ESTIMATION OF RADIOLOGICAL AND PATHOLOGICAL PATTERN IN A CASE OF MASTALGIA

DISSERTATION SUBMITTED TO

In partial fulfillment of the requirement for the degree of

M. S. (GENERAL SURGERY)

Branch I

of

THE TAMIL NADU DR. M. G. R MEDICAL UNIVERSITY

CHENNAI- 600032

DEPARTMENT OF GENERAL SURGERY

TIRUNELVELI MEDICAL COLLEGE

TIRUNELVELI- 11

MAY 2019

CERTIFICATE BY THE GUIDE

This is to certify that the dissertation entitled **"ESTIMATION OF RADIOLOGICAL AND PATHOLOGICAL PATTERN IN A CASE OF MASTALGIA"** is a bonafide research work submitted by **DR.A.RAGHURAMAN,** Postgraduate student in Department of General Surgery, Tirunelveli Medical College & Hospital, Tirunelveli to the Tamilnadu Dr MGR Medical University, Chennai, in partial fulfillment of the requirement for M.S. Degree (Branch - I) in General Surgery.

Date:
Place: Tirunelveli

Dr. B.M.PABITHA DEVI, M.S.,
Associate Professor
Department of General Surgery
Tirunelveli Medical College,
Tirunelveli.

CERTIFICATE BY THE HEAD OF THE DEPARTMENT

This is to certify that the dissertation entitled **"ESTIMATION OF RADIOLOGICAL AND PATHOLOGICAL PATTERN IN A CASE OF MASTALGIA"** is bonafide and genuine research work carried out by **DR.A.RAGHURAMAN** Post Graduate M.S student in Department of General Surgery, Tirunelveli medical college & Hospital, Tirunelveli under the guidance of **Dr. B.M.PABITHA DEVI, M.S.,** Associate Professor, Department of General Surgery, Tirunelveli Medical College Tirunelveli in partial fulfilment of the requirements for the degree of M.S in GENERAL SURGERY.

Date:
Place: Tirunelveli

Prof. Dr. VARADARAJAN M.S.,
Professor and HOD,
Department of General Surgery,
Tirunelveli medical college & Hospital,
Tirunelveli.

CERTIFICATE BY THE HEAD OF INSTITUTION

This is to certify that the Dissertation **"ESTIMATION OF RADIOLOGICAL AND PATHOLOGICAL PATTERN IN A CASE OF MASTALGIA"** presented here in by **Dr.A.RAGHURAMAN** is an original work done in the Department of General Surgery, Tirunelveli Medical College Hospital, Tirunelveli for the award of Degree of M.S. (Branch I) General Surgery under my guidance and supervision during the academic period of 2016 -2019.

Date:
Place: Tirunelveli

Dr. S. M. KANNAN M.S., M.Ch.,
The DEAN
Tirunelveli Medical College,
Tirunelveli - 627011.

DECLARATION

I solemnly declare that the dissertation titled **"ESTIMATION OF RADIOLOGICAL AND PATHOLOGICAL PATTERN IN A CASE OF MASTALGIA"** is done by me at Tirunelveli Medical College hospital, Tirunelveli. I also declare that this bonafide work or a part of this work was not submitted by me or any others for any award, degree, or diploma to any other University, Board, either in or abroad.

The dissertation is submitted to The Tamilnadu Dr. M.G.R.Medical University towards the partial fulfilment of requirements for the award of M.S. Degree (Branch I) in General Surgery.

Place: Tirunelveli
Date:

Dr.A.RAGHURAMAN
Postgraduate Student,
M.S General Surgery,
Department of General Surgery,
Tirunelveli Medical College
Tirunelveli.

ACKNOWLEDGEMENT

I express my deep sense of gratitude and indebtedness to my respected teacher and guide Dr. B.M. Pabitha Devi, M.S. Associate Professor, Department of General Surgery, Tirunelveli Medical College, Tirunelveli, whose valuable guidance and constant help have gone a long way in the preparation of this dissertation.

I am also thankful to Assistant Professors Dr.S.Bethsy Priscilla, M.S., Dr. C. Rajmohan M.S., for their help.

I express my thanks to all of the staff members of the Department of General Surgery and all my Postgraduates colleagues and friends for their help during my study and preparation of this dissertation and also for their co-operation.

I always remember my family members for their everlasting blessings and encouragement.

Lastly, I express my thanks to my patients without whom this study would not have been possible.

TIRUNELVELI MEDICAL COLLEGE

INSTITUTIONAL RESEARCH ETHICS COMMITTEE
TIRUNELVELI, STATE OF TAMILNADU, SOUTH INDIA PIN 627011
91-462-2572733-EXT; 91-462-2572944; 91-462-2579785; 91-462-2572611-16
online@tvmc.ac.in, tirec@tvmc.ac.in; www.tvmc.ac.in

CERTIFICATE OF REGISTRATION & APPROVAL OF THE TIREC

REF NO: 948/GS/2016

PROTOCOL TITLE: ESTIMATION OF RADIOLOGICAL AND PATHOLOGICAL PATTERN IN A CASE OF MASTALGIA
PRINCIPAL INVESTIGATOR: Dr.A.RAGHURAMAN, M.B.B.S
DESIGNATION OF PRINCIPAL INVESTIGATOR: POST GRADUATE STUDENT
DEPARTMENT & INSTITUTION: TIRUNELVELI MEDICAL COLLEGE, TIRUNELVELI

Dear , Dr.A.Raghuraman,, M.B.B.S, The Tirunelveli Medical College Institutional Ethics Committee (TIREC) reviewed and discussed your application during the IEC meeting held on 25.11.2016.

THE FOLLOWING DOCUMENTS WERE REVIEWED AND APPROVED

1.	TIREC Application Form	☐
2.	Study Protocol	☐
3.	Department Research Committee Approval	☐
4.	Patient Information Document and Consent Form in English and Vernacular Language	☐
5.	Investigator's Brochure	☐
6.	Proposed Methods for Patient Accrual Proposed	☐
7.	Curriculum Vitae of the Principal Investigator	☐
8.	Insurance /Compensation Policy	☐
9.	Investigator's Agreement with Sponsor	☐
10.	Investigator's Undertaking	☐
11.	DCGI/DGFT approval	☐
12.	Clinical Trial Agreement (CTA)	☐
13.	Memorandum of Understanding (MOU)/Material Transfer Agreement (MTA)	☐
14.	Clinical Trials Registry-India (CTRI) Registration	☐

THE PROTOCOL IS APPROVED IN ITS PRESENTED FORM ON THE FOLLOWING CONDITIONS

1. The approval is valid for a period of 2 year/s or duration of project whichever is later
2. The date of commencement of study should be informed
3. A written request should be submitted 3weeks before for renewal / extension of the validity
4. An annual status report should be submitted.
5. The TIREC will monitor the study
6. At the time of PI's retirement/leaving the institute, the study responsibility should be transferred to a person cleared by HOD
7. The PI should report to TIREC within 7 days of the occurrence of the SAE. If the SAE is Death, the Bioethics Cell should receive the SAE reporting form within 24 hours of the occurrence.
8. In the events of any protocol amendments, TIREC must be informed and the amendments should be highlighted in clear terms as follows:
   a. The exact alteration/amendment should be specified and indicated where the amendment occurred in the original project. (Page no. Clause no. etc.)
   b. The PI must comment how proposed amendment will affect the ongoing trial. Alteration in the budgetary status, staff requirement should be clearly indicated and the revised budget form should be submitted.
   c. If the amendments require a change in the consent form, the copy of revised Consent Form should be submitted to Ethics Committee for approval. If the amendment demands a re-look at the toxicity or side effects to patients, the same should be documented.
   d. If there are any amendments in the trial design, these must be incorporated in the protocol, and other study documents. These revised documents should be submitted for approval of the IEC, only then can they be implemented.
   e. Approval for amendment changes must be obtained prior to implementation of changes.
   f. The amendment is unlikely to be approved by the IEC unless all the above information is provided.
   g. Any deviation/violation/waiver in the protocol must be informed

STANDS APPROVED UNDER SEAL

Dr.K.Shantaraman MD
Registrar, TIREC
Tirunelveli Medical College, Tirunelveli – 627011
State of Tamilnadu, South India

Dr.J.Suresh Durai, MD
Member Secretary, TIREC
Tirunelveli Medical College, Tirunelveli – 627011
State of Tamilnadu, South India

CERTIFICATE – II

This is certify that this dissertation work title **"ESTIMATION OF RADIOLOGICAL AND PATHOLOGICAL PATTERN IN A CASE OF MASTALGIA"** of the candidate **Dr.A.RAGHURAMAN** with registration Number **221611358** for the award of **M.S.** Degree in the branch of **GENEARL SURGERY (I).** I personally verified the urkund.com website for the purpose of plagiarism check. I found that the uploaded thesis file contains from introduction to conclusion page and result shows **1 percentage** of plagiarism in the dissertation.

