GYNAECOMASTIA: MANAGEMENT IN A DEVELOPING COUNTRY

Ambreen Muneer, Zameer Hussain Laghari, Abdul Razaque Shaikh, Qamber Ali Laghari
Department of Surgery Liaquat University of Medical and Health sciences, Jamshoro, Pakistan

Background: Gynaecomastia is a benign enlargement of male breast. It is common in the general population, resulting from various pathophysiological mechanisms. The aim of this study was to describe the presentation and outcome of treatment for gynaecomastia at a University Hospital in Pakistan. **Methods:** A three year retrospective study was carried out of one hundred men with gynaecomastia. Patients were evaluated in detail clinically and by appropriate investigations. They were counselled and kept on hormonal therapy for three months. Surgery was considered for patients with long standing gynaecomastia, failed medical therapy and for cosmetic reasons. Post operative complications and patient's satisfaction was assessed. **Results:** Most (90%) cases were idiopathic. Other causes were liver cirrhosis in 4 cases, testicular tumour in two, thyrotoxicosis in one and drug induced (use of cimetidine and *Kushta*) in two. Carcinoma of the breast was diagnosed in one patient. Most of the patients had bilateral, non tender lump in the breast. Three cases of idiopathic gynaecomastia resolved on danazol. Eighty-eight cases underwent surgical treatment. The mean age of patients who underwent surgery (n=88) was 30.5±9.59 years. Most of the patients belonged to 21–30 years age group. Major indications for surgery were failure of medical treatment (45.5%) and cosmetic reasons (34.0%). Mean operating time for subcutaneous mastectomy was 42.2±3.70 (36–48) minutes. Mean hospital stay after subcutaneous mastectomy was 5.2±2.44 (2–10) days. The only postoperative complication noted was wound infection (24%). Seventy-two (81.8%) were satisfied with the results of their surgical treatment. **Conclusion:** Gynaecomastia is the common condition affecting male breasts and most common cause of gynaecomastia is idiopathic. Secondary gynaecomastia may regress in size by treating the primary cause. Idiopathic gynaecomastia do not respond to danazol so they needed surgical treatment. Subcutaneous mastectomy through a periareolar skin incision is a valid procedure for treatment for gynaecomastia and provides satisfactory cosmetic results.

Keywords: Gynaecomastia, Male breast, Management, Subcutaneous mastectomy

INTRODUCTION

Normally male breast is vestigial, but under certain hormonal and drug influences, there is an increase in ductal and connective tissue elements of the male breast. It is called Gynaecomastia. It is a benign enlargement of the male breast due to proliferation of the glandular components.[1] It was first reported by Paulus Aegineta (690–625 AD) who thought it was due to formation of fat. It is the most common benign breast condition in men. It accounts for 35–65% of lesions in male breasts depending on the criteria for diagnosing gynaecomastia and the age group.[2–4]

Gynaecomastia may be true, when breast enlargement is due to hyperplasia of the glandular elements, or pseudo-gynaecomastia, when the breast enlargement is secondary to fat accumulation, or mixed, when both the glandular and fat tissues are present in the gynaecomastia.[5,6] Gynaecomastia is thought to result from an imbalance in oestrogen/ androgen at the site of the breast which can be caused by various pathophysiological mechanisms.[7] Physiological gynaecomastia associated with a change in hormone levels has been reported in newborns, boys at puberty and in older men. Pathological causes of gynaecomastia include drugs, tumours, liver and renal failure, congenital defects and endocrinopathies.

Gynaecomastia present clinically as either a unilateral or a bilateral rubbery or firm mound of tissue concentric to the nipple with localized pain and tenderness suggestive of rapid development over a short time interval. Bilateral enlargement indicates a low probability of cancer.[8] Pain is more common in benign gynaecomastia, but the lack of symptoms is not helpful in differential diagnosis.[9]

Gynaecomastia itself requires no treatment, unless it causes discomfort or embarrassment to the patient. Therefore the mode of treatment depends upon the cause of the disease. Drug induced gynaecomastia should be identified, as reversibility with drug withdrawal is the rule. While in the case of idiopathic gynaecomastia, the mode of treatment is commonly relief of symptomatic pain by analgesics. In persistent and long standing gynaecomastia surgical therapy is commonly accepted as the standard treatment.

The aim of our study was to describe the presentation and outcome of treatment for gynaecomastia at Liaquat University of Medical and Health Sciences Jamshoro, Pakistan.

PATIENTS AND METHODS

We performed a retrospective study of all male patients attending Surgical Outpatient Department of Liaquat University of Medical and Health Sciences Jamshoro

with a clinical diagnosis of gynaecomastia between January 2005 and December 2007. A thorough history was taken in every case. The patients were asked the age of onset, duration of gynaecomastia, recent change in the size of the nipple or discharge and presence of pain. Secondary causes of gynaecomastia were ruled out with a careful history with specific questions about the use of medication, drugs, and alcohol in combination with questions about the symptoms of hepatic dysfunction, decreased sexual functioning, pulmonary symptoms suggestive of lung cancer, and hyperthyroidism. All patients underwent clinical examination in the outpatient clinic. In the physical examination, patient's overall health and nutritional status was noted. Physical signs of liver, thyroid and renal disease and signs of feminization were also noted. The testis and breast were examined. An attempt was made to assess whether the enlargement was true gynaecomastia or pseudo-gynaecomastia because the latter does not merit further evaluation.

All patients underwent investigations including complete blood count, liver function tests and hormonal assays. Ultrasound scan was used as a standard imaging modality. True gynaecomastia was diagnosed in men who had ultrasonic evidence of the condition. Fine needle aspiration cytology was performed when the surgeon felt that the breast was clinically suspicious of carcinoma. After evaluation, the patients of puberty gynaecomastia were reassured and followed up. Hormonal therapy, i.e., Danazol was prescribed to those who did not resolve spontaneously, to whom there was no secondary cause for gynaecomastia and to patients who had gynaecomastia of recent onset. After three months of hormonal treatment, all these patients were re-examined. The surgery was performed if they failed to respond to Danazol.

Subcutaneous mastectomy with a semicircular periareolar was performed for benign gynaecomastia. After surgery, patients were released from the hospital after assessment for possible immediate complications. Treatment continued at the outpatient clinic where the surgical wound was evaluated for the presence of abnormal fluid collections or complications. At the outpatient clinic history from patients regarding general health, psychological satisfaction and time taken for return to normal activities was recorded. Data was collected on a standardised form.

The data was evaluated in SPSS version 16.0. The Pearson's Chi-square test was applied among the categorical parameters, to calculate the frequencies and percentages on 95% confidence interval. The continuous parameters were calculated as Mean±SD, $p \leq 0.05$ was considered as significant.

RESULTS

One hundred cases were examined during three year study period. It was found that most of the cases were idiopathic (90%). The other causes of gynaecomastia were liver cirrhosis in 4 cases, one case was due to *Kushta* (containing marijuana) using since three years for aphrotidism, two cases due to testicular tumours, one case due to thyrotoxicosis and one case due to intake of cimetidine. Carcinoma of the breast was diagnosed in one patient. These nine cases of secondary gynaecomastia regressed in size by treating the underlying disease. Eighty-eight cases were subjected to surgical treatment, while three cases of idiopathic gynaecomastia resolved on Danazol.

The mean age of patients who underwent surgery (n=88) was 30.5±9.59 years (range 12–65 years). While mean age of patients who were medically treated (n=12) was 39.8±14.75 years (range 22–70 years). Most of the patients belonged to 21–30 years age group (Table-1).

Table-1: Age distribution of patients

Age group (years)	Treatment		*p*
	Medically (n=12) n(%)	Surgically (n=88) n(%)	
11–20	0	10(11.4)	0.05
21–30	4(33.3)	48(54.5)	
31–40	3(25.0)	17(19.3)	
41–50	2(16.7)	10(11.4)	
51–60	2(16.7)	2(2.3)	
>60	1(8.3)	1(1.1)	

From the group of patients who underwent surgery, 34 had gynaecomastia for less than a year, 42 suffered for a period of 1–2 years and 12 patients' duration was more than 2 years. Majority number of patients who were medically treated had disease duration of 1–2 years, while those with duration of more than 2 years were in a smaller number (Table-2).

Table-2: Duration of symptoms

	Treatment		*p*
	Medically (n=12) n(%)	Surgically (n=88) n(%)	
<1 year	4(33.3)	34(38.6)	0.89
1–2 years	6(50.0)	43(48.9)	
>2 years	2(16.7)	11(12.5)	

Most of the patients with gynaecomastia had a bilateral, non tender lump in the breast. Other symptoms were testicular swelling, jaundice due to cirrhosis, acid peptic disease, abdominal distension due to ascites and increased appetite with history of weight loss (Table-3).

Table-3: Symptoms of patients

	Treatment	
	Medically (n=12) n(%)	Surgically (n=88) n(%)
Bilateral breast lump	7(58.3)	47(53.4)
Unilateral breast lump	5(41.6)	41(5.6)
Non tender lump	11(91.6)	73(82.9)
Tender lump	1(8.3)	15(17.0)
Testicular swelling	2(16.6)	0(0)
Jaundice	2(16.6)	0(0)
Abdominal Distension	1(8.3)	0(0)
Increased appetite & weight loss	1(8.3)	0(0)

Fourteen cases were anaemic, fine outstretched hand tremors were present in three cases, jaundice, oedema and ascites (due to cirrhosis) were present in two cases, palpable spleen (due to portal hypertension), exophthalmos (due to thyrotoxicosis) and nipple destruction (due to carcinoma of breast) were present in one case (Table-4).

One case of unilateral gynaecomastia with nipple destruction was found to have malignant cells on fine needle aspiration cytology.

Table-4: Physical findings

	Treatment	
	Medically (n=12) n(%)	Surgically (n=88) n(%)
Anaemia	2 (16.6%)	12 (13.6%)
Jaundice	2 (16.6%)	0 (0)
Oedema	2 (16.6%)	0 (0)
Exophthalmos	1 (8.3%)	0 (0)
Fine out stretched hand tremors	3 (25.0%)	0 (0)
Ascites	2 (16.6%)	0 (0)
Palpable spleen	1 (8.3%)	0 (0)
Nipple destruction	0 (0)	1 (1.13%)

Major indications for surgery in patients with gynaecomastia were failure of medical treatment (45.5%) and cosmetic (and accompanying psychological) reasons (34.0%). Other indications were tender lump and lump proved as carcinoma breast.

Table-5: Operative & Postoperative data

	Results (n=88) n(%)	
Indications		
Failure of medical treatment	40(45.5%)	
Cosmetic purposes	30(34.0%)	
Tender lump	17(19.3%)	
Ca. breast (proved on biopsy report)	1(1.13%)	
Types of surgery		
Subcutaneous Mastectomy	87(98.8%)	
Total mastectomy	1(1.13%)	
Operative time Mean±SD (Range)		
Subcutaneous Mastectomy	42.2±3.70 (36–48)	
Total mastectomy	40±0 (36–48)	
Hospital stay (days) Mean±SD (range)		
Subcutaneous Mastectomy	5.2±2.44 (2–10)	
Total mastectomy	10.0±0 (2–10)	
Wound infection (complication)		
Subcutaneous Mastectomy	23 (26.43%)	
Total mastectomy	1 (100%)	
	Treatment (n=100)	
	Medically (n=12) n(%)	Surgically (n=88) n(%)
Patient Satisfaction:		
Fully Satisfied	9(75.0)	72(81.80)
Slightly Satisfied	2(16.70)	12(13.60)
Dissatisfied	1(8.30)	4(4.50)

Eighty-eight patients were treated by different surgical procedures (Table-5). One case (1.13%) proved as carcinoma breast, underwent total mastectomy. Mean operating time for subcutaneous mastectomy was 42.2±3.70 (36–48) minutes. Mean hospital stay after subcutaneous mastectomy was 5.2±2.44 (2–10) days. The only postoperative complication was wound infection, which was noted in 24 patients, majority of which were operated by subcutaneous mastectomy. Most of the patients were fully satisfied with the results of their treatment, 75% of those who were treated medically and 81.8% of those who were treated surgically (Table-5).

DISCUSSION

Many males experience gynaecomastia at some stage of their life. The prevalence varies from country to country, i.e., 30–40% in United Kingdom[1], to as high as 65% of adult males between 15–40 years in Italy[10], 65% at 14 years in USA[11]. However, there is no available literature for the prevalence of disease in our country. In our setup, relatively fewer patients report to surgeons for this disease, probably due to shame or guilt.

Gynaecomastia is a source of embarrassment, surprise and concern to the young as well as the elder men. The usual reason for presentation is that young men don't like having breasts and older men are worried about the possibility of cancer.

From a surgeon's point of view, gynaecomastia has two important aspects. First is to differentiate between physiological or pathological gynaecomastia and second, to refrain from surgery until there are strong indications to do so.[12]

Gynaecomastia is more common amongst males of two age groups, i.e., 12–16 years and the elderly. In the middle- aged adult male population breast tissue is palpable in 30% or more and with advancing age this increases to >60% by the seventh decade.[13,14] In our study, most of the cases presented were below 40 years of age and most of them underwent surgery due to failed medical treatment and cosmetic reasons.

Conditions associated with gynaecomastia vary, but approximately half of the cases are either idiopathic or persistent pubertal gynaecomastia without a significant secondary cause. There are several case series in the literature in which no cause could be revealed in the majority of the boys.[1,15,16] Similarly in our study, the major cause of gynaecomastia in 90% of cases was found to be idiopathic. In contrast to previous reports in which drug induced gynaecomastia was 20%, the second major cause of our cases was cirrhosis of liver. It is probably due to the fact that viral hepatitis is more common in our country. Similar to previous reports in which 3% of gynaecomastia was due to testicular neoplasms, our study showed testicular tumours causing gynaecomastia in 2% of cases[17]. Although frequently bilateral and symmetrical, gynaecomastia of any cause can be unilateral or asymmetric. In our study, unilateral gynaecomastia was noted in 47.2% of patients. In other large series, the

incidence of unilateral involvement varies from 14–51%.[18,19]

In evaluation of gynaecomastia confirming the presence of breast tissue is an important step. In our patients, this had been done by physical and radiological examination. We used ultrasound of breast as imaging modality of choice because of its easy availability and expertise in diagnosing male breast lesions. Mammography has been shown as technically difficult because of the small size of male breast. Mammography of the male breast accounts for less than 1% of mammographic examinations done in breast imaging centers.[20] Some authors believe that the use of both modalities in each case improves diagnostic accuracy.[21,22] However, ultrasound has been used successfully to differentiate between gynaecomastia and other causes of swelling of the breast area in men[23]. FNAC is regarded as an accurate tool for the diagnosis of female breast lesions and it is highly sensitive and specific. On the other hand, the yield of cells taken in gynaecomastia is often unsatisfactory and needs to be repeated. The reason is that gynaecomastia is a predominantly fibrous lesion. In our study, FNAC was performed in cases where there was a suspicion of malignancy. Many reports by different authors have varying opinion on use of FNAC in men and it is also considered by some as uncomfortable procedure for men.[23-26]

The duration of gynaecomastia is important in evaluating possible treatment; if less than 1 year may respond well to therapy, whereas in cases of longer duration the gynaecomastia may become irreversible. In such cases the surgery may be the only available option. The aim of surgery is to reduce the breast size to the normal male contour, to eliminate the painful tissue and to restore the patient's chest to an acceptable cosmetic shape[23]. There are many surgical procedures for management of gynaecomastia, including subtotal mastectomy, subcutaneous mastectomy and reduction mastoplasty.

The surgical procedure performed in our study was the subcutaneous mastectomy by semicircular periareolar incision. It was first described by Webster in 1946. Slight differences from the standard subareolar incision and procedure of dissection have been defined and rejected one after the other. In literature, a large number of surgical procedures have been described indicating that there is no generally accepted satisfactory approach.[26-31] In our experience of the study, we did not have any difficulty in getting the required exposure from Webster's incision. In no case did we need to extend the incision, for inadequacy of the exposure.

Nipple areolar depression after resection for gynaecomastia can be avoided by preserving an ample amount of breast tissue and fat under the areola. If a marked depression of the areola occurs, correction can be difficult. Each patient requires an individual assessment, but the principle of rotation of soft tissue under the nipple areola complex is usually necessary. An effective way to accomplish this is by deepitheliazation of a semi lunar area inferior to the original subareolar scar, freeing it at its caudal border and advancing this deepitheliazed flap under the areola and repairing the wound. The technique is simple in design and may be a useful tool in dealing with this difficult problem. Aslan *et al* suggest a modified surgical access that uses a W-shaped periareolar-transareolar-perithelial incision to provide wide exposure of the resection area and to facilitate nipple-areolar reduction in advanced stages.[32] Colombo-Benkmann performed surgical treatment of 100 patients and obtained 86% satisfactory result. Most authors suggest a hemi-circumareolar or periareolar incision and preservation of nipple. There is general agreement that the operation is cosmetic and should be performed only by surgeons with the appropriate experience because the development of unaesthetic scarring may result in a worse problem than the original condition. A number of innovations in recent years have been proposed to further improve cosmetic results. These include liposuction, ultrasound-assisted liposuction, endoscopic techniques and use of vacuum-assisted biopsy device. The liposuction is particularly useful in the management of pseudo-gynaecomastia and probably less effective in patients with true glandular gynaecomastia.[33] The ultrasound assisted liposuction can be attempted for all types of gynaecomastia as suggested by Hodgson *et al* who report satisfactory results. We have no experience of liposuction due to non availability of the instruments.[34]

The only complication after surgery noted in our study was wound infection. Previous reports suggest that most frequent complications after subcutaneous mastectomy are hematoma or seroma formation. Other complications associated with this type of surgery are doughnut deformity, nipple necrosis, nipple flattening, inversion or loss of sensation. Other case series have described an overall complication rate of up to 28%. In a study of 100 patients Colombo-Benkmann reported minor complications such as skin retraction, hypertrophic scars, hypaesthesia and skin redundancy in 53% of cases and hematoma occurred in 11.4% of these cases.[19] In order to reduce the incidence of complications, Pitanguy suggested a transareolar incision and obtained satisfactory results in all patients, except one case where a hypertrophic scar occurred.[35]

The psychological assessment of patients after treatment of gynaecomastia in our study showed a high degree of patient satisfaction. There was an improvement in patient's self confidence and quality of life. This finding is consistent with the results of other series, which have described more than 85% patients

satisfied with the outcome.[36] Although in some cases we achieved less than perfect results, yet the patients were satisfied. They were probably more than happy to get rid of an extremely embarrassing condition.

CONCLUSION

Most common cause of gynaecomastia in young adult males is idiopathic. Secondary gynaecomastia may result from metabolic disorders, testicular tumours, drug induced, endocrinal disease and rarely carcinoma of the breast. Secondary gynaecomastia may regress in size by treating the primary cause, like patient with thyrotoxicosis responded to anti-thyroid drug. Patients with idiopathic gynaecomastia do not respond to medical treatment, so they needed surgical treatment. In addition, patients who have long standing gynaecomastia, who are experiencing psychological or emotional distress, or who have significant breast pain are potential candidates for surgery. Among different available surgical procedures for gynaecomastia, subcutaneous mastectomy is the preferred method. The high incidence of wound infection can be reduced by good surgical techniques, avoidance of creation of dead space and use of good antibiotics according to pus culture and sensitivity report. Subcutaneous mastectomy through a periareolar skin incision is a valid procedure for the treatment for gynaecomastia and provides satisfactory cosmetic results.

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Address for Correspondence:

Dr. Ambreen Muneer, Assistant Professor, Department of Surgery, LUMHS, Jamshoro, Pakistan. **Res:** House No. C-112, Sharif Square, Hussainabad, Hyderabad, Pakistan. **Cell:** +92-333-2716337
Email: banglani_90@hotmail.com