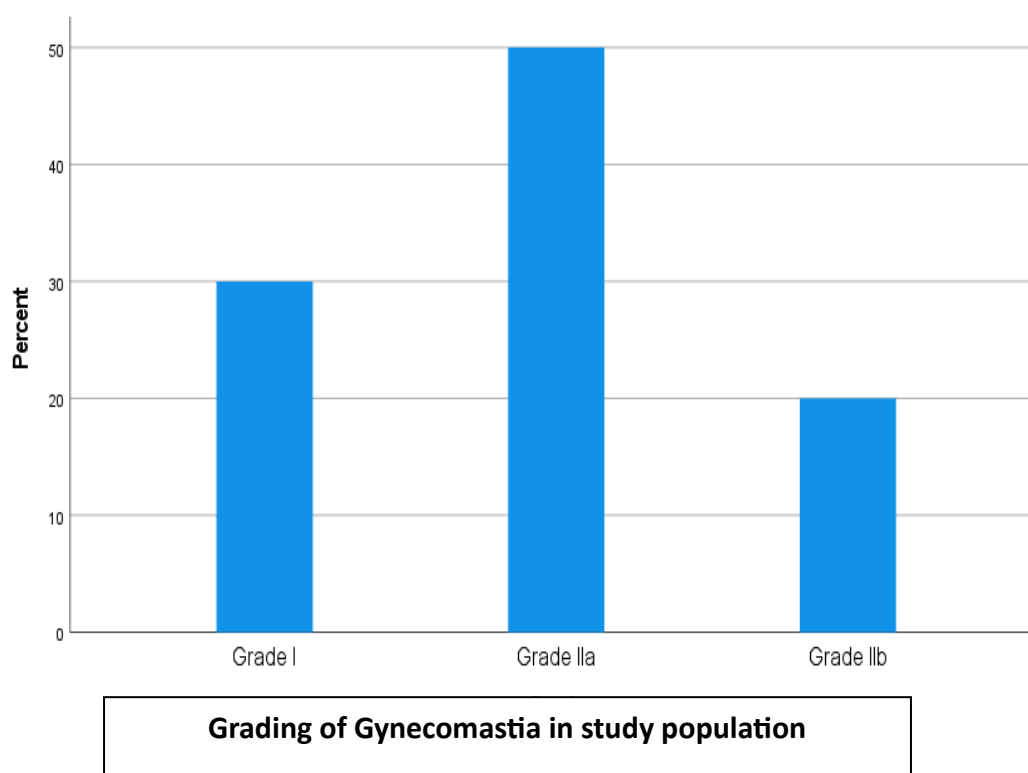
Most common reason for patient to opt for surgery was poor aesthetic outcome (56.7%) secondary to breast enlargement, around (33.3%) had low self confidence and others had pain(10%) .



Hormonal assay and specific investigations were done for 5 patients which revealed Hypogonadism, klinefelters ,drug induced as cause for GM. Majority (25 cases) had idiopathic cause.

Grading

According to simon classification patients were categorised. Around 15 cases(50%) had Grade IIa,9 cases(30%) had Grade I and rest 6 cases(20%) had Grade IIb at presentation. Majority of Grade 1 cases (26.7%) were aged between 21-30 yrs whereas Grade IIa (23.3%) was seen in equal proportion in both early age groups. Grade IIb was seen in both young(10.0%) and middle aged groups(3.3%+6.7%).

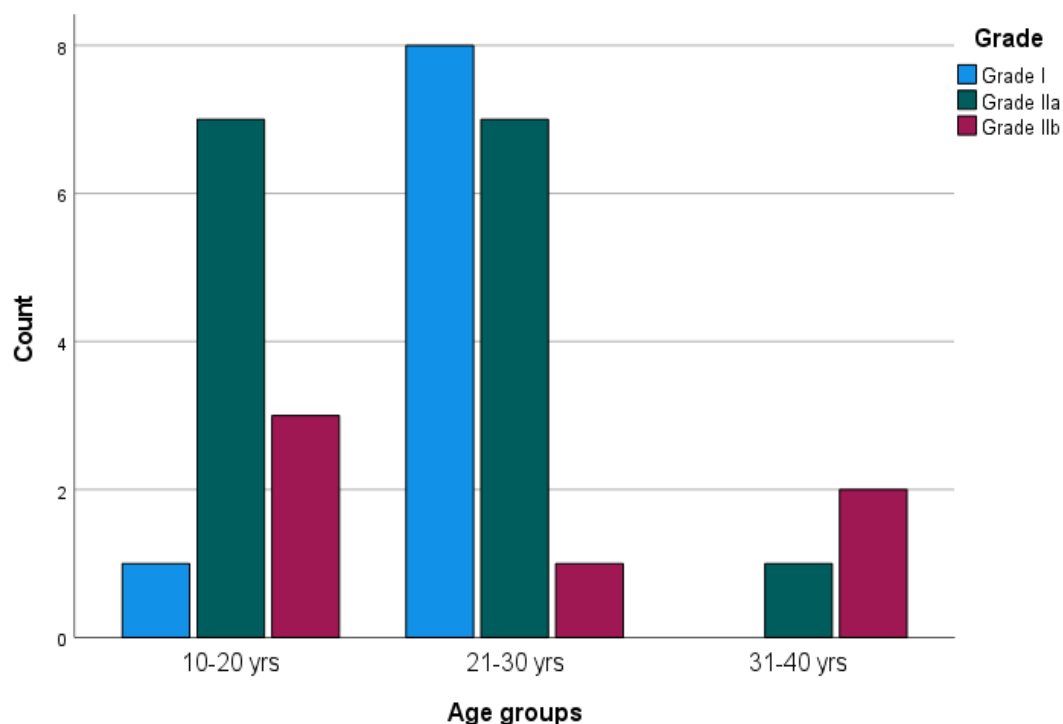


Grade				
		Frequency	Percent	Cumulative Percent
Grade	Grade I	9	30.0	30.0
	Grade IIa	15	50.0	80.0
	Grade IIb	6	20.0	100.0
	Total	30	100.0	

Grade of Gynecomastia in study population

		Age groups		
		10-20 yrs	21-30 yrs	31-40 yrs
Grade	Grade I	3.3%	26.7%	0.0%
	Grade IIa	23.3%	23.3%	3.3%
	Grade IIb	10.0%	3.3%	6.7%

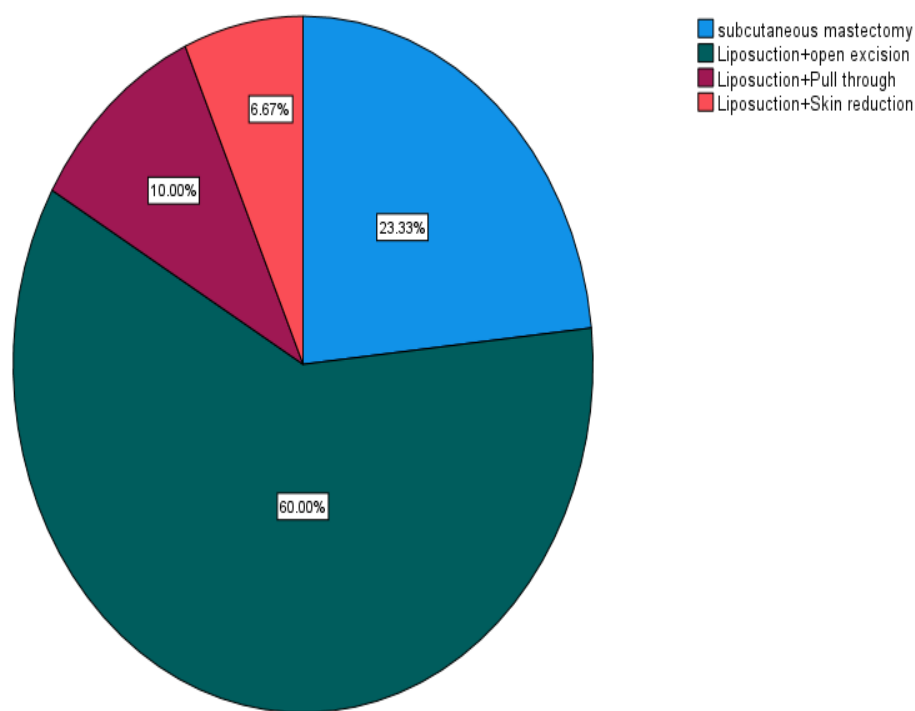
Grade of Gynecomastia in different age groups



Grading of Gynecomastia in different age groups

Type of Surgery

Various surgical procedure were performed depending on grade of GM. Accordingly, majority of cases (60%) underwent SAL+Open excision, followed by SCM in 7 cases (23.3%), SAL + PT in 3 cases (10.0%) and SAL+ SR in 2 cases (6.7%) of grade IIb. Mean operative time of all cases combined was 81.50 min, SAL+ open excision had mean operative time of 88.61min while for SAL + SR it was 112.5 min. Operative time was dependent on type of surgery and whether the case was U/L or B/L.