Guide & Supervisor sign with Seal.

URKUND

Urkund Analysis Result

Analysed Document:	Raghu dissertation 3.docx (D42248195)
Submitted:	10/7/2018 11:43:00 PM
Submitted By:	raghuraman89@gmail.com
Significance:	1 %

Sources included in the report:

https://ipfs.io/ipfs/QmXoypizjW3WknFiJnKLwHCnL72vedxjQkDDP1mXWo6uco/wiki/Breast.html

Instances where selected sources appear:

1

CONTENTS

SNO	TITLE	PAGENO
1	INTRODUCTION	1
2	AIMS AND OBJECTIVES	2
3	REVIEW OF LITERATURE	5
4	RESULTS	56
5	DISCUSSION	70
6	CONCLUSION	79
7	BIBLIOGRAPHY	
8	ANNEXURE	
9	PROFORMA	
10	MASTER CHART	

LIST OF TABLES

SNO	TITLE	PAGENO
1	TABLE -1 (ANDI CLASSIFICATION OF BENIGN BREAST DISORDERS)	35
2	TABLE-2 (RELATIVE CANCER RISK ASSOCIATED WITH BENIGN BREAST DISORDERS AND IN SITU CARCINOMA OF THE BREAST)	38
3	TABLE-3 (CLASSIFICATION OF BENIGN BREAST DISORDERS)	39
4	TABLE-4 ADVANTAGES AND LIMITATIONS OF MAMMOGRAPHY	48
5	TABLE-5 ADVANTAGES AND LIMITATIONS OF USG	51
6	TABLE-6 AGE DISTRIBUTION	56
7	TABLE-7 AGE GROUP CORRELATIONS:	57
8	TABLE-8 LUMP AND MASTALGIA	58
9	TABLE-9 CYCLICITY OF MASTALGIA	59
10	TABLE-10 MENSTURAL CYCLE AND MASTALGIA	61
11	TABLE-11 FNAC CORRELATION	68
12	TALBE-12 EXCISIONAL BIOPSY REULTS	69
13	TABLE-13 SPLIT UP OF LESIONS IN RELATION TO CYCLICITY	72
14	TABLE-14 SPLIT UP OF LESIONS IN INDUVIDUALS BASED ON MENSTRUAL HISTORY	74
15	TABLE-15 PREVIOUS HISTORY OF BENIGN BREAST DISEASES	75
16	TABLE-16 SPLIT UP OF LESIONS IN INDUVIDUALS WITH PREVIOUS HISTORY OF BENIGN BREAST DISEASES	75
17	TABLE-17 BREAST FEEDING AND MASTALGIA	76
18	TABLE-18 WORKUP IN CASES PRESENTED WITH MASTALGIA	78

LIST OF PICTURES

SNO	TITLE	PAGENO
1	FIG 1. MILK LINES	10
2	FIG 2. FOUR ANATOMICAL QUADRANTS OF BREAST	13
3	FIG 3. BREAST ANATOMY-SAGITTAL SECTION	17
4	FIG 4. BLOOD SUPPLY OF BREAST	19
5	FIG.5 AXILLARY LYMPH NODES:	22
6	FIG 6. LYMPHATICS OF BREAST	24
7	FIG 7. NEUROEDOCRINE CONTROL OF MILK REFLUX	28
8	FIG:8 MAMMOGRAPHY OF BREAST SHOWING DIFFERENT DENSITIES:	49
9	FIG:9 COMPOSITION A HAS LOW RISK, WHILE B &C HAVE MEDIUM RISK AND COMPOSITION D HAVE HIGH RISK FOR DEVELOPING BREAST CANCER	49
10	FIG:10 USG OF A BREAST CYST:	51
11	FIG:11 USG DIFFERENTIATION BETWEEN BENIGN AND MALIGNANT LESIONS:	52
12	FIG:12 FNAC OF BREAST:	54
13	FIG:13 FIBROADENOMA (FNAC)	55
14	FIG:14 DUCTAL CARCINOMA IN SITU:	55

LIST OF CHARTS

SNO	TITLE	PAGENO
1	CHART-1 SPLIT UP BASED ON CLINICAL EXAMINATIONS	56
2	CHART-2 SPLIT UP BASED ON USG AND FNAC RESULTS	57
3	CHART-3 LUMP AND MASTALGIA	58
4	CHART-4 CYCLICITY OF MASTALGIA	59
5	CHART-5CORRELATION BETWEEN CYCLICITY AND CLINICAL EXAMINATION FINDINGS	60
6	CHART-6 CORRELATION BETWEEN CYCLICITY AND USG&FNAC FINDINGS	60
7	CHART-7 MENSTURAL CYCLE AND MASTALGIA	61
8	CHART-8 CORRELATION BETWEEN MENSTURAL CYCLE AND CLINICAL EXAMINATION FINDINGS	62
9	CHART-9 CORRELATION BETWEEN MENSTURAL CYCLE AND USG&FNAC FINDINGS	62
10	CHART-10 PREVIOUS BENIGN BREAST DISEASES	63
11	CHART-11 CLINICAL EXAMINATION FINDINGS IN INDUVIDUALS WITH PREVIOUS HISTORY OF BENIGN BREAST DISEASES	63
12	CHART-12 USG AND FNAC FINDINGS IN INDUVIDUALS WITH PREVIOUS HISTORY OF BENIGN BREAST DISEASES	64
13	CHART-17 BREASTFEEDING AND MASTALGIA	65
14	CHART-14 CLINICAL EXAMINATION FINDINGS	66
15	CHART-15 USG CORRELATION	67
16	CHART-16 FNAC CORRELATION	68
17	CHART-17 EXISIONAL BIOPSY RESULTS	69

LIST OF ABBREVIATIONS

FAD	**Fibroadenoma of the Breast**
FC	**Fibrocystic Disease of the Breast**
NAD	**No Abnormality Detected**
Reg	**Regular menstrual cycles**
Ireg	**Irregular menstrual cycles**
USG	**Ultrasonography**
FNAC	**Fine Needle Aspiration Cytology**
DCIS	**Ductal Carcinoma In Situ**
NA	**Not Applicable**

INTRODUCTION

Mastalgia is the most common breast symptom in patients attending any breast clinic[1]. About 60 to 70 % of women experience some degree of mastalgia, among them 10 to 20 % of cases present with severe pain [2, 3.] The common concerns of patients coming with mastalgia in OPD are: the fear of cancer and the severe degree of pain affecting day to day activity. The majority of patients with mastalgia can be managed with either reassurance or simple drugs. Mastalgia in significant proportion of patients is associated with breast nodularity that may be tender or without a clinically palpable lump. Some degree of mastalgia and breast nodularity are found in normal population [3, 4]. The most important responsibility of the clinician is to rule out benign breast disease or cancer and to reassure the patient.

In addition most of the causes of mastalgia are poorly understood, inadequately assessed and treated. Knowing the magnitude of the problem there is a need to conduct clinicopathological study on mastalgia. The purpose of the study is to profile the natural history, different modes of clinical presentation, to study with respect to various radiological and pathological presentations so that we can make any alteration in treatment and approach. Also we want to correlate the clinical diagnosis with histopathological diagnosis.

AIMS AND OBJECTIVES OF THE STUDY:

- To study the natural history and different modes of clinical presentation of mastalgia.
- To study the various radiological and pathological patterns of mastalgia.
- To correlate clinical diagnosis with the histopathological diagnosis in order to refine our diagnostic skills

SOURCE OF THE DATA:

Patients attending the surgery department of Tirunelveli medical college hospital, with complaints of mastalgia during December 2016 to September 2018.

STUDY DESIGN:

A prospective cohort study of a sample size of 200 patients fulfilling the inclusion criteria will be part of this study.

INCLUSION CRITERIA:

- Patients above 13years of age who present with complaints of mastalgia with or without lump or nipple discharge.
- Lactating women.
- Patients who are willing for follow up.

EXCLUSION CRITERIA:

- Patients with signs and symptoms suggestive of carcinoma breast.
- Pregnant patients.
- Patients who are not willing for follow up.

METHOD OF COLLECTION OF DATA:

- All the patients coming to TVMCH surgery dept. with the features suggestive of mastalgia will be subjected to detailed history and clinical examination.
- All the patients will be subjected to ultra sonography, mammography (only in patients more than 40yrs of age), FNAC (as and when required) besides routine investigations.
- The patients who has lump and in whom surgery is contemplated will undergo excisional biopsy and histopathological examination of excised lump.

