A STUDY OF BENIGN BREAST DISEASE MANAGEMENT BASED ON CLINICAL, RADIOLOGICAL AND PATHOLOGICAL ASSESSMENT

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Benign breast disorders are usually hormone induced and therefore usually seen in the reproductive period of life with dramatic fall in incidence after menopause. As compared to breast cancers, benign breast lesions are 10 times more common.

The aim of the study *was to determine the spectrum and incidence of various benign breast diseases in female patients attending our institute and to compare the results with those of other studies.*

Material and methods: *80 cases of benign breast diseases which were clinically diagnosed and confirmed pathologically or radiologically were subjected for therapeutic interventions and the results were analysed.*

Results: *In the present study of 80 cases, the age group most affected by benign breast diseases was 21-30 years. 63 patients (78.8 %) presented with lump in the breast and 23 patients' common symptom is pain. In most of the cases of lump had duration between 7–12 months (38.8 %), pain for 1-5 days (13.8 %), discharge for 0-5 days (11.3 %). Both breasts were involved in 6 cases (7.5 %) whereas right and left breasts are equally involved in 47 cases each (46.25 %). Most of the patients were nulliparous (46.3 %) followed by multiparous (38.8 %) and uniparous (15.0 %). Fibroadenoma constituted in 53.8 % of patients (44 cases), breast abscess constituted 21.25 % (17 cases). The most commonly affected age group was 21–30 years. 63 patients (78.8 %) presented with lump in the breast and 23 patients presented with pain. HRUSG findings correlated with that of clinical diagnosis in 70 cases. 60 cases underwent core biopsy, and in 41 cases (68.33 %) there were fibroadenoma and 7 cases (11.66 %) fibro adenosis. 59 cases (73.75 %) underwent excision, and 18 cases (22.5 %) incision and drainage.*

Conclusion: *The most common benign breast disease was fibroadenoma. Most common age group affected with benign breast disease was 21–30 years. 88.7 % of clinical diagnosis, 90.3 % of radiological diagnosis, 93.3 % of core needle biopsy diagnoses were correlating with the histopathology diagnosis*

Keywords: *histopathology, HRUSG, core needle biopsy, fibroadenoma., excision, radiological diagnosis, incision and drainage*

1. Introduction

Breast is a dynamic structure, which undergoes changes throughout a woman's reproductive life with superimposed cyclical changes throughout the menstrual cycle. Up to 30 % of the women who suffer from BBDs will require treatment at some time in their lives. It is relatively common in younger population and the incidence rises during the second decade of life and peaks in the fourth and fifth decades. In contrast, the malignant diseases are more common after menopause. Benign breast diseases constitute heterogeneous group of disorders including developmental abnormalities, epithelial and stromal proliferations, inflammatory lesions and benign neoplasms [1]. Benign breast disease is common and complex topic and requires an integrated approach involving not only surgeons but also radiologists, pathologists, and on-cologists [2]. Triple assessment by clinical examination, radiological imaging and pathological assessment by core or excision biopsy has been a standard approach in the evaluation of breast lumps [3]. While approaching a patient of benign breast disease, systematic evaluation by adhering to triple assessment will confirm the benign nature of the condition. This will provide confidence to the surgeon in excluding malignancy and decreasing the anxiety and fear for the patient [4]. Surgery has long been the most widely followed treatment modality for majority of the benign breast diseases. Present clinical and pathological evidence suggests that conservative approach can be attempted in few of these benign conditions.

Studies have extensively been conducted in this field in the past few decades targeting aetiology and risk factors for development of benign breast diseases, evalu-

ation of newer non-invasive treatment modalities, studying the risk of subsequent development of malignancy in benign breast diseases. Most of the literature about benign breast disease is from the western world and not applicable to Indian population because of the ethnic, cultural and demographic differences. Hence there is a need for more Indian studies about benign breast disease

management. This study was performed to determine the spectrum and incidence of various benign breast diseases in female patients attending Kamineni Academy of Medical Sciences and Research Centre, Hyderabad.

The combination of clinical assessment with radiology and pathological analysis has an astonishing positive predictive value of more than 99.9 % (Fig. 1).
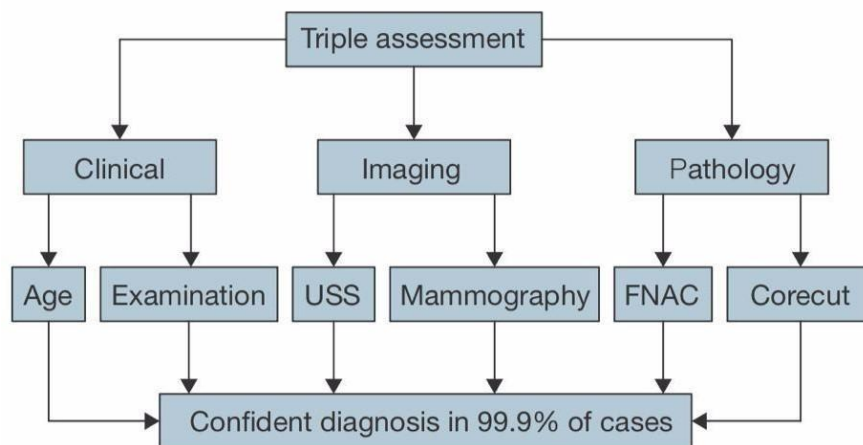

Fig. 1. Clinical assessment with radiology and pathological analysis in present study

Classification of benign breast disorders [5]:

1. Congenital: Supernumerary breasts/ nipples, Amazia, Nipple inversion.

2. Injury: Hematoma, Traumatic fat necrosis.

3. Inflammation or infection: breast abscess, tuberculosis of the breast, duct ectasia/ periductal mastitis.

4. ANDI: cyclical mastalgia, noncyclical mastalgia, breast cysts, fibroadenoma, fibrocystic disease, sclerosing adenosis, phyllodes tumour.

5. Pregnancy related: Galactocele, Lactational breast abscess.

The aim of the study was to determine the spectrum and incidence of various benign breast diseases in female patients attending our institute and to compare the results with those of other studies.

2. Materials and methods

The present study is a prospective observational study, undertaken in the Department of General Surgery, Kamineni Academy of Medical Sciences and Research Centre, Hyderabad. Telangana, during the period of June 2018 to May 2020, total period of 2 years.

Study sample:

80 cases clinically diagnosed and confirmed pathologically or radiologically, have been studied. Sample size has been calculated using single proportion formula.

$$n = Z^2 P (1—P)/d^2$$

n – sample size
Z – 1.96
P – expected prevalence of proportion (5 %)
d – precision (5 %, d=0.05)

Inclusion criteria: female patients aged from 15 to 50 years, presenting with features of benign breast disorder.

Exclusion criteria: all patients diagnosed to have breast malignancy. Patients not willing to participate in the study and male patients.

A detailed history and thorough clinical examination were done and a provisional diagnosis was obtained. The findings were noted down in the proforma designed for the study. Those patients found to have benign breast disease on clinical examination and radiological investigations were subjected to core needle biopsy wherever applicable and the needful surgical intervention was done. All specimens removed during the surgery were sent for histopathological examination and drained pus was sent for culture and sensitivity.

Data was entered in Microsoft Excel and analysis was done using SPSS version 20. Descriptive statistical analysis was done. Simple mathematical expressions like percentage was also used. Statistical analyses were performed using statistical package for social science (SPSS) software, latest version.

Ethical approval. The study was approved by the Institutional Ethics Committee institution and was informed consent obtained from study participants (IEC-ECR/58/Inst/AP/2013/RR-16 and date- 7/8/2018). Study was line with the Declaration of Helsinki.

3. Results

In the present study a total of 80 cases were studied prospectively. Fibroadenoma constituted in 53.8 % of patients (43 cases). Breast abscess constituted in 21.25 % of patients (17 cases). Fibro adenosis / fibrocystic disease constituted in 6.3 % of patients (6 cases), phyllodes tumour constituted in 6.3 % of patients (5 cases). Papilloma constituted in 3.8 % of patients (3 cases), epidermoid cyst constituted in 2.5 % of patients (2 cases), infected galactocele, bilateral hypertrophied axillary tail, lipoma and duct ectasia constituted 1.3 % each (1 case each).

Age wise distribution of benign breast disease:

In the present study the youngest patient is 15 years old and the eldest was 50 years. The age group most commonly affected by benign breast diseases was 21–30 years (Table 1).

Table 1

Age group

Age group	Frequency	Percent
15–20	17	21.25 %
21–30	31	38.75 %
31–40	22	27.50 %
41–50	10	12.50 %

Mode of presentation

In the present study 63 patients (78.8 %) presented with lump in the breast, total of 23 patients presented with pain, out of which 7 patients presented with pain with lump and 8 patients presented with pain with discharge, 1 patient presented with discharge alone. In most of the cases of lump had duration between 7–12 months (38.8 %), pain for 1–5 days (13.8 %), discharge for 0–5 days (11.3 %). Both breasts were involved in 6 cases (7.5 %) whereas right and left breasts are equally involved in 47 cases each (46.25 %). Most of the patients were nulliparous (46.3 %) followed by multiparous (38.8 %) and uniparous (15.0 %).

Clinical diagnosis and HRUSG findings

In the present study HRUSG findings in contrast to clinical diagnosis given in the following table, among which there were 44 cases of fibroadenoma, 17 cases of breast abscess, 2 cases of epidermoid cyst, 4 cases of phyllodes tumour, 2 cases of papilloma, 1 case of lipoma and 1 case of fibro adenosis clinically correlates with the HRUSG findings. In 4 cases of clinical diagnosis of fibroadenoma HRUSG finding was fibro adenosis, and 1 case of clinically fibroadenoma, HRUSG finding was duct ectasia, 1 case of clinically phyllodes tumour finding was fibro adenosis, 1 case of clinically lipoma HRUSG finding was fibroadenoma, 1 case of clinically papilloma HRUSG finding was fibroadenoma (Table 2).

Table 2

Correlation of clinical diagnosis and HRUSG findings

Clinical diagnosis	HRUSG								Total
	BA	DE	EC	FA	FAS	HATB	PAP	PHY	
Bil. Hypertrophied Axillary Tail	0	0	0	0	0	1	0	0	1
Breast Abscess	17	0	0	0	0	0	0	0	17
Epidermoid cyst	0	0	2	0	0	0	0	0	2
Fibroadenoma	0	1	0	44	4	0	0	0	49
Fibro adenosis	0	0	0	0	1	0	0	0	1
Galactocele	1	0	0	0	0	0	0	0	1
LIPOMA	0	0	0	1	0	0	0	0	1
Papilloma	0	0	0	1	0	0	2	0	3
Phyllodes tumour	0	0	0	0	1	0	0	4	5
Total	**18**	**1**	**2**	**46**	**6**	**1**	**2**	**4**	**80**

Core biopsy results

In the present study, 60 cases underwent core biopsy and fibroadenoma was found in 41 cases (68.33 %), fibro adenosis/ fibrocystic disease in 7 cases (11.66 %), phyllodes tumour in 5 cases (8.33 %), papilloma in 3 cases (5.00 %), lipoma in 2 cases (3.33 %), duct ectasia and duct hyperplasia in 1 case each (1.60 %) (Table 3).

Of the 80 cases of benign breast disease 73.75 % (59 cases) underwent excision, 22.5 % (18 cases) incision and drainage, 1 case (1.25 %) microdochectomy and simple mastectomy in 2 cases (2.5 %). 62 specimens were sent for histopathology and the findings were 43 fibroadenoma, 6 fibro adenosis, 5 phyllodes tumour, 3 cases papilloma and 2 cases were epidermoid cyst. 88.7 % of clinical diagnosis, 90.3 % of radiological diagnosis, 93.3 % of core needle biopsy diagnoses were correlating with the histopathology diagnosis (Fig. 2).

Table 3

Core biopsy results

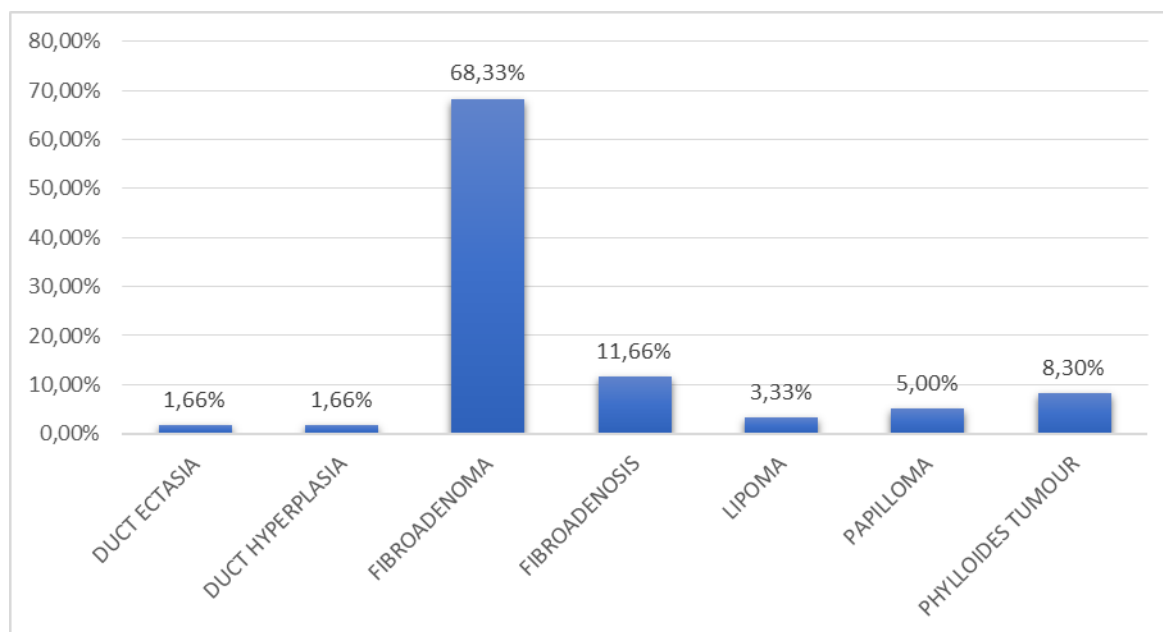| Histopathological result	Frequency	Percent
Duct ectasia	1	1.66 %
Duct hyperplasia	1	1.66 %
Fibroadenoma	41	68.33 %
Fibroadenosis	7	11.66 %
Lipoma	2	3.33 %
Papilloma	3	5.00 %
Phylloides tumour	5	8.33 %

Fig. 2. Bar diagram showing core biopsy results

4. Discussion

Incidence of the most common benign breast disease in the present study was fibroadenoma accounting for 53.80 % (43 cases). The similar results were obtained by others researches – Satyajith S. et al [6] (55 %), Sudershan kapoor et al [7] (51 %), Selvakumaran et al [8] (55.9 %), Naveen N et al [9] (46.6 %). This is followed next in frequency by breast abscess which accounted for 21.25 % (17 cases) which is comparable to 16 % observed by Satyajith S et al [6], 18.9 % Amruthavalli et al [10]. The age group most affected by benign breast disease is 15–30 years (60 %). This is similar with that of other studies by Satyajith et.al [11] 60 %, Selvakumaran et.al [6] 55.9 %, Srivastava et al [2] 59.1 %, Naveen N. et al [12] 65.71 %. On the whole benign breast disease presented in 3rd and 4th decades of life (45 %) which is also like in the observation of Abhijit MG et.al [3]. In the present study most of the patients were nulliparous (46.3 %) followed by multiparous (38.8 %) and uniparous (15.0 %), Naveen N. et al [10] also observed similar findings in their study.

In the present study the most common presenting symptom was breast lump (68.75 %). This correlates with findings by Satyajith S et al [6] (53 %), Rajkumar et. al [4] (73.85 %), Srivastav P. et al [2] (60 %), Naveen N. et al [12] (60 %). Second most common symptom was pain (29 %) in which 8 patients presented with lump along with pain, 8 patients presented with pain with discharge. Naveen N. et. al [12] (33.2 %), Srivastav P. et. al [2] (49 %), Rajkumar et. al [4] (23.5 %) also observed that pain is the second most common symptom. Total of 9 patients presented with nipple discharge (11 %), similar results were observed by Naveen N et al [12] (6.7 %), Amruthavalli et al [9] (17.5 %), and Rajkumar et al [4] (2.61 %).

In the present study, 46.3 % (37) of cases presented with right sided disease and 46.3 % (37) of presented with left sided disease and 6 cases (7.5 %) presented as bilateral disease. Similar observations were documented by Naveen N. et al [12] – right (52 %), left (41.3 %),

bilateral (6.7 %), according to Srivastava P. et al [2] – right 35.8 %, left 46.6 %, bilateral 17.5 %.

Correlation between clinical diagnosis and HRUSG findings: clinical diagnosis comparing with the HRUSG diagnosis 44 cases of fibroadenoma, 17 cases of breast abscess, 2 cases of epidermoid cyst, 4 cases of phyllodes tumour, 2 cases of papilloma, 1 case of lipoma and 1 case of fibro adenosis clinically correlated with the HRUSG diagnosis. 4 cases of clinically fibroadenoma HRUSG finding was fibro adenosis, and 1 case of clinically fibroadenoma HRUSG finding was duct ectasia, 1 case of clinically phyllodes tumour finding was fibro adenosis, 1 case of clinically lipoma HRUSG finding was fibroadenoma, 1 case of clinically papilloma HRUSG finding was fibroadenoma, similar results were observed by Kumar M. et al [9], Sangma M. B. et. al [13], Aslam H. M. et. al [11], Koorapati R. et al [14], Chalya P. L. et. al [15] and Surati K. N. et. al [16].

Surgical management. 43 cases of fibroadenoma were subjected to excision and sent for histopathological examination. 2 cases of papilloma which were diagnosed by HRUSG and core biopsy underwent simple excision, and 1 case underwent microdochectomy 3 cases of phyllodes tumour diagnosed by triple assessment underwent excision, and 2 cases underwent simple mastectomy for recurrent disease, 17 cases of clinically diagnosed breast abscess and 1 case of infected galactocele underwent incision and drainage. 1 case of lipoma underwent excision. 1 case of hypertrophic axillary tail of breast, 1 case of duct ectasia and 2 cases of sebaceous cyst underwent excision, which is comparable with that of Gunes ME et al [17].

Correlation of clinical diagnosis with histopathological diagnosis. In the present study of benign breast disease total 62 cases of clinically diagnosed lumps sent for histopathology after surgery and the final histopathology diagnosis given in the Table 1 – 43 cases of fibroadenoma and 1 case of bilateral hypertrophied axillary tail of breast, 2 cases of epidermoid cyst, 1 case of fibro adenosis, 1 case of lipoma, 3 cases of papilloma

and 5 cases of phyllodes tumour correlated with the histopathological findings. In 5 cases of clinically diagnosed fibroadenoma the histopathology diagnosis was fibro adenosis and in 1 case of clinically diagnosed fibroadenoma. In present study 88.7 % of clinical diagnosis, 90.3 % of radiological diagnosis, 93.3 % of core needle biopsy diagnoses were correlating with the histopathology diagnosis, the same was observed by Yousif Z. H. et. al [18], Hatim K. S. et.al [19], Vijayalakshmi M. et.al [20], and Dhirendranath choudary et. al [21], Surati KN et al [16] and Gunes ME et al [17].

Summary. 80 cases of benign breast diseases which were treated at KAMINENI HOSPITAL L. B nagar Hyderabad were studied over a period of 24 months from June 2018 to May 2020.The most common benign breast disease was fibroadenoma constituting 53.8 % cases in the present study. The second most common benign breast condition was breast abscess (21.25 %), followed next by fibro adenosis (7.5 %). Less common benign breast diseases like lipoma, duct ectasia, infected galactocele constituted only 1.3 % each. The age group most affected was 21–30 years old – 38.75 % (31 cases). The phyllodes tumour affects women in the 4th and 5th decades. In total, 27 patients were unmarried and remaining were married, out of married, 37 patients (46.3 %) were nulliparous. The most common presenting complaint was lump in the breast – 68.75 % of cases. The second most common presenting complaint was pain (29 %), followed by discharge from breast nipple – 11 % of cases. Majority of the patients (38.8 %) had symptoms for 7–12 months duration. Breast abscess presented with symptoms of 1–5 days duration. Fibroadenoma with 1-6 months, phyllodes tumour presented with 7-12 months on an average. The left and right breast involved equally (46.3 %) in the present study. Bilateral breast involvement was also noted only in 7.5 % cases. the upper-outer quadrant was most commonly involved (36.3 %) followed by lower-outer quadrant (27.5 %), upper-inner quadrant (12.5 %), lower-inner quadrant (10 %). The size of the lumps ranged from 2 cm to 20 cm. Majority of the tumours (73.8 %) were of the size 2–6 centimetres, fibroadenoma presented with a 2–6 centimetres size in majority of the patients (67.79 %). 21.3 % were of the size 6–10 centimetres and (5 %) were of the size >10 centimetres size in which the diagnosis was phyllodes tumour. Clinically majority of the swellings in present study were having smooth surface (63.75 %), freely mobile (72.50 %) and firm in consistency (65.00 %). Majority of the clinically diagnosed benign breast diseases were correlating with the HRUSG findings, except in 8 cases. 60 cases underwent core needle biopsy, and results were fibroadenoma in 41 cases (68.30 %), fibro adenosis in 8 cases (13.30 %), phyllodes tumour in 5 cases (8.30 %), papilloma in 2 cases (3.30 %) and lipoma in 2 cases (3.30 %). Majority of the core needle biopsy diagnoses were correlating with the histopathology findings, except in 2 cases.

Study limitations are limited to the initial postoperative period; study period was small; sample size was small.

Prospects for further research. Future developments include the development of a biopsy kit, combining MD with molecular diagnostic markers and real-time optical biopsy system for the diagnosis of pre-malignant and early malignant disease and radiofrequency for curative ablation of intraductal lesions.

5. Conclusion

1. Fibroadenoma, breast abscess, fibro adenosis, phyllodes tumour, infected galactocele, epidermoid cyst, duct ectasia, papilloma, lipoma, hypertrophied axillary tail of breast were the benign breast disease that were noted in present study. Most common age group affected with benign breast disease was 21–30 years. Most common symptom among patients was a breast lump. Benign breast disease present with variable duration of symptoms was mostly for 1–6 months. Benign breast disease commonly affects single breast and upper outer quadrant of breast. Majority of the benign breast lumps were small. Phyllodes tumour usually present with large lumps. Fibroadenoma affected the younger age group females in their early reproductive period were as fibrocystic disease and phyllodes tumour affected the later reproductive age group.

2. 88.7 % of clinical diagnosis, 90.3 % of radiological diagnosis, 93.3 % of core needle biopsy diagnoses were correlating with the histopathology diagnosis. Excision of tumour is sufficient for fibroadenoma were as giant recurrent phyllodes tumour required simple mastectomy. Breast abscess needed immediate incision and drainage to relieve pain. Benign duct papilloma requires microdochectomy.

Conflict of interest
The authors declare there is no conflict of interests.

References

1. Abhijit, R. (2021). A clinicopathological study and management of benign breast diseases in females. MedPulse International Journal of Surger, 6, 83–86. Available at: https://www.researchgate.net/publication/348802677_A_clinicopathological_study_and_management_of_benign_breast_diseases_in_females

2. Srivastava, P., Arya, P. K., Khertarpal, H. S., Shrivastava, K., Singh, P. (2017). Spectrum of benign breast disease in a tertiary care hospital of Punjab. Journal of Evolution of Medical and Dental Sciences, 6 (79), 5602–5606. doi: http://doi.org/10.14260/jemds/2017/1216

3. MG, A., D, A., Bhoopal, S., Ramanujam, R. (2013). Benign breast diseases: experience at a teaching hospital in rural India. International Journal of Research in Medical Sciences, 1 (2), 73–78. doi: http://doi.org/10.5455/2320-6012.ijrms20130507

4. Rajkumar, Ranjan, A. (2017). Clinico-pathological study and management of benign breast lesions. International Journal of Contemporary Medical Research, 4 (12). Available at: https://www.ijcmr.com/uploads/7/7/4/6/77464738/ijcmr_1802_v2.pdf

5. Chilakala, A., Navya, K. C. N. (2019). Clinical Study of Benign Breast Diseases Based on Aberrations in Normal Development and Involution Classification and Development. Journal of Evolution of Medical and Dental Sciences, 8 (31), 2467–2474. doi: http://doi.org/10.14260/jemds/2019/538

6. Samal, S., Swain, P. K., Pattanayak, S. (2019). Clinical, pathological and radiological correlative study of benign breast diseases in a tertiary care hospital. International Surgery Journal, 6 (7), 2428–2432. doi: http://doi.org/10.18203/2349-2902.isj20192968

7. Sudershan, K., Ashwani, K., Singh, A., Singh, H., Singla, R. (2016). Varied pattern of breast diseases- A Study of 443 cases. IOSR Journal of Medical Sciences, 15 (3), 36–49. Available at: https://www.iosrjournals.org/iosr-jdms/papers/Vol15-Issue%203/Version-5/G015353649.pdf

8. Selvakumaran, S., Sangma, M. B. (2016). Study of various benign breast diseases. International Surgery Journal, 4 (1), 339–343. doi: http://doi.org/10.18203/2349-2902.isj20164466

9. Kumar, M., Ray, K., Harode, S., Wagh, D. D. (2010). The pattern of benign breast diseases in rural hospital in India. East and Central African Journal of Surgery, 15 (2), 59–64. Available at: ajol.info/index.php/ecajs/article/view/136688

10. Amruthavalli, B. V., Srihari, V. (2015). Clinical study of Benign breast diseases. IOSR Journal of Dental and Medical sciences, 14 (11), 34–40. Available at: https://www.iosrjournals.org/iosr-jdms/papers/Vol14-issue11/Version-10/H01411103440.pdf

11. Aslam, H. M., Saleem, S., Shaikh, H. A., Shahid, N., Mughal, A., Umah, R. (2013). Clinico- pathological profile of patients with breast diseases. Diagnostic Pathology, 8 (1). doi: http://doi.org/10.1186/1746-1596-8-77

12. Naveen, N., Avijeet, M., Vikrant, M. (2013). A clinical study of benign breast disease in rural population. Journal of Evolution of Medical and Dental Sciences, 2 (30), 5499–5511. doi: http://doi.org/10.14260/jemds/1016

13. Sangma, M. B., Panda, K., Dasiah, S. (2013). A Clinico-Pathological Study On Benign Breast Diseases. Journal of Clinical and Diagnostic Research, 7 (3), 503–506. doi: http://doi.org/10.7860/jcdr/2012/5355.2807

14. Ramesh, K., Bookya, K. (2017). A study on clinical and pathological correlation of benign breast lesions. International Surgery Journal, 4 (8), 2700–2705. doi: http://doi.org/10.18203/2349-2902.isj20173208

15. Chalya, P. L., Manyama, M., Rambau, P. F., Kapesa, A., Ngallaba, S. E., Masalu, N., Mabula, J. B. (2016). Clinicopathological pattern of benign breast diseases among female patients at a tertiary health institution in Tanzania. Tanzania Journal of Health Research, 18 (1). doi: http://doi.org/10.4314/thrb.v18i1.1

16. Surati, K., Suthar, K., Parekh, B., Shah, J. (2013). A study of accuracy of triple assessment as a clinical tool for the diagnosis of a palpable breast lump. International Journal of Medical Science and Public Health, 2 (3), 733–737. doi: http://doi.org/10.5455/ijmsph.2013.070520134

17. Gunes, M. E. (2018). Comparison of the ultrasound-guided tru-cut biopsy with postoperative histopathology results in patients with breast mass. Annali Italiani di Chirurgia, 89, 30–35. Available at: https://pubmed.ncbi.nlm.nih.gov/29629888/

18. Yousif, Z. H., Yacoub, S. E. (2018). Patterns of Breast Diseases Among Women Attending Breast Diseases Diagnosing Center in Erbil City/Iraq. Global Journal of Health Science, 10 (4), 114–126. doi: http://doi.org/10.5539/gjhs.v10n4p114

19. Hatim, K. S., Laxmikant, N. S., Mulla, T. (2017). Patterns and prevalence of benign breast disease in Western India. International Journal of Research in Medical Sciences, 5 (2), 684–688. doi: http://doi.org/10.18203/2320-6012.ijrms20170174

20. Vijayalakshmi, M., Rao, J. Y., Shekar, T. Y., Balakrishnan, S., Divya MSameera, K. et. al. (2016). Prevalence of Benign Breast Disease and Risk of Malignancy in Benign Breast Diseases. IOSR Journal of Dental and Medical Sciences, 15 (8), 32–36. doi: http://doi.org/10.9790/0853-1508083236

21. Dhirendranath, C., Anjai, K. B. (2016). An Analytical Study of Benign Breast Disease. Indian Journal of Applied Research, 6 (9), 543–545. Available at: https://www.worldwidejournals.com/indian-journal-of-applied-research-(IJAR)/article/an-analytical-study-of-benign-breast-disease/MTAxNzg=/?is=1

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