Type of Surgery

Operative procedure

		Frequency	Percent	Cumulative Percent
Valid	subcutaneous mastectomy	7	23.3	23.3
	Liposuction+open excision	18	60.0	83.3
	Liposuction+Pull through	3	10.0	93.3
	Liposuction+Skin reduction	2	6.7	100.0
	Total	30	100.0	

Operative procedure

Mean Operative time (min)	
Overall	81.50
Subcutaneous mastectomy	58.57
Liposuction + Open excision	88.61
Liposuction + Pull through	71.66
Liposuction + Skin resection	112.5

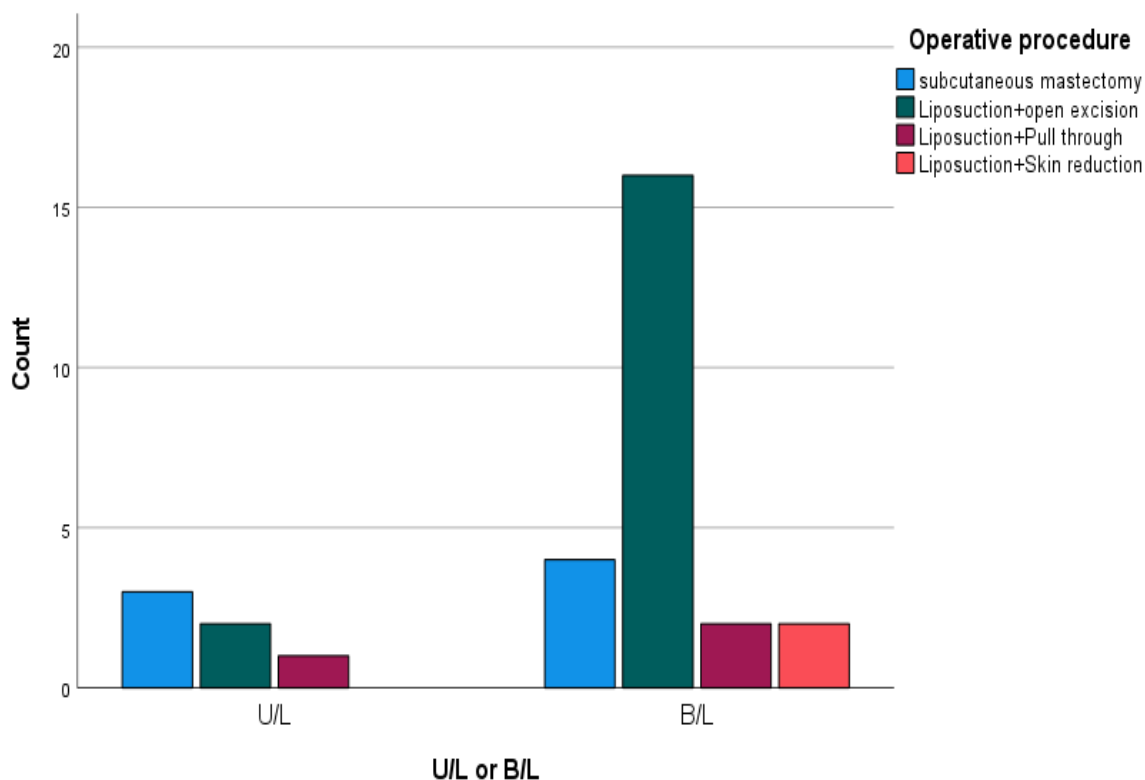
Mean operative time in surgery

U/L or B/L * Operative procedure Crosstabulation

	Operative procedure	Total
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		Subcutaneous mastectomy	Liposuction+open excision	Liposuction+Pull through	Liposuction+Skin reduction	
U/L or B/L	U/L	3	2	1	0	6
	B/L	4	16	2	2	24
Total		7	18	3	2	30

Laterality and operative procedure



Laterality and Operative procedure

Outcome evaluation

Mean satisfaction score for treated cases was 4.2 on day 1 and 4.4 on 4 weeks followup. Majority of the patients were satisfied (50%) and very satisfied (36.7%) on Day 1. Low satisfaction score were of the cases that had complications. After 4 weeks, 36.7% cases were satisfied whereas the percentage of very satisfied increased to 53.3%.

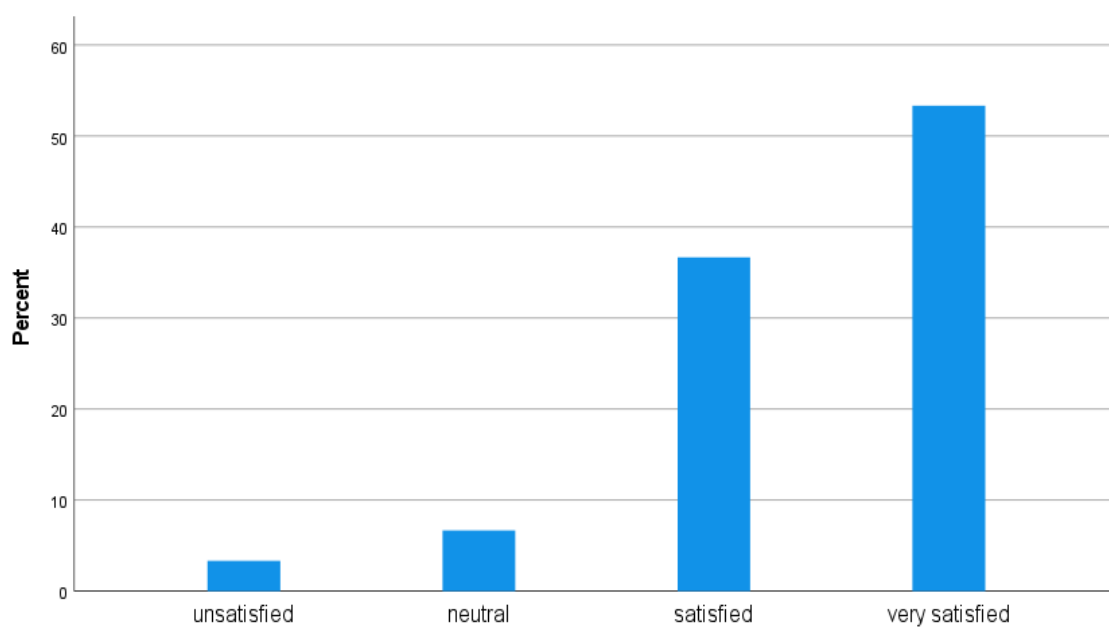
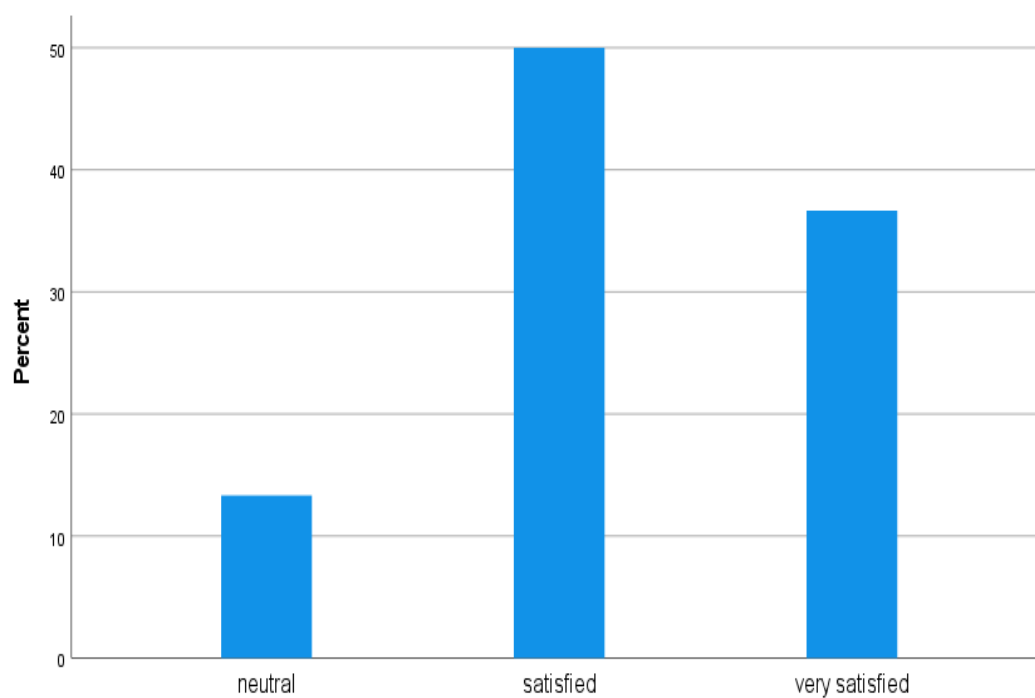
Surgical Aesthetic Outcome:

All operated cases were assessed by the surgeon for aesthetic correction based on Breast contour, breast size, NAC symmetry and projection, Scar visibility on Day 1 and after 4 weeks.

Majority of Grade 1 cases had well maintained breast contour and man like breast appearance, cases with U/L GM had NAC asymmetry whereas scar was aesthetically pleasing in majority of cases.

In Grade 2A, majority of cases had well maintained NAC symmetry and aesthetic scar except for case of superficial necrosis. Breast contour and appearance was excellent in 7 cases and in between in 8 cases. Grade 2B, breast and NAC symmetry was excellent in majority of cases whereas breast size was in between with and average scar appearance in majority of cases.

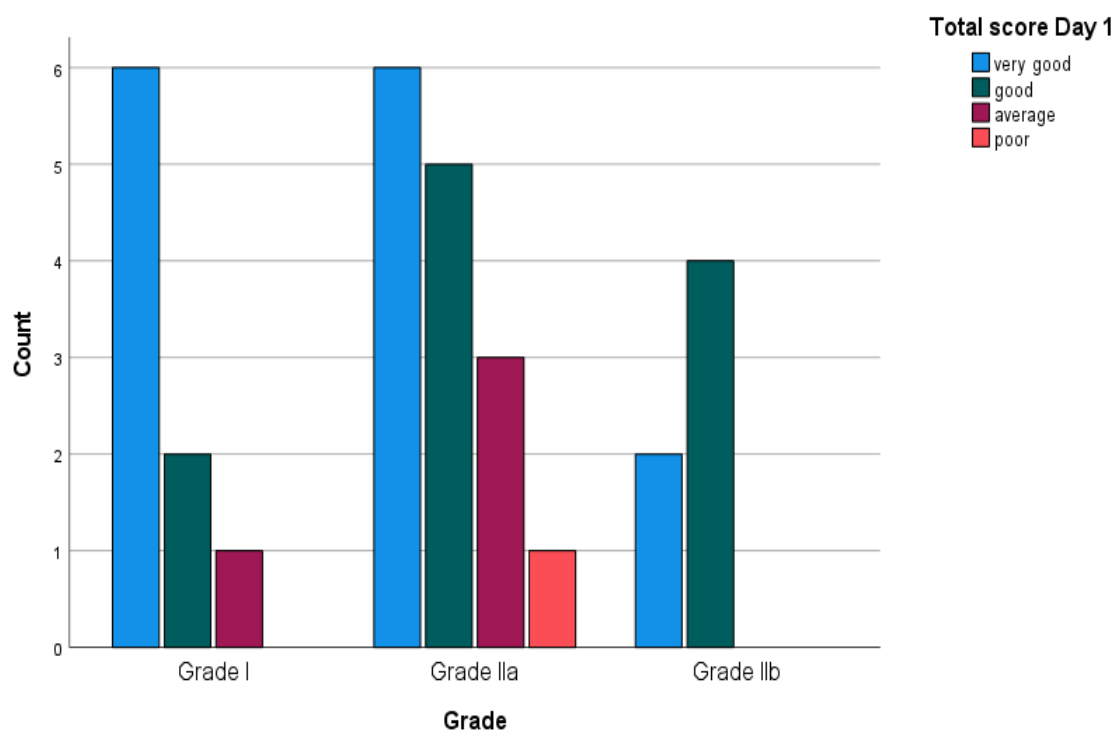
Patient satisfaction Day 1



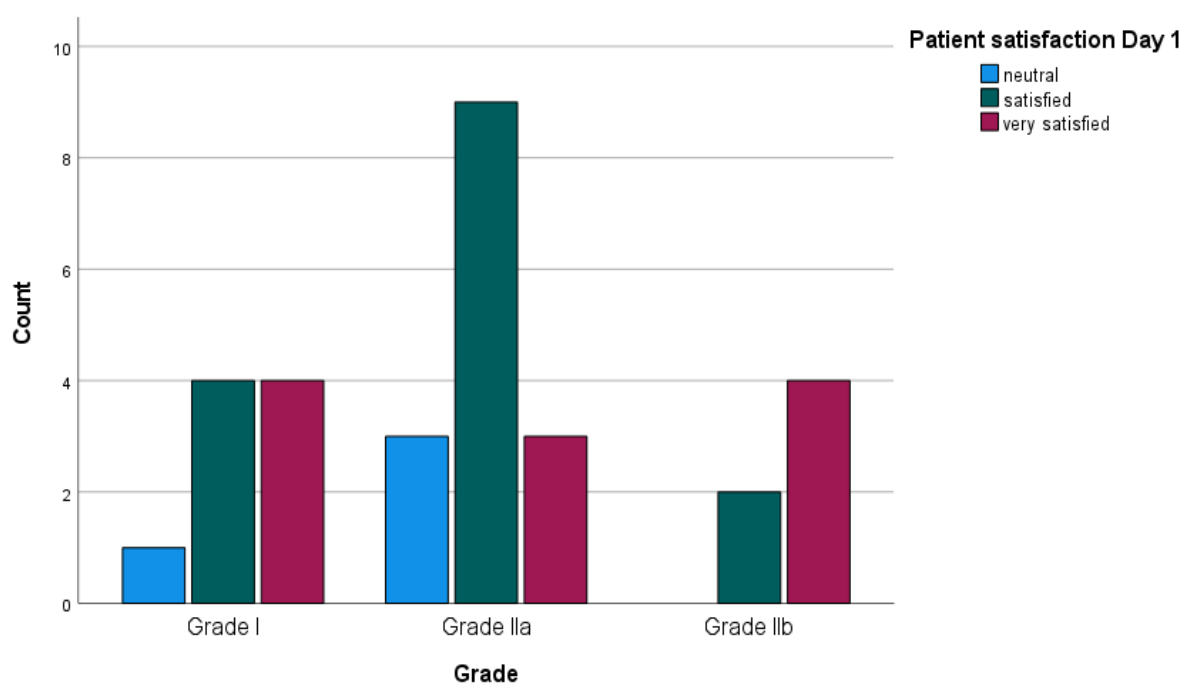
Patient satisfaction 4 wks

Mean patient satisfaction score	
Day 1	4.23
4 weeks	4.40

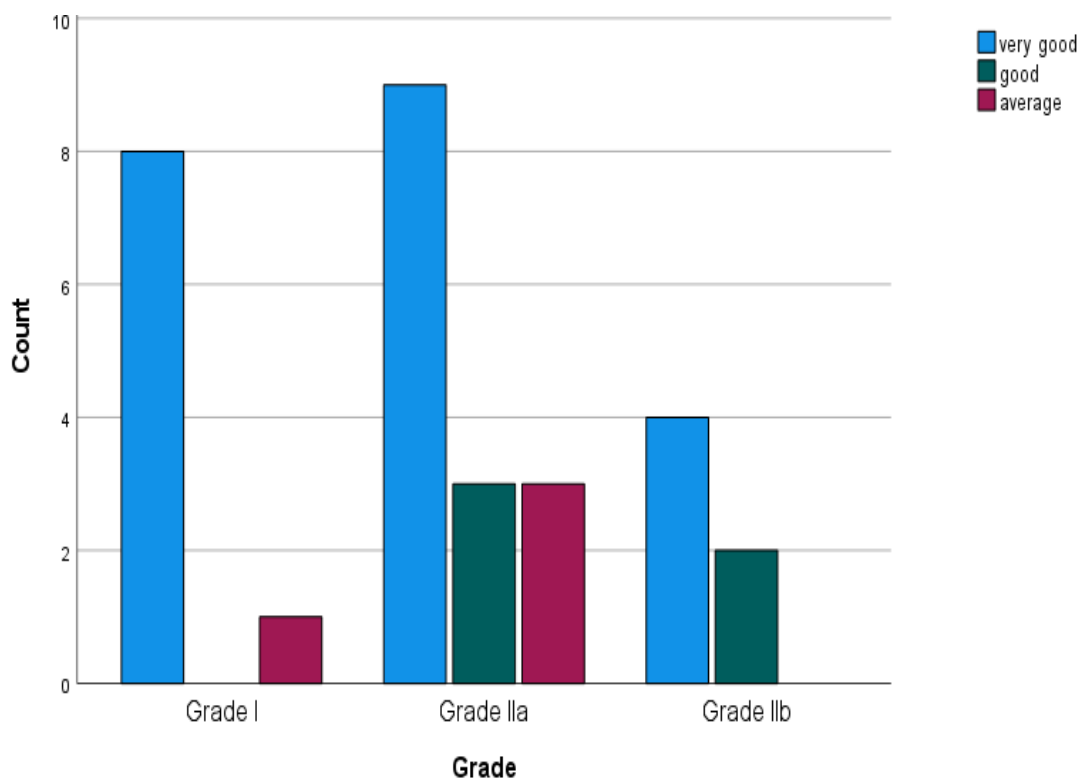
Mean Patient satisfaction score



Total score day 1 and grade



Patient satisfaction day 1 and grade

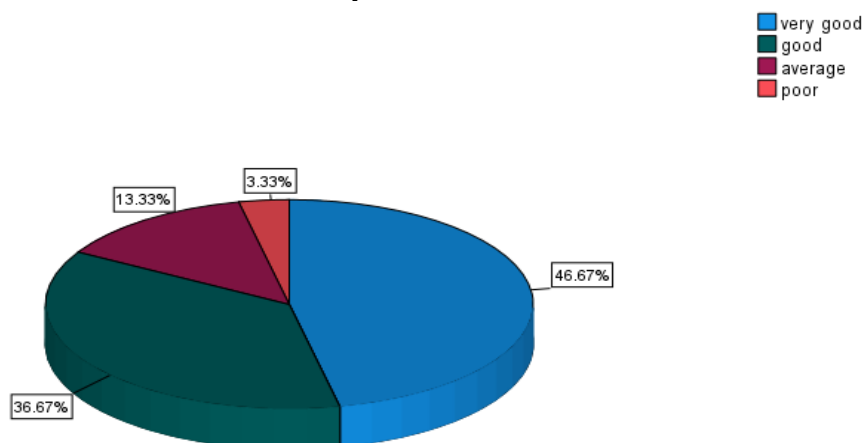


Total score 4 weeks and grade

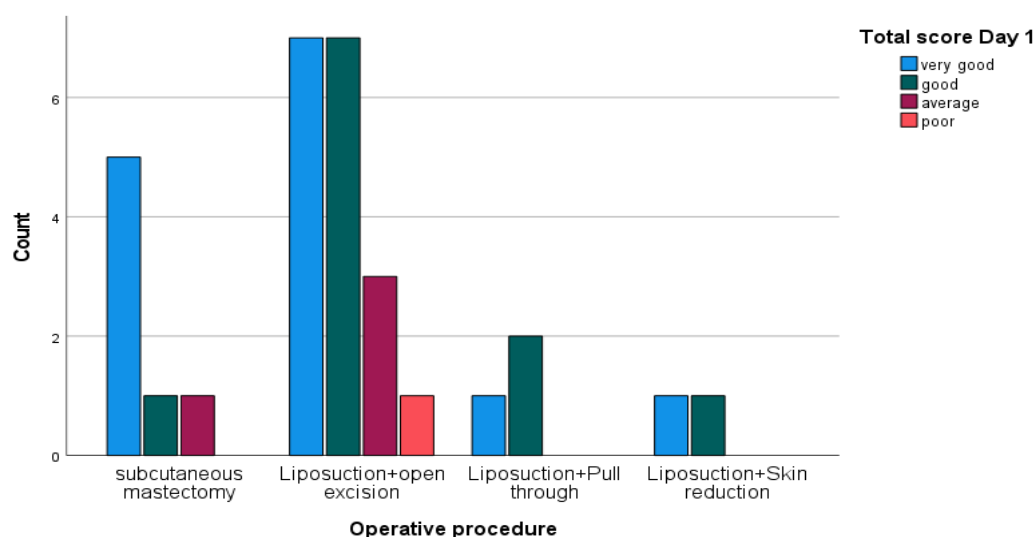
	BREAST CONTOUR			BREAST SIZE			NAC			SCAR		
	Symmetric well positioned	In b/w	Asymmetric malpositioned	Male sized	In b/w	Female sized	Symmetric good projection	In b/w	Asymmetric deformed	Almost invisible	In b/w	Visible, Unaesthetic
Grade I	9	0	0	8	1	0	5	3	1	6	3	0
Grade IIa	7	8	0	7	8	0	10	4	1	10	4	1
Grade IIb	6	0	0	1	5	0	6	0	0	1	5	0

Evaluation parameters

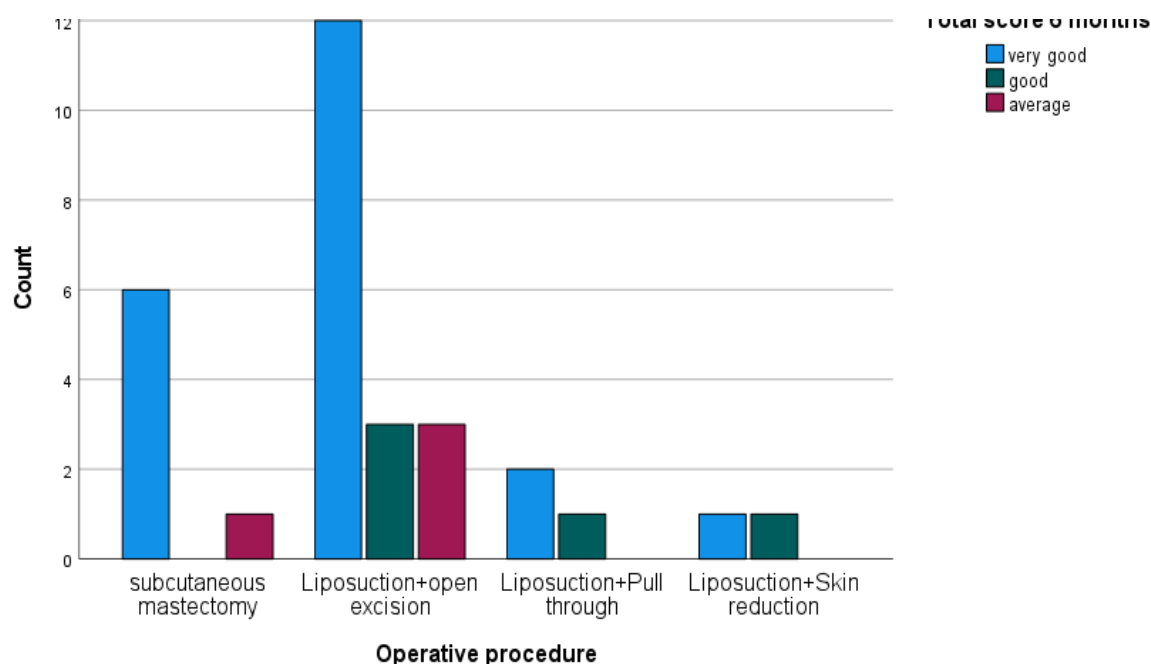
Post op aesthetic outcome



Total score 4 weeks



Total score day1 and procedure



Total score 4 weeks and procedure

Complications

Those events which were directly related to the procedure performed were considered as complication either immediate or late.

Sl.No	Complication	Grade	Surgery	PS score
1)	Superficial necrosis	I	SCM	3
2)	Haematoma	IIb	SAL + SCM	4
3)	Saucer shaped deformity	IIa	SAL + SCM	3
4)	Residual gland	IIa	UAL + PT	3
5)	Superficial necrosis	IIa	SAL + SCM	5
6)	Haematoma	IIa	SAL + SCM	4

Complications

A total of 6 cases (20%) experienced complication. None of them were life threatening, but only delayed hospital stay and influenced aesthetic outcome.

Role of Pressure garments

All operated cases were advised to use chest compression garments for a period of 4 weeks.

Patient satisfaction score and aesthetic outcome was assessed after four weeks. Significant improvement in both the score were noted at 4 weeks compared to POD 1 ($p < 0.001$).

Correlations

		Patient satisfaction Day 1	Patient satisfaction 4 weeks
Patient satisfaction Day 1	Pearson Correlation	1	.607**
	Sig. (2-tailed)		<.001
	N	30	30
Patient satisfaction 4 weeks	Pearson Correlation	.607**	1
	Sig. (2-tailed)	<.001	
	N	30	30

** . Correlation is significant at the 0.01 level (2-tailed).

Correlations

		Total score Day 1	Total score 4 weeks
Total score Day 1	Pearson Correlation	1	.656**
	Sig. (2-tailed)		<.001
	N	30	30
Total score 4 weeks	Pearson Correlation	.656**	1
	Sig. (2-tailed)	<.001	
	N	30	30

** . Correlation is significant at the 0.01 level (2-tailed).

Role of pressure garment

CONCLUSION

Gynecomastia has been an under estimated disease in the Indian population, identified as major psychological issue among young adult and adolescent age group. Hence surgical strategy has to be tailored to suit the expectation and outcome of the patient. As the procedure varies according to grade, appropriate categorization will help in surgical planning and also keeping the procedure cost effective. Various surgical procedure described have been shown to be equally effective in respective grade and the issue to be addressed was in reducing the incidence of complication rate especially with respect to NAC deformity, which influences patient satisfaction score and outcome.

Subcutaneous mastectomy alone in grade 1 cases had an excellent aesthetic appearance and minimal scarring and the ease of procedure performed under local infiltration necessitates this as procedure of choice for grade I cases.

Liposuction has been a time tested and minimally invasive technique for grade II cases because of the aesthetic appearance and scar concealment especially when axillary incision are used. Finally retaining tissue under NAC to prevent saucer shaped deformity and control of bleeding are the most important events to be looked after.

In patients of grade IIb with ptosis additional skin reduction procedure like mastopexy had an excellent outcome which outweighed the prolonged operative time. Proper postoperative followup and use of compression vest influences the long term outlook and appearance.

Overall gynecomastia surgery has been a reliable and safe procedure, patients were well satisfied and outcome was very good according to observers rating.

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