INVESTIGATION AND INTERVENTION:

- Routine blood investigations-HB%, TC, DC, ESR, RBS, Urea, Creatinine.
- Ultrasonography of the breasts

- Mammography as and when required (Mammography for patients above the age of 40yrs).
- FNAC and Excisional biopsy as and when required.
- Pus culture and sensitivity in case of breast abscess.

REVIEW OF LITERATURE

CLASSIFICATION OF BREAST PAIN

CYCLICAL MASTALGIA

Cyclical breast pain tends to occur 1 to 2 weeks before menses. The pain is diffuse and bilateral, at times radiating to the upper arm and axilla. Some experience more severe pain in one breast than the other. It is usually relieved by the onset of menstrual flow. Cyclical mastalgia affects age group between 30 and 40. Cyclical mastalgia may have spontaneous resolution in 22 % of patients and persists in up to 65 % of patients even after treatment [4]. However, it can resolve with a pregnancy or menopause, and because of this, it is postulated that cyclical mastalgia may occur due to hormonal stimulation of breast parenchyma at the end of the luteal phase of the menstrual cycle [5]. For many, it may be a lifelong suffering till they attain menopause, if left untreated [4].

NONCYCLICAL MASTALGIA

It is usually unilateral and at times localized to one quadrant of the breast. Affecting the elderly age group, in their 40s or 50s, and are often perimenopausal [5]. There causes of noncyclical mastalgia are periductal mastitis ,cysts, Mondor's disease, traumatic fat necrosis, stretching of Cooper's ligaments , diabetic mastopathy, and neoplasia [3, 5.]

In up to 50 % of cases it can resolve without treatment but in others it's more difficult to treat [3].

Chest wall pain can mimic mastalgia. Common causes of chest wall pain are costochondritis (Teitze's disease), herpes zoster and referred nerve root pain as in cervical spondylitis. Non-chest wall pain can be due to ischemic heart disease, peptic ulcer and biliary pain. [5, 6.]

ETIOLOGY OF MASTALGIA

ENDOCRINE ABNORMALITIES

Three main theories postulated:

1. Increased estrogen secretion from the ovary
2. Deficient progesterone production
3. Hyperprolactinemia

The serum hormone levels studies do not support the first two postulates, as hormonal levels are similar in both patient group and control group[7] however, a recent study published showed a significantly depressed level of luteal progesterone, thus supporting the second theory [12].

It is found that the patients with mastalgia had a significantly greater rise in prolactin levels when compared to the control groups . A study conducted at Cardiff Mastalgia Clinic also arrived at a result of rise in stimulated prolactin level in women presenting with mastalgia[11] .

WATER RETENTION

In the study conducted at Cardiff Mastalgia Clinic, the total amount of body water was measured using radioactive water (D2O) in mastalgia patients and control groups women. It was observed that there was no significant differences in water gain in mastalgia patients compared to control group in between the 5^{th} and 25^{th} day of menstrual cycle[13]. So the study concluded that simple retention of body water is not associated with breast pain [13].

PSYCHONEUROSIS

Astley Copper suggested that some patients presenting with mastalgia were neurotic. A Middlesex Hospital Questionnaire (MHQ) analysed psycho - neurotic profiles of 300 patients with mastalgia(both cyclical and noncyclical) and 156 patients with varicose veins. The MHQ scores of patients presented with mastalgia were significantly lower than those of neurotic patients, thus showing no correlation of psychoneurosis in occurrence of mastalgia [14].

CAFFEINE AND METHYLXANTHINE

It is suggested that breast cells overstimulation may occur due to interference with adenosine triphosphate degradation pathway by methylxanthine. Minton et al. observed that caffeine restriction produced improvement in symptoms; however, the study was uncontrolled[15] . Subsequent randomized control trials have failed to demonstrate the benefit of caffeine restriction in relieving mastalgia [16.]

MISCELLANEOUS FACTORS

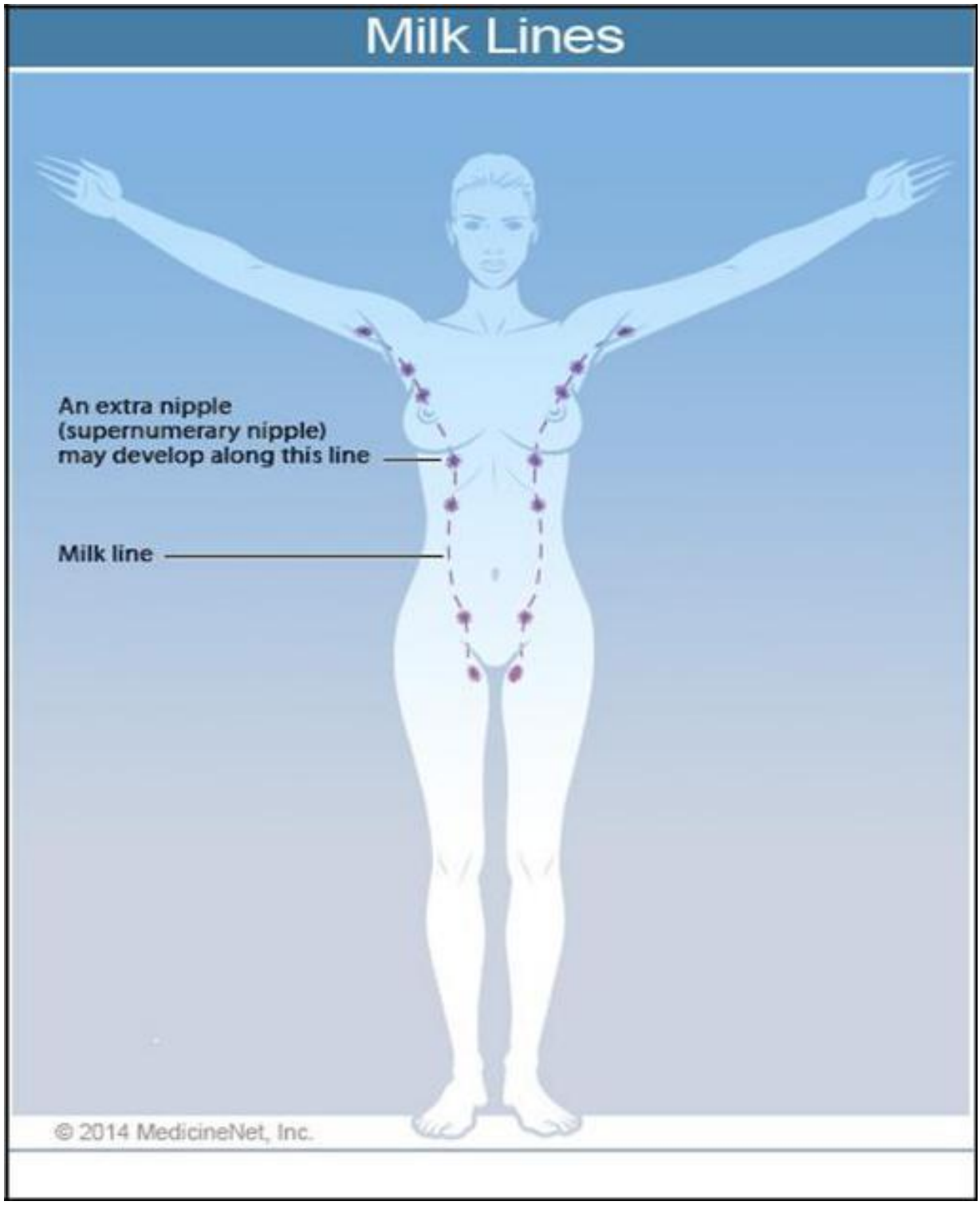
Mastalgia had a positive association with degree of ductal dilatation, as supported by ultrasound scan in a study conducted by Peters et al[17].

EMBRYOLOGY OF BREAST

Breasts develop from mammary ridges which extend from the axilla to inguinal region by the end of 6th week of gestation. This ridges or the milk lines wont persist in later days and disappears. The part of the pectoral region is retained giving raise to breasts.

The breast develops when the ingrowth forms a primary tissue bud in mesenchyme. The primary bud, initiates the development of sixteen to twenty secondary buds. Epithelial cords arise from those secondary buds and extend well into the surrounding mesenchyme. Major ducts/lactiferous ducts develop and open into a shallow mammary pit. During infancy, the mesenchyme proliferates and transforms the mammary pit into a nipple. The breast will be underdeveloped in the female until puberty, then it enlarges to ovarian estrogen and progesterone stimuli, which kick starts the proliferation of the epithelial and connective tissue components. However, the breasts remain in a state of incomplete developement until pregnancy.

FIG 1. MILK LINES



FUNCTIONAL ANATOMY OF BREAST

The breasts consist of mammary glands and associated skin and connective tissues. The mammary glands are modified sweat glands in the superficial fascia anterior to the pectoral muscles and the anterior thoracic wall. The base, or attached surface, of each breast extends vertically from ribs II to VI, and transversely from the lateral border of sternum to as far laterally as the mid-axillary line. The upper lateral region of the breast can project around the lateral margin of the pectoralis major muscle and into the axilla. This axillary process (axillary tail) may perforate deep fascia and extend as far superiorly as the apex of the axilla.

The mammary glands consist of a series of ducts and associated secretory lobules. These converge to form 15 to 20 lactiferous ducts, which open independently onto the nipple. Each duct has a dilated portion, the lactiferous sinus, in which a small droplet of milk accumulates or remains in the nursing mother. The nipple is surrounded by a circular pigmented area of skin termed the areola. The areola contains numerous sebaceous glands, which enlarge during pregnancy and secrete an oily substance that provides a protective lubricant for the areola and nipple. The nipples are conical or cylindrical prominences in the centre of the areola. The nipples have no fat, hair, or sweat glands.

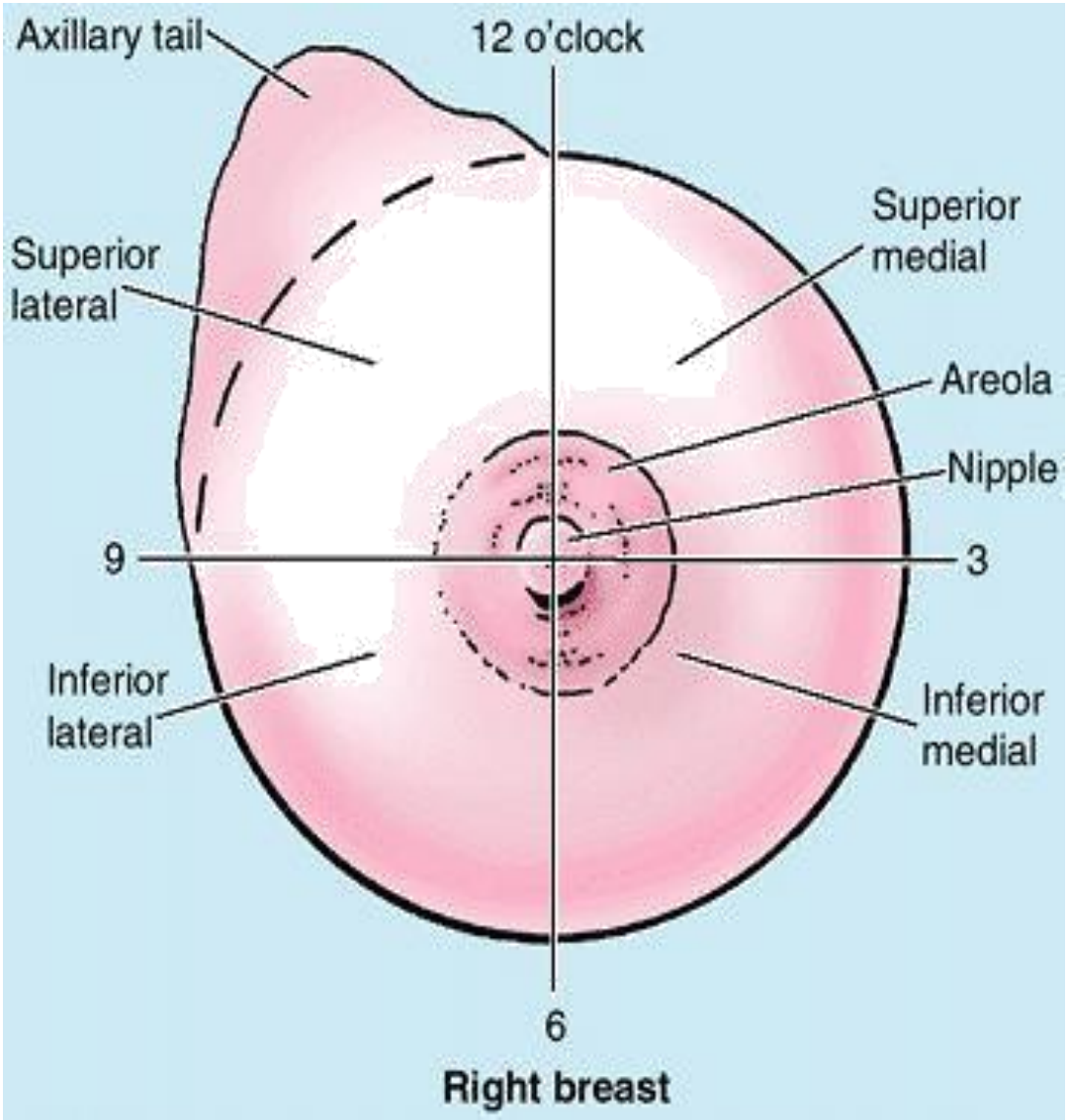
The tips of the nipples are fissured with the lactiferous ducts opening into them. The nipples are composed mostly of circularly arranged smooth muscle fibres that compress the lactiferous ducts during lactation and erect the nipples in response to stimulation, as when a baby begins to suckle.

A well-developed, connective tissue stroma surrounds the ducts and lobules of the mammary gland. In certain regions, this condenses to form well-defined ligaments, the suspensory ligaments of breast, which are continuous with the dermis of the skin and support the breast.

The breast lies on deep fascia related to the pectoralis major, serratus anterior and the aponeurosis of external oblique muscle. The deep pectoral fascia envelops the pectoralis major muscle and is continuous with the deep abdominal fascia below. It attaches to the sternum medially and to the clavicle and axillary fascia above and laterally. Along the lateral border of the pectoralis major muscle, the anterior lamina of the deep pectoral fascia unites with the fascia of the pectoralis minor muscle and, more inferiorly, with the fascia of the serratus anterior. A posterior extension of this fascia is continuous with the fascia of the latissimus dorsi and forms the suspensory ligament of the axilla. A layer of loose connective tissue (the retromammary space) separates the breast from the deep fascia and provides some degree of movement over underlying structures.

For the anatomical location and description of tumors and cysts, the surface of the breast is divided into four quadrants (fig. 2). The upper outer quadrant of the breast contains a greater volume of tissue than do the other quadrants.

FIG 2. FOUR ANATOMICAL QUADRANTS OF BREAST



NIPPLE-AREOLA COMPLEX

The epidermis of the nipple-areola complex is pigmented very much when compared to the surrounding. At puberty, this pigment becomes darker and the nipple assumes an elevated position. Then in pregnancy, the areolar region enlarges and pigmentation is further increased in intensity. The areola also contains sweat glands, sebaceous glands, and Montgomery's tubercles (accessory glands, which produce small elevations on the surface of the areola). Smooth muscle bundle fibres, lie in a circumferential fashion inside the dense connective tissue and longitudinally inturn along the course of major ducts. They were responsible for the nipple erection in response to sensory stimuli. The dermal papilla which is located at the tip of the nipple has been provided with numerous sensory nerve endings and Meissner's corpuscles. This rich sensory innervation of the breast is of physiological importance, because the sucking of the child evokes a neurohormonal response that results in milk ejection.

INACTIVE AND ACTIVE BREAST:

Each lobe of the breast ends in lactiferous duct (0.2 to 0.4 cm in diameter).

The lactiferous ducts then opens through a narrowed orifice (0.2 to 0.35 mm in radius) into the ampulla of the nipple areola complex. Lactiferous sinus is the distal dialated portion of the lactiferous duct that lies below the nipple areola complex. It has the lining of stratified squamous epithelium. Lactiferous ducts / major ducts are lined by 2 layers of cuboidal cells. The minor ducts are in contrast lined by a single layer of columnar or cuboidal cells.

The Myoepithelial cells arise from ectoderm and they reside between the epithelial cells in the basal lamina. Myoepithelial cells contain myofibrils which inturn are responsible for milk ejection. Inactive breast, the epithelium is sparse and less. In the early phases of the menstrual cycle in women, minor ducts are cord-like structures with small lumina. The estrogen stimulation occuring at the time of ovulation, causes the alveolar epithelium to increase in height and the duct lumen becomes more prominent with accumulation of some secretions. As the hormonal stimulation stops at the end, the alveolar epithelium regresses in height.

During pregnancy in women, the breast goes through proliferative changes, ductal maturation and increase in size in response to hormonal stimulus. The lymphocytes and plasma cells from circulation accumulate within the connective tissues. The minor ducts gives off branches and the alveoli develop from these branches.

Development of the alveoli is asymmetric, and there is a considerable degree of variation in the development within a single lobule. Following the delivery of child, the breasts gains additional volume by means of hypertrophy. Then secretory products accumulate in the lumina of the minor ducts.

Alveolar epithelium contains abundant of some cell organelles like mitochondria, Golgi complexes and dense lysosomes.

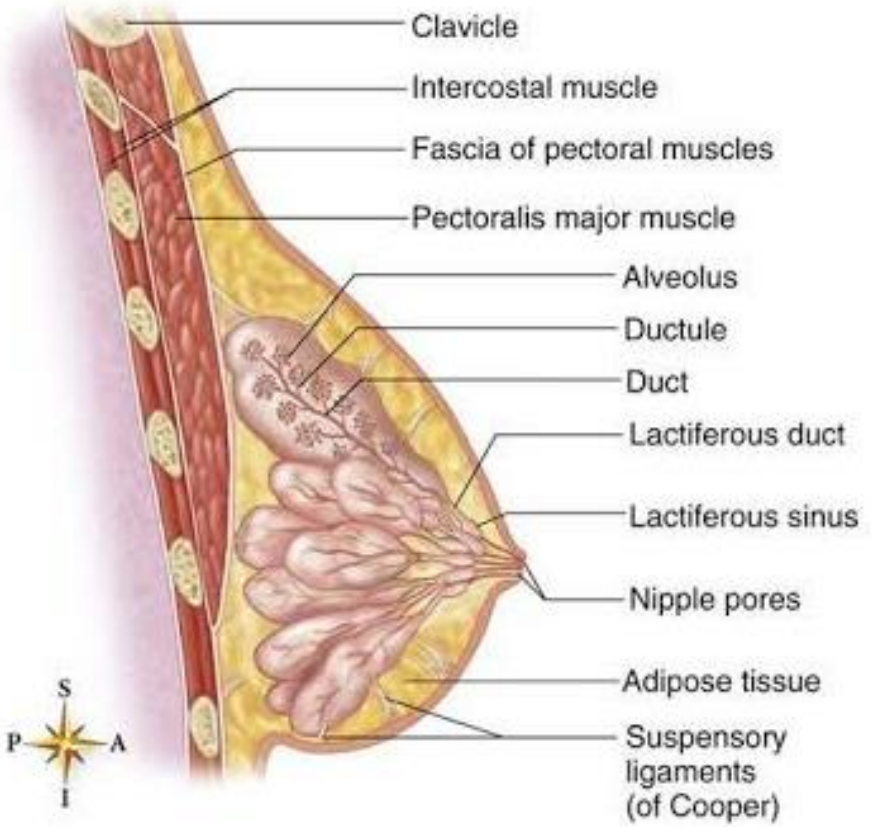
Function of the alveolar epithelium in the production of milk:

(a) Endoplasmic reticulum produces the protein component of the milk

(b) Lipid component of milk, are produced as free lipid droplets in the cytoplasm.

Milk secreted during the first few days after parturition is called colostrums or witch milk. Colustrum has very low lipid content but rich in terms of antibodies. The lymphocytes and plasma cells which accumulated in the ductal lumen during the physiological phase are the source of the antibodies. In the next few weeks the number of cells decrease and the lipid-rich milk is released from nipple.

FIG 3. BREAST ANATOMY-SAGITTAL SECTION



BLOOD SUPPLY OF BREAST:

The breast receives its principal arterial blood supply from

(a) perforating branches of the internal thoracic (or internal mammary) artery, a branch of the subclavian artery; it courses parallel with the lateral border of the sternum behind the transversus thoracis muscles. From the internal thoracic artery, perforating branches pass through the intercostal muscles of the first six interspaces and the pectoralis major muscle to supply the medial half of the breast and surrounding skin. Typically these arteries descend laterally toward the nipple-areolar complex so that most of the arterial supply arises above the level of the nipple. Therefore, radial incisions in the upper half of the breast are less likely to injure the major arterial supply than transverse incisions. The inferior parts of the breast below the level of the nipple are almost free of major vessels.

(b) lateral branches of the posterior intercostal arteries; and

(c) branches from the axillary artery, including the highest thoracic, lateral thoracic, pectoral branches of the thoracoacromial artery and unnamed mammary branches. The lateral thoracic artery is the most important of these vessels.

The second, third, and fourth anterior intercostal perforators and branches of the internal mammary artery arborize in the breast as the medial mammary arteries.

The veins of the breast and chest wall follow the course of the arteries, with venous drainage being toward the axilla. The three principal groups of veins are

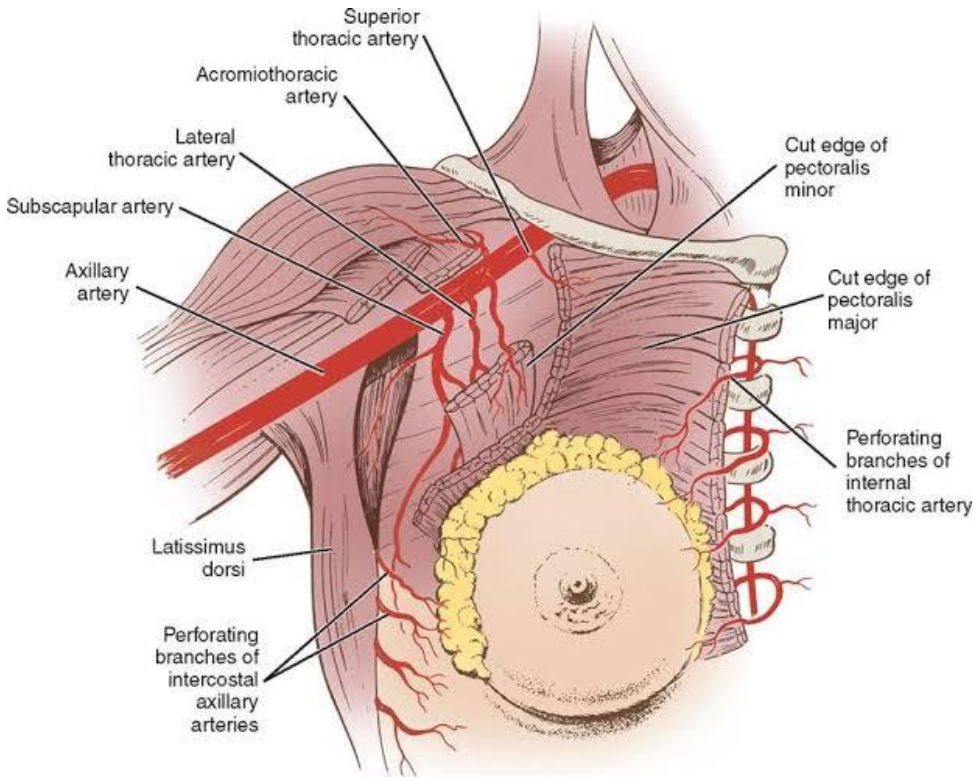
(a) perforating branches of the internal thoracic vein - The perforating tributaries from the medial half of the breast carry the greater part of the venous drainage. They enter the internal thoracic vein, which joins the brachiocephalic vein.

(b) perforating branches of the posterior intercostal veins, and

(c) tributaries of the axillary vein.

Batson's vertebral venous plexus, which invests the vertebrae and extends from the base of the skull to the sacrum, may provide a route for breast cancer metastases to the vertebrae, skull, pelvic bones, and central nervous system.

FIG 4. BLOOD SUPPLY OF BREAST



NERVE SUPPLY:

Lateral cutaneous branches of the third through sixth intercostal nerves provide sensory innervation of the breast (lateral mammary branches) and of the anterolateral chest wall. Cutaneous branches that arise from the cervical plexus, specifically the anterior branches of the supraclavicular nerve, supply a limited area of skin over the upper portion of the breast. The intercostobrachial nerve is the lateral cutaneous branch of the second intercostal nerve and may be visualized during surgical dissection of the axilla. Resection of the intercostobrachial nerve causes loss of sensation over the medial aspect of the upper arm.

LYMPHATIC DRAINAGE OF BREAST:

The lymphatic flow of the breast is of great clinical significance because metastatic dissemination occurs principally by the lymphatic routes. The dominant lymphatic drainage of the breast is derived from the dermal network. The breast lymphatics branch extensively and do not contain valves: lymphatic blockage through tumour occlusion may therefore result in reverse blood flow through the lymphatic channels. The direction of lymphatic flow within the breast parallels the major venous tributaries and enters the regional lymph nodes via the extensive periductal and perilobular network of lymphatic channels. Lymph passes from the nipple, areola, and lobules of the gland to the subareolar lymphatic plexus.

From this plexus most lymph (> 75%), especially from the lateral breast quadrants, drains to the axillary lymph nodes, initially to the anterior or pectoral nodes for the most part. However, some lymph may drain directly to other axillary nodes or even to interpectoral, deltopectoral, supraclavicular, or inferior deep cervical nodes.

Axillary nodes are 20–40 nodes, grouped artificially as pectoral (anterior), subscapular (posterior), central and apical. Surgically, the nodes are described in relation to pectoralis minor. Those lying below pectoralis minor are the low nodes (level 1), those behind the muscle are the middle group (level 2), while the nodes between the upper border of pectoralis minor and the lower border of the clavicle are the upper or apical nodes (level 3).There are six axillary lymph node groups recognized by surgeons

(a) the axillary vein group (lateral);

(b) the external mammary group (anterior or pectoral group),

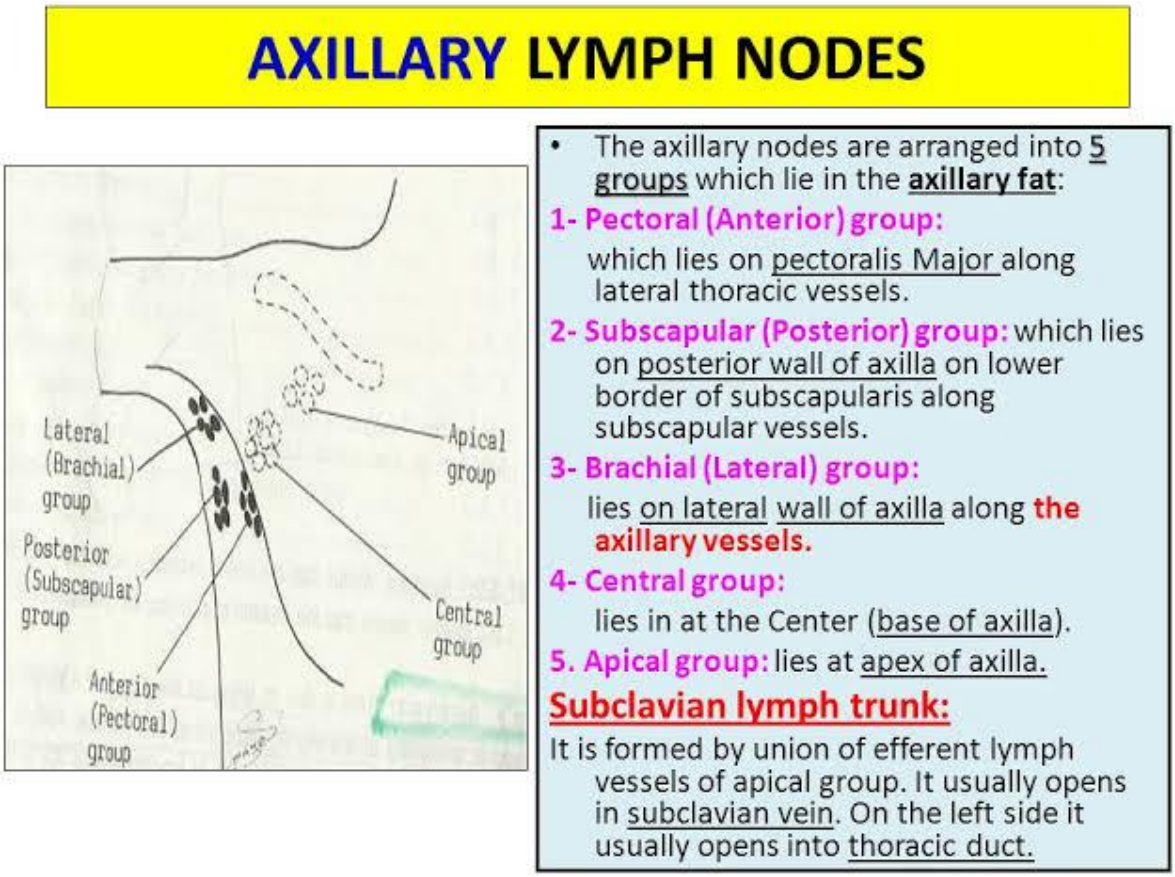
(c) the scapular group (posterior or subscapular),

(d) the central group,

(e) the subclavicular group (apical), and

(f) the interpectoral group (Rotter's nodes),

FIG.5 AXILLARY LYMPH NODES:



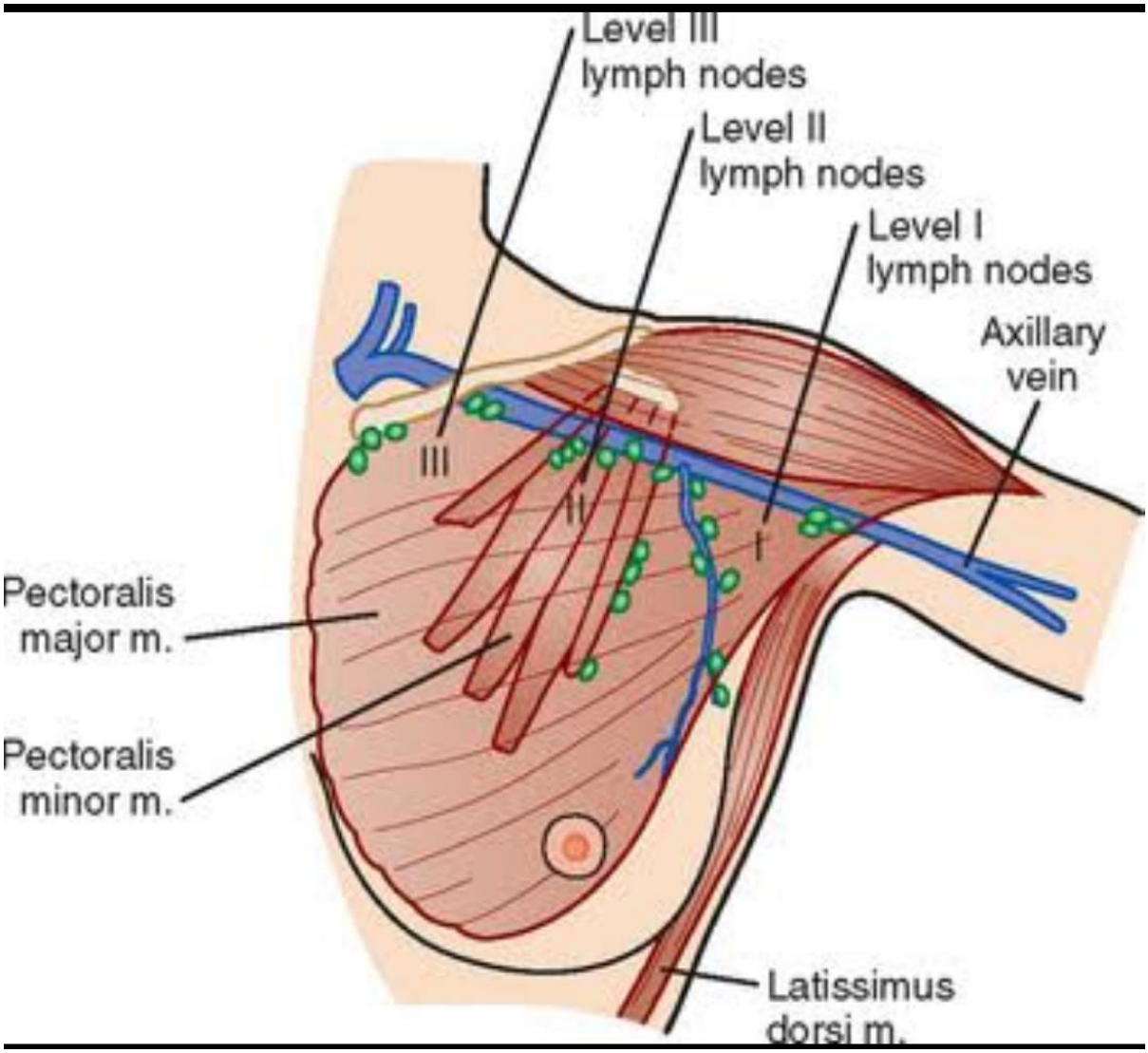
Lymph from the axillary nodes drains into clavicular (infraclavicular and supraclavicular) lymph nodes and from them into the subclavian lymphatic trunk, which also drains lymph from the upper limb. Efferent vessels directly from the breast pass round the anterior axillary border through the axillary fascia to the pectoral lymph nodes; some may pass directly to the subscapular nodes. A few vessels pass from the superior part of the breast to the apical axillary nodes, sometimes interrupted by the infraclavicular nodes or by small, inconstant, interpectoral nodes.

Lymphatic vessels occasionally follow lateral cutaneous branches of the posterior intercostal arteries to the intercostal nodes.

Lymph from the skin of the breast, except the nipple and areola, drains into the ipsilateral axillary, inferior deep cervical, and infraclavicular lymph nodes and also into the parasternal lymph nodes of both sides. Dermal lymphatics penetrate pectoralis major to join channels that drain the deeper parenchymal tissues, and then follow the vascular channels to terminate in the subclavicular lymph nodes. Part of the medial side of the breast drains towards the internal thoracic group of lymph nodes whereas lymph from the inferior quadrants may pass deeply to abdominal lymph nodes (subdiaphragmatic inferior phrenic lymph nodes). The internal thoracic chain may drain inferiorly via the superior and inferior epigastric lymphatic routes to the groin. Connecting lymphatics across the midline may provide access of lymphatic flow to the opposite axilla. Lymph from the parasternal nodes enters the bronchomediastinal lymphatic trunk, which also drains lymph from the thoracic viscera. The termination of these lymphatic trunks varies; traditionally, these trunks are described as merging with each other and with the jugular lymphatic trunk, draining the head and neck to form a short right lymphatic duct on the right side or entering the termination at the thoracic duct on the left side.

However, in many cases, the trunks open independently into the junction of the internal jugular and subclavian vein, the venous angle, to form the brachiocephalic veins. In some cases, they open into both of these veins.

FIG 6. LYMPHATICS OF BREAST



PHYSIOLOGY OF THE BREAST

BREAST DEVELOPMENT AND FUNCTION

Breast development and function are initiated by a variety of hormonal stimuli, which includes the estrogen, progesterone, prolactin, oxytocin, thyroid hormone, cortisol, and growth hormone. Estrogen, progesterone, and prolactin especially have trophic effects that are essential to breast development and function. Estrogen is responsible for ductal development, whereas progesterone is responsible for differentiation of epithelium and lobular development. Prolactin is the hormonal stimulus for lactogenesis in pregnancy and the postpartum period. It up regulates hormone receptors and also stimulates epithelial development. Figure 7 depicts the secretion of neurotrophic hormones from hypothalamus, which inturn is responsible for regulation of the secretion of the hormones that affect the breast tissues.

The luteinizing hormone (LH) and follicle - stimulating hormone (FSH) regulates the release of estrogen and progesterone from the ovaries. The release of LH and FSH from the basophilic cells of the anterior pituitary is regulated by the secretion of gonadotropin-releasing hormone (GnRH) from hypothalamus.

Positive and negative feedback mechanisms regulate the secretion of LH, FSH, and GnRH. These hormones together are responsible for the development, function, and maintenance of breast tissues.

In female neonate, the circulating estrogen and progesterone levels decrease after birth and remain low throughout childhood period because of the sensitivity of the hypothalamic-pituitary axis to the negative feedback mechanisms from these hormones. With the beginning of puberty, there is a decrease in the sensitivity of the hypothalamic-pituitary axis to negative feedback mechanisms and an increase in its sensitivity to positive feedback mechanism to estrogen. These physiologic events causes an increase in GnRH, FSH, and LH secretion and resultant increase in estrogen and progesterone secretion by the ovaries, which inturn leads to establishment of the menstrual cycle. At the beginning of the menstrual cycle, the breast increase in the size and density. With the onset of menstruation, the breast engorgement and epithelial proliferation decreases.

PREGNANCY, LACTATION, AND SENESCENCE

A dramatic increase in circulating ovarian and placental estrogens and progestins are evident during pregnancy, which causes alterations in the form and substance of the breast. The breast increases in size and density as the ductal and lobular epithelium proliferates.

The areolar skin darkens, and the accessory areolar glands (Montgomery's glands) become more prominent. In the 1^{st} and 2^{nd} trimesters, the minor ducts branch and develop.

During the 3rd trimester, fat droplets accumulates in the alveolar epithelium and colostrum fills the alveolar and ductal spaces. In late pregnancy, prolactin initiate the synthesis of milk fats and protein.

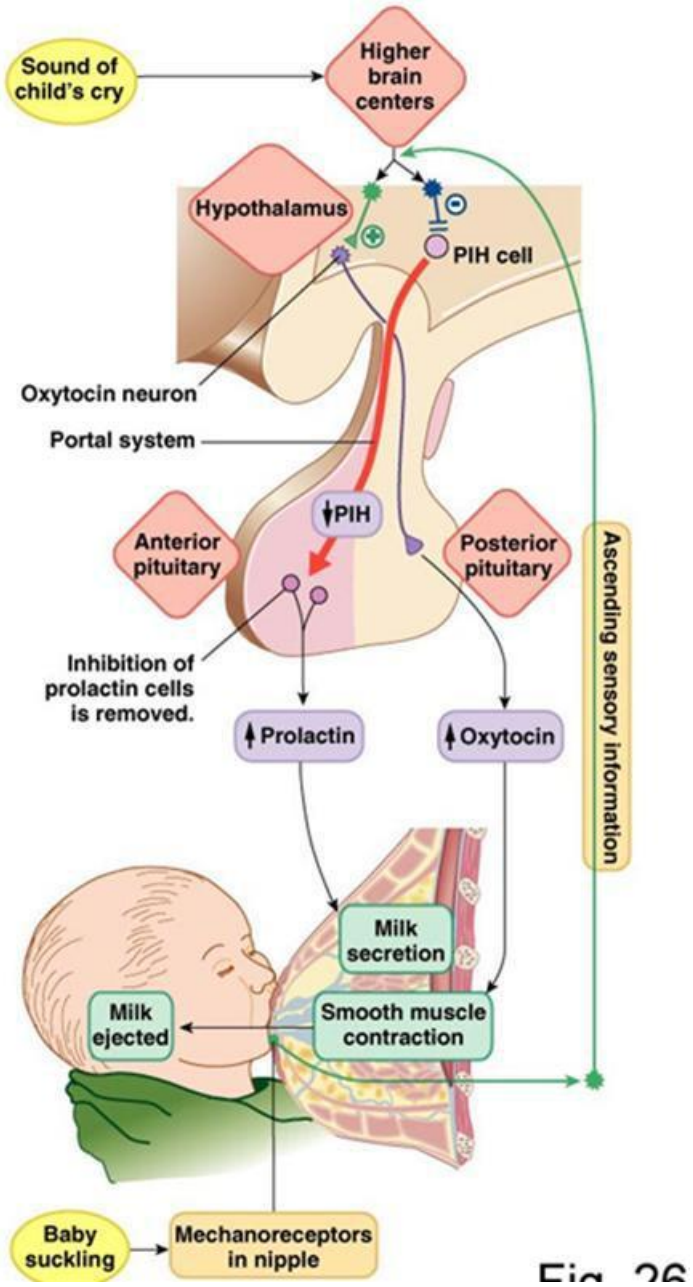
After delivery of the placenta, circulating progesterone and estrogen levels falls, prolactin expresses its lactogenic action. Milk production and secretion are controlled by neural reflex arcs that begin in nerve endings of the nipple-areola complex. Maintenance of lactation needs regular stimulation of these neural reflexes, which stimulates prolactin secretion and milk letdown.

Oxytocin release is initiated by the auditory, visual, and olfactory stimuli associated with the process of nursing. Oxytocin results in contraction of the myoepithelial cell and expulsion of milk. After weaning of the infant, prolactin and oxytocin levels decreases. Dormant milk results in increased pressure within the ducts and alveoli, which causes atrophy of the epithelium.

With the onset of menopause there is a decrease estrogen and Progesterone secretions by the ovaries and involution of the ducts and alveoli of the breast tissue occurs. The surrounding fibrous connective tissue increases and breast tissues is replaced by adipose tissues.

FIG 7. NEUROEDOCRINE CONTROL OF MILK

REFLUX



INFECTIOUS AND INFLAMMATORY DISORDERS:

Except during the postpartum period, infections of the breast are rare. They are classified as:

- Intrinsic (secondary to abnormalities in the breast)
- Extrinsic (secondary to an infection in the adjacent structure, e.g., skin, thoracic cavity).

BACTERIAL INFECTION

Staphylococcus aureus and *Streptococcus* are the most frequent organisms found in nipple discharge from an infected breast. Breast abscesses (typically staphylococcal infections) presents with tenderness, erythema, and hyperthermia. These abscesses have positive correlation to lactation and occur within the few weeks of breastfeeding. The staphylococcal infection progress and results in subcutaneous, subareolar, interlobular and retromammary abscesses, which needs to be drained. Before drainage ultrasonography is effective in delineating the required extent of the drainage area. Drainage is done with a circumareolar incisions or incisions paralleling Langer's lines.

Staphylococcal infections tend to be more localized and occurs in the deeper parts of the breast tissues, while streptococcal infections usually present diffusely in the superficial layers.

They are treated with local wound care, including application of warm compresses, and with administration of IV antibiotics (penicillins or cephalosporins). Breast infections may be chronic, with recurrent abscess formation. Cultures are performed to identify acid-fast bacilli, anaerobic and aerobic bacteria, and fungi. Biopsy of the abscess cavity wall is recommended at the time of drainage to rule out underlying breast cancer with necrotic tumor. Hospital-acquired puerperal infections are less common nowadays, but lactating women who presents with milk stasis or non infectious inflammation may still develop this problem. Epidemic puerperal mastitis is initiated by virulent strains of methicillin-resistant *S. Aureus(MRSA)* that are transmitted by the suckling neonate and may result in considerable morbidity and occasional mortality.

Purulent fluid may be expressed from the nipple. In these cases, breastfeeding is stopped, IV antibiotics started, and surgical therapy is initiated. *Nonepidemic (sporadic) puerperal mastitis* is the infection of the interlobular connective tissue of the breast. The patient develops nipple fissuring and milk stasis, which causes a bacterial infection in retrograde fashion. Breasts are emptied using breast suction pumps, which shortens the duration of symptoms and reduces the recurrences rates. The initiation of antibiotic therapy results in a satisfactory outcome in nearly >95% of cases.

Zuska's disease (*recurrent periductal mastitis)*, is the recurrent retroareolar infections, abscesses and duct fistulas located near nipple.This syndrome is managed symptomatically, by IV antibiotics incision and drainage as and when required. Long-term control can be obtained by wide débridement of chronically infected tissue and/or terminal duct resection. But postoperative infections are worrisome. Smoking has been a risk factor for this condition.

MYCOTIC INFECTIONS:

Fungal infections of the breast are uncommon and usually caused by blastomycosis or sporotrichosis. Intraoral fungi are inoculated into the breast tissue by the suckling neonate. These present as mammary abscesses in close proximity to the nipple-areola complex. Pus mixed with blood may be expressed from sinus tracts. Antifungal agents are administered for the treatment of systemic (noncutaneous) infections. This therapy generally eliminates the need for surgical intervention, but some may benefit from drainage of an abscess, or even partial mastectomy, to eradicate the persistent fungal infection. *Candida albicans* of the breast skin presents as erythematous, scaly lesions of the inframammary or axillary folds. Scrapings from the lesions can be used to demonstrate fungal elements.

Therapy usually involves the removal of predisposing factors such as maceration and the topical application of nystatin.

HIDRADENITIS SUPPURATIVA

Hidradenitis suppurativa of the nipple-areola complex or axilla is a chronic inflammatory condition that originates in the accessory areolar glands of Montgomery or within the axillary sebaceous glands. Chronic acne is a predisposing factor for developing hidradenitis. When located in and around the nipple - areola complex, this disease may be difficult to distinguish from other chronic inflammatory conditions, Paget's disease of the nipple, or invasive breast cancer. Involvement of the axillary skin is often contiguous and multifocal. Treatment involves Antibiotic therapy with incision and drainage of fluctuant areas. Sometimes excision of the involved areas may be required. Large areas of skin loss may require coverage with advancement flaps or split-thickness skin grafts.

MONDOR'S DISEASE:

Mondor's disease (variant of thrombophlebitis) is a rare condition that involves inflammation of the superficial veins of the anterior chest wall and breast.

Mondor described the condition as "string phlebitis". An inflamed and thrombosed vein presenting as a tender, cord -like structure. Frequently involves the lateral thoracic vein, the thoraco epigastric vein and the superficial epigastric vein. Typically, the woman presents with acute pain in the lateral aspect of the breast or in the anterior chest wall.

A tender, firm cord like structure is found to follow the distribution of one of the major superficial veins. Rarely, bilateral presentation may be seen, and there may be no evidence of thrombophlebitis in other anatomic sites. This benign, disorder is not indicative of a cancer. When the diagnosis is doubtful, or when a mass like lesion is present near the tender cord, biopsy is indicated.

Treatment for Mondor's disease includes anti-inflammatory medications and application of warm fomentation along the symptomatic vein. Other measures include brassiere support as well as restriction of motion of the ipsilateral extremity and shoulder. The process usually resolve in 4 to 6 weeks. If they are refractory to therapy, excision of the involved vein segment is indicated.

BENIGN DISORDERS AND DISEASES OF THE BREAST:

Benign breast disorders and diseases encompass a wide spectrum of clinical and pathologic entities.

Surgeons need an in-depth knowledge of these disorders and diseases so that a clear explanation and appropriate treatment can be given to affected individual and unnecessary long -term follow up can be avoided.

ABERRATIONS OF NORMAL DEVELOPMENT AND INVOLUTION:

The principles guiding the classification of the aberrations of normal development and involution (ANDI) of benign breast conditions are as follows:

(a) Benign breast disorders and diseases are related to the normal processes of reproductive life and to involution.

(b) There is a spectrum of breast conditions that ranges from normal to disorder to disease.

(c) The ANDI classification encompasses all aspects of the breast condition, including pathogenesis and the degree of abnormality.

The horizontal row of Table-1 defines ANDI along a spectrum from normal, to mild abnormality (disorder), to severe abnormality (disease). The vertical component indicates the period during which the condition develops.

TABLE -1 (ANDI CLASSIFICATION OF BENIGN BREAST DISORDERS)

	NORMAL	DISORDER	DISEASE
Early reproductive years (age 15-25years)	Lobular Development	Fibroadenoma	Giant Fibroadenoma
	Stromal Development	Adolescent hypertrophy	Gigantomastia
	Nipple eversion	Nipple inversion	Subareolar abscess
			Mammary duct fistula
Late reproductive years (age 25-40yrs)	Cyclical changes of menstruation	Cyclical mastalgia	Incapacitating mastalgia
		Nodularity	
	Epithelial hyperplasia of pregnancy	Bloody nipple discharge	
Involution (age 35-55years)	Lobular involution	Macrocysts	
		Sclerosing lesions	
	Duct involution		
	Dilatation	Duct ectasia	Periductal mastitis
	Sclerosis	Nipple retraction	
	Epithelial turnover	Epithelial hyperplasia	Epithelial hyperplasia with atypia

EARLY REPRODUCTIVE YEARS

Fibroadenomas are commonly seen younger women aged between 15 to 25 years. Fibroadenomas usually grow to 1 or 2 cm in diameter and then remain stable but may grow to a larger size. Small fibroadenomas (1 cm in size) are considered normal, whereas larger fibroadenomas (3 cm) are considered a disorder. Giant fibroadenomas (>3 cm) are disease. Similarly, multiple fibroadenomas (with more than 5 lesions in one breast) are very uncommon and are considered disease. The precise etiology of adolescent breast hypertrophy is not known. A spectrum of changes from limited to massive stromal hyperplasia (gigantomastia) is seen. Nipple inversion is a developmental disorder of the major ducts, which prevents normal protrusion of the nipple. Mammary duct fistulas occurs when nipple inversion predisposes to major duct obstruction, inturn leading to recurrent subareolar abscess.

LATER REPRODUCTIVE YEARS

Cyclical mastalgia and nodularity usually are associated with premenstrual enlargement of the breast and are considered normal. Cyclical mastalgia and severe painful nodularity are viewed differently when compared to the physiologic discomfort and lumpiness.

Painful nodularity persisting for more than a week of the menstrual cycle is considered a disorder.

INVOLUTION

Involution of lobular epithelium is dependent on the specialized stroma surrounding it. However, an integrated involution of breast stroma and epithelium is not always seen, and disorders of the involution are common. When the stroma involution is too quick, alveoli remain and form microcysts, which may lead to macrocysts. Macrocysts are common and are often subclinical. They do not require any specific treatment. Sclerosing adenosis is a disorder of both the proliferative and the involutional phases of the breast developement. Duct ectasia (dilated ducts) and periductal mastitis are also included in ANDI classification. Periductal fibrosis is a sequela of periductal mastitis, which results in nipple retraction. Sixty percent of women aged 70 may exhibit some degree of epithelial hyperplasia. Atypical proliferative diseases include ductal and lobular hyperplasia, both display some features of carcinoma in situ. Women having atypical ductal or lobular hyperplasia are in fourfold risk for breast cancer (Table-2).

TABLE-2 (RELATIVE CANCER RISK ASSOCIATED WITH BENIGN BREAST DISORDERS AND IN SITU CARCINOMA OF THE BREAST)

Abnormality	Relative Risk
Nonproliferative lesions of the breast	No increased risk
Sclerosing adenosis	No increased risk
Intraductal papilloma	No increased risk
Florid hyperplasia	1.5 to 2-fold
Atypical lobular hyