

## Original Research Article

# Study of spectrum and clinical profile of benign breast disease in the rural area: is there any change

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### ABSTRACT

**Background:** Recent understanding of pathophysiology and health awareness may have impact on spectrum of benign breast disease (BBD) in rural area. We have analyzed clinical data of 88 cases of BBD for spectrum and clinical profile to compare with present studies.

**Methods:** Clinical records of 88 cases of BBD were reviewed for demographic details, clinical presentation, management and outcome. Recent literature related to BBD in rural area was searched using various search engines. Results of our study were compared with recent studies.

**Results:** Fibroadenoma (FA) was most common condition followed by fibrocystic disease. BBD were common in third decade 46 (52.3%). Lump was present in 87 cases. Lump was painful in 45 (52.3%), and associated with fever in 15 (17.1%) cases. Fine needle aspiration cytology and ultrasound was done in 70 and 32 patients in which diagnostic accuracy with histopathology was seen in 69.7% and 56.2% respectively. Surgical treatment included lumpectomy, lump excision, mastectomy, drainage with debridement and axillary clearance. Three patients of breast tuberculosis were treated with 9 months AKT. When compared with recent studies, over all spectrum was same expect chronic abscess presenting as lump was more in our series.

**Conclusions:** Our study revealed benign neoplasms, inflammatory condition and tumor like lesions in 43.1%, 14.6% and 13.8% cases respectively. FA was the most common lesion. BBD were common in third decade. Except the chronic mastitis, incidence of various types of benign lesions was comparable with those found in other studies. There is not much change in overall spectrum of benign breast disease.

**Keywords:** Benign breast diseases, Fibroadenoma, Fibrocystic disease, Mastitis

### INTRODUCTION

Breasts or mammary glands in the females can be considered as a distinguishing and unique feature of mammals.<sup>1</sup> Its development and growth are under the control of various hormones and various physiological statuses like menstruation, pregnancy, lactation and menopause. Further, it undergoes several cyclical changes during the reproductive life. Its physiology and histology are influenced by the hormones during puberty,

menstruation, and menopause. Benign breast diseases (BBDs) are the group of non-cancerous condition which includes a variety of diseases. They are most common cause of breast problems in females and are more frequent than those of malignant.<sup>2-7</sup>

In the western countries they are 10 times more common as compared to breast cancer.<sup>8</sup> BBD constitute a heterogeneous group of breast lesions which include developmental abnormalities, inflammatory and

granulomatous lesions, epithelial and stromal proliferations, and benign neoplasms.

The patients commonly present with pain, lump or nipple discharge. 30% of the women who suffer from BBDs require treatment at some part of the time during their entire life.<sup>9</sup> In past two decades, there are developments in our understanding of pathophysiology of breast diseases. There is an increase in the public awareness about overall health and breast diseases. Health care systems and infrastructure has also been improved all over India. Rural population, particularly, female suffer from various benign diseases. Recently some of the authors have published their studies of clinical profile of BBD in rural areas. But there are no studies to see whether developments in understanding of BBD have any implications on clinical spectrum and profile of BBD in rural population. We have done the study of our clinical data of patients of BBD collected during 1999 to 2001 and analyzed for various parameters. We compared our results with studies in published literature to look for changes in clinical spectrum and profile of BBD.

#### ***Aims and objectives***

Retrospective study of all clinical records was done to study of demographics details, clinical spectrum and clinical profile of benign breast diseases in rural area of Maharashtra. Records were also studied for age, sex, location and incidence wise study of benign diseases in our study group. Further study was done to compare our findings with findings by other authors whose papers are published in literature.

#### **METHODS**

Clinical study was conducted at Swami Ramanand Tirth Rural Medical College Ambajogai, which is located in rural area in the Beed district of state of Maharashtra. This study was done during January 1999 to May 2001. Necessary ethical authorization was taken from institutional authorization committee.

As per protocol, patients presented with different breast related problems like lump in breast, nipple discharge, associated fever and mastalgia were admitted in surgical ward for evaluation. Patients were clinically examined to record all clinical details. Sonography, mammography and fine needle aspiration cytology was done in selected cases as per need. Patients were posted for surgery as indicated. Final diagnosis was made after histopathological examination of the specimen.

#### ***Inclusion criteria***

Patient of either sex, presented with breast lump, nipple discharge, sinus, associated fever and mastalgia in whom histopathology revealed any type of non-malignant BBD were included in the study.

#### ***Exclusion criteria***

Patient treated on outdoor patient basis were excluded further patient with malignant breast lesions and acute breast abscess requiring incision and drainage were excluded from the study.

All patients satisfying above criteria were considered for the study. All clinical records were collected, tabulated on Microsoft excel sheet and evaluated for various parameters like age, sex, type of breast disease. Statistical analysis was done using Microsoft excel tools and formulae. Type of clinical presentation, site and quadrant of breast lesion was noted. Further study was done to see menstrual and lactational status of the patient at the time of presentation. Clinical, imaging and histopathological diagnosis was noted. Information regarding surgical and medical treatment given to the patients was collected and reviewed.

Histopathologically cases were classified as benign neoplasms, inflammatory lesions and tumor like lesions. Pure benign neoplasm included fibroadenoma (FA), lactating adenoma, phylloid tumor and tubular adenoma. Inflammatory lesions included acute mastitis presenting as a lump, chronic mastitis clinically labelled as antiobiooma and tuberculosis of breast. Tumor like lesions included fibrocystic disease (FCD) and gynaecomastia.

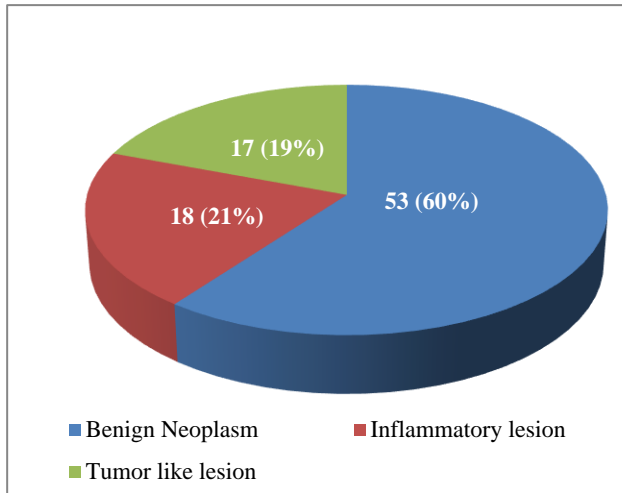
Recent literature and studies on BBD from other rural area of India was searched on internet using PubMed, Medline, Google and other search engines. Our clinical results were compared with findings in the recent literature.

#### **RESULTS**

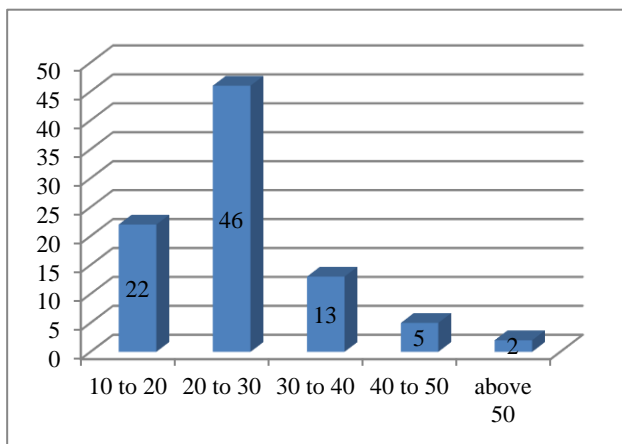
Out of 88 patients with histopathologically proved benign lesions only 2 patients were male and rest all were female. As shown in Figure 1, benign neoplasm were 53 (60.3%). 18 (20.4%) were inflammatory lesions and 17 (19.3%) were tumor like lesions. Table 1 shows the spectrum of benign breast lesions. Fibroadenoma is the most common benign neoplasm seen in 46 (52.3%) cases followed by fibrocystic disease seen in 15 (17.1%) cases. out of 88 patients only 4 patients 4.5% had bilateral disease rest were unilateral. Unilateral lesion in right or left breast is seen in 43 (48.9%) and 41 (46.6%) cases respectively. Unilateral multiple lumps were present in one case of FCD (Figure 3A).

Ages of the patients were ranging from 12 years to 60 years. As shown in Figure 2, benign lesions were common in third decade 46 (52.3%). Looking at individual disease, fibroadenomas were also commonly seen in third decade. 27 (58.7%) out of 46 cases of FA were seen in third decade. Benign phylloid tumor was seen in fourth and sixth decade. Looking at quadrant wise involvement as shown in Table 2, upper outer quadrant is the most common site of benign breast disease in 31

(35.2%) cases upper outer quadrant was involved. Next common site is lower outer quadrant which was involved in 18 (20.4%) cases.



**Figure 1: Incidence of various types of benign breast disease in present study.**



**Figure 2: Age wise distribution of benign breast diseases.**

As shown in (Figure 3) lump was present in all except one patient who presented with chronic sinus. Lump was painful in 45 (52.3%) patients and it was associated with fever in 15 (17.1%) patients. Abnormal nipple discharge was seen in chronic mastitis and FCD. 11 patients of FA had association of pain. Tuberculosis was found in three cases (Figure 3B and 3C). In one it was presented as painful lump with low grade evening rising fever, in another patient it presented as recurrent abscess with lump and patient with sinus on histopathology turned out to be breast tuberculosis. On studying menstrual and lactational status of the patient; all fibroadenomas were present in premenopausal women. In one case FA was present in pre-menarche period (age 12 years). 20 out of 88 patients reported menstrual irregularity. Irregularity of menses was commonly seen FCD where out of 15 patients 11 had history of menstrual irregularity. Being a rural area most of the patients present to institution in late stages. In 55 (62.6%) cases duration of symptoms prior to attend our institution was more than 2 months.

**Table 1: Spectrum of benign breast diseases.**

Lesion	No. of cases	%
<b>Benign neoplasms</b>		
Fibroadenoma	46	52.3
Lactating adenoma	4	4.5
Phyllodtu	2	2.3
Tubular adenoma	1	1.1
Total	53	60
<b>Inflammatory lesions</b>		
Acmastritis (abscess)	2	2.3
Chronic mastitis	13	14.8
Tuberculosis of breast	3	3.4
Total	18	21
<b>Tumour like lesion</b>		
Fibrocystic disease	15	17.1
Gynaecomastia	2	2.3
Total	17	19

**Table 2: Quadrant wise distribution of the lesion.**

S. no.	Lesion	Upp-out	Upp-inn	Low-out	Low-inn	Central	Multiple	Peripheral
1	Fibroadenoma	23	4	15	1	0	3	0
2	Lactadenoma	1	2	0	0	0	1	0
3	Phyllodtu	0	0	0	0	0	2	0
4	Tubular adenoma	1	0	0	0	0	0	0
5	Acmastritis	0	0	0	0	0	0	2
6	Chromastitis	1	0	2	0	3	0	7
7	Tubercumastitis	1	0	0	0	0	2	0
8	Fibrocystic	4	1	1	0	1	8	0
9	Gynaecomastia	0	0	0	0	2	0	0
	Total	31	7	18	1	6	16	9
	Percentage	35.2	8	20.4	1.1	6.8	18	10.2



**Figure 3: (A) Patient with multiple lumps due to fibrocystic disease, (B) case of breast tuberculosis presented as recurrent abscess with lump, (C) case of breast tuberculosis presented as sinus, (D) breast lump during excision and (E) excised fibroadenoma.**

Regarding diagnosis and treatment, 18 (20.45%) had symptoms for more than one-year rest of the patient had history of symptoms for more than two months and less than one year. Fine needle aspiration cytology (FNAC) was done in 70, patients correct diagnosis was established by cytology in 53 (out of 70) patients i.e. 69.7%. Ultrasound was done in 32 patients, in 18 patients 56.2% diagnosis is confirmed on histopathology. Mammography is inconclusive for most of the benign disease. All patients were managed surgically by lumpectomy in 82 cases Figure 3 (D and E), excision in 1 case, mastectomy 3 cases and drainage with debridement in 2 cases. Axillary clearance was done along with mastectomy in 1 patient. All patients were treated with antibiotics and analgesics. Three patients where histopathology revealed tuberculosis of breast were treated with 9 months AKT. There was no morbidity or mortality present in this study. Patients were followed up for one year. All patients were satisfied with the treatment provided.

## DISCUSSION

The breast is vulnerable to both benign as well as malignant disease. BBD constitute a heterogeneous group of breast lesions. They are most common cause of breast problems in females and are more frequent than those of malignant.<sup>1-7</sup> Despite of this, BBD has not given much of notice in medical literature. Breast continuously undergoes normal structural and physiological changes. When these normal changes (pubertal, cyclical, pregnancy, lactational, and menopausal) exceed their limit and raise concern for the woman, they are labeled as BBD.<sup>10</sup> Approach to a patient with breast complaints includes, performing a 'triple assessment' which comprises of clinical breast examination, imaging of bilateral breast and a tru-cut biopsy/FNAC. The aim of triple assessment is to aid detection of early cancer thus reducing morbidity and mortality.<sup>11</sup> The incidence of BBDs is almost ten times than the breast cancer in west.<sup>8</sup>

Approximately 30-40 percent of the women suffering from BBDs require treatment at some time in their life.<sup>9</sup> Recently there is an increased knowledge and awareness about benign diseases of breast. These diseases have been popularly classified according to the aberration of the normal development and involution. Love et al has described a new scoring system for benign disease of breast.<sup>12</sup>

The scenario was different few years ago when benign disorders were given very less importance the terminology was vague, there was inadequate classification and poor correlation between clinical, radiological and pathological features.<sup>13</sup> There were few studies done to analyse clinical profile, spectrum, age wise incidence, quadrant wise distribution, relation with menstruation and reproductive life in BBD.<sup>14-18</sup>

For recent studies on BBD, when literature was searched in PubMed, Medline and Google using terms like benign breast diseases, abressions of normal development and involution, breast lumps, rural study etc. there are many studies related to benign breast diseases but there are very few studies from rural population Kumar et al presented a study of 124 females with various forms of BBD from Darbhanga located in Bihar.<sup>10</sup> Janki et al presented an observational study of all the post pubertal women residing in the selected village from Pillaiyarkuppam, Pondicherry in which total of 128 women (1 in 8) had positive symptomatology with 94 (1 in 11) of them having a breast disease on examination.<sup>11</sup> Nagger et al reported clinico-pathological study on benign breast diseases in Gurugram, NCR in two hundred patients with breast lesions.<sup>19</sup> Shanker et al did study of 50 cases of BBD at Adichunchanagiri Karnataka and Kochhar et al did retrospective study in the Department of Pathology and Maharaja Agrasen Medical College, Agroha.<sup>20,21</sup>

In our study we included 88 cases in which diagnosis of BBD was established by histopathology. We did study of our cases for incidence of various conditions among BBD, side wise involvement, age wise distribution, presentation, marital and lactational status, duration of presentation etc., and compared with other studies in available literature. We found our study was comparable with other studies. Table 3 shows comparison of relative incidences of various benign breast lesions in various reported studies.<sup>14-20,22,23</sup> Our findings are similar with most of the studies except the incidence of chronic mastitis was higher in our study. Comparison of age-wise distribution of BBD in various studies as shown in (Table 4) indicates that incidence of BBD is common in 3<sup>rd</sup> and 4<sup>th</sup> decade (age group between 20 to 40 years of age) and our findings are comparable with other studies.<sup>10,11,15-17,20,21</sup> The benign nature of fibroadenoma was recognized in 1840 by Sir Astley Cooper, who referred to the lesions as chronic mammary tumors. World health organization defined fibroadenoma as a discrete benign tumor showing evidence of both connective tissue and epithelial proliferation.

**Table 3: Comparison of incidence of various benign breast diseases in various reported studies.**

Study	Haque et al <sup>14</sup>	Gupta <sup>15</sup>	Rangbhashyam et al <sup>18</sup>	Khanna <sup>16</sup>	Khanana <sup>17</sup>	Kumar et al <sup>10</sup>	Shilpa et al <sup>22</sup>	Seema et al <sup>19</sup>	Shanker et al <sup>20</sup>	Narendra et al <sup>23</sup>	Present study
<b>Year</b>	1980	1983	1983	1988	1988	2016	2017	2018	2017	2017	2001
<b>BBD\ no. of patients</b>	104	488	215	971	807	124	58	200	50	100	88
<b>Fibroadenoma</b>	41	43	57	40.8	60	36	86.2	51	48	40	52.3
<b>Lactational adenoma</b>	-	-	-	-	-	-	-	-	2	-	4.5
<b>Phyllod tumor</b>	-	3.7	2.3	13.8	-	-	-	-	6	6	2.3
<b>Tubular adenoma</b>	-	-	-	-	-	-	-	-	-	-	1.1
<b>Acute mastitis</b>	-	-	-	-	-	-	-	-	-	-	2.3
<b>Chronic mastitis</b>	7.5	13.7	11	22.6	11.4	6	-	5.5	6	8	14.8
<b>Tuberculosis</b>	1.9	4.9	-	-	5.6	-	-	-	-	-	3.4
<b>Fibrocystic disease</b>	22.1	15.5	16.3	13.8	15	58	12.1	28.5	18	34	17.1
<b>Gynaecomastia</b>	8.6	4	-	-	-	-	-	-	-	-	2.3
<b>Other condition</b>	10.6	11.9	13.4	9	8	-	1.7	15	20	12	-

All incidences are mentioned in percentage.

**Table 4: Age wise distribution of patients of BBD.**

Study	Gupta <sup>15</sup>	Khanna et al <sup>16</sup>	Khanana et al <sup>17</sup>	Kumar et al <sup>10</sup>	Shilpa et al <sup>22</sup>	Janki et al <sup>11</sup>	Shanker et al <sup>20</sup>	Present study
<b>Year</b>	1983	1988	1988	2016	2017	2016	2017	2001
<b>BBD\ no of patients</b>	488	971	807	124	58	94	50	88
<b>Age in years</b>								
<20	26	28.5	29	5	39.7	2.5	22	25
20-40	55.9	58	71	50	51.7	44.1	68	67
41-60	16.6	12	-	45	8.6	39.3	10	8
>60	1.6	1.5	-	-	-	14.1	-	-

All number are mentioned in percentage.

It is categorized under mixed connective tissue and epithelial tumors of breast. They are the most common types of BBD described in the literature. The exact cause of fibroadenoma is unknown but hormonal imbalance may be a factor. Martin et al have demonstrated lower circulating levels of progesterone in women with fibroadenomas compared with controls.<sup>24</sup> The proposed hormonal cause of fibroadenomas is strengthened by the clinical observation of the involution of fibroadenomas after menopause and their dramatic increase in size during pregnancy.

Majority of fibroadenoma appear as unilateral single lump in breast, bilateral and multiple fibroadenomas are rare in our study two patients had bilateral fibroadenomas and three patients had multiple fibroadenoma. Spontaneous regression of fibroadenomas has been described in the literature however in our institute we did

excision in all cases of fibroadenoma and we found no recurrence of fibroadenoma during study period.

Tubular adenoma and lactating adenoma represent a variant of fibroadenoma. Tubular adenoma possesses tubular elements arranged in circumscribed concentric mass with minimal supporting stroma. These lesions have fine nodularity, uniform tubular structures and the absence of lobular anatomy. Lactating adenoma is an adenoma composed of a tubuloacinar structures with pronounced secretary changes as seen in pregnancy and lactation.

Phyllod tumor was first time described by Sir Benjamin Brodie in 1940 and hence named by his name as serocystic tumour of brodie.<sup>25</sup> There are branching projections of tumor tissue in to the cystic cavities which give it leaf like appearance. It is rare tumor of breast representing 2.5% of all fibroepithelial lesions of breast.<sup>26</sup>

Based on histopathology phylloid tumor can be classified as benign, borderline or malignant tumor. Benign cystosarcoma presents as large, sometimes massive tumor with an unevenly bosselated surface, occasionally ulceration of the overlying skin occurs due to pressure necrosis. In spite of large size, they remain mobile on chest wall. Treatment for benign type is enucleation in very young women or wide local excision. To prevent local recurrence, small low-grade tumors should be treated with wide local excision achieving a 1-2 cm margin in all directions, whereas simple mastectomy should be considered for large high- grade tumours.<sup>27</sup> In our study two patients presented with phylloid tumor at the age of 40 and 60 years respectively. In 60 years, female clinically diagnosis of malignancy was kept, on FNAC opinion was inconclusive so we performed total mastectomy with axillary clearance. On histopathology it was turned out to be benign phylloid tumor. Her subsequent recovery was uneventful.

Inflammatory diseases of breast include wide range of conditions like simple mastitis, breast abscess, chronic mastitis and granulomatous mastitis etc. In our study we excluded all cases of breast abscess treated with incision and drainage. Recurrent abscess or mastitis with lump were included in our study. Most of these patients came from rural areas where acute mastitis gets treated with antibiotics by local doctors and over a period due to recurrent subclinical episodes, they develop lump and present to our institute as a case of lump in breast with associated history of pain and fever. These patients were clinically diagnosed as a case of antibioma, all of them underwent lumpectomy. As microbiological culture facility was not available in the institute at the time of this study only histopathological study was done. Histopathology revealed acute mastitis in two patients and chronic mastitis in 13 patients. On comparison with studies of same timeline incidence of chronic mastitis was found to be similar but in comparison with recent studies our incidence was higher. This indicates that the awareness about breast diseases among general population and general practitioners, availability of culture techniques, development and availability of newer antibiotics has been useful to decrease the incidence of chronic mastitis and antibioma.

Breast tuberculosis (TB) was first described by Sir Astley Cooper in 1829.<sup>28</sup> After him several authors describe it as a report of cases or case series.<sup>29-34</sup> Incidence of tuberculosis of breast in all lesions of breast is 2.05%. Married female of child bearing age are commonly affected (20 to 50). This may be because of female breast undergoes more frequent changes during this period of activity and is more liable to trauma and infection. Tubercle bacilli reach the breast tissue via the blood stream, lymphatics or spread from lungs to breast tissue via trachibronchial, paratracheal and internal mammary lymph nodes. Depending upon the spread, tuberculosis of breast may be primary or secondary; primary is hematogenous in origin, secondary is secondary to

tuberculosis of ribs, lungs or lymph-nodes. Tuberculosis of breast commonly presents as lump it can be present as sinus or abscess. The common differential diagnosis is chronic breast abscess, carcinoma breast, plasma cell mastitis, duct ectasia with giant cell reaction and sarcoidosis. In our study one patient presented as recurrent abscess, one as chronic sinus and one as lump. Tuberculosis was diagnosed based on presence of giant cell granuloma, caseous necrosis, Langhan's type giant cells. Patients were treated with lumpectomy in two patients and excision of sinus in one patient. All patients were kept on standard anti tuberculosis treatment for nine months.

Fibrocystic disease is a second most common type of BBD described in the literature characterized by a spectrum of proliferative and regressive alterations of mammary tissues with an abnormal interplay of epithelial and connective tissue elements. Reproductive hormones (estrogen, prolactin) thyroid hormones and methylxanthine's have been associated with the development of FCD.<sup>35</sup> Estrogen predominance over progesterone is considered causative in the development of FCD. Breast pains in fibrocystic diseases are attributed to nerve irritation by edema of connective tissue and secretory retention as well as nerve pinching by process of fibrosis and sclerosis. Microscopically FCD has four features which vary in extent and degree; these are cyst formation, fibrosis, hyperplasia and papillomatosis. Patient presents with one or more symptoms and signs, which include discrete lump, lumpiness, nipple discharge, pain in the breast (mastalgia). Treatment of FCD includes treatment of mastalgia, hormonal treatment and surgery in limited cases presenting with lumps. In our study menstrual irregularity was 7 patients, 4 patients had lactational amenorrhea and only 4 had regular menses showing the association between hormonal imbalances with FCD. All patients in our study presented with lumps, one of our patients had multiple discrete lumps. We treated patients using lumpectomy along with hormonal treatment.

Gynaecomastia is a condition of male breast characterized by proliferation of duct and increased periductal stroma which may have a myxoid appearance. Macroscopically gynaecomastia is divided into two groups diffuse and discrete.<sup>36</sup> In diffuse form, hyperplastic breast tissue had ill-defined margins merging with surrounding tissue where as in discrete form the hyperplastic breast tissue is well circumscribed with well-defined margin. It can also be divided as florid, intermediate and fibrous type histologically. Patients usually present with no other complaints but abnormal enlargement of the breast. Unilateral enlargement of the breast is much more common and mostly of idiopathic variety. Though it is painless condition; few patients particularly elderly individuals' complaint of little pain. Idiopathic gynaecomastia may resolve by itself. When definite reason cannot be evaluated and there is no sign of regression simple mastectomy by sub-areolar incision

keeping nipple and areola intact can be done for cosmetic purpose. In our study, we had two patients of gynaecomastia both presented with unilateral enlargement of breast both were managed by simple sub-areolar mastectomy with preservation of nipple areola complex.

### Limitations

Comparison of data was done in geographically different area; further studies may be done to actually compare spectrum of BBD in different time zone in same geographical area.

### CONCLUSION

Benign breast diseases in this study include benign neoplasms 43.1% inflammatory condition 14.6 and tumor like lesions 13.8%. Fibroadenoma was the most common benign lesion 52.3%. Benign diseases were common in third decade 53.3%. Except the chronic mastitis, incidence of various types of benign lesions was comparable with those found in other studies. High incidence of chronic mastitis in this study could be attributed to poor knowledge and awareness among rural population. Age, side, distribution, incidence wise study of benign breast diseases in our setup is comparable with other studies. There is not much change in overall spectrum of benign breast disease.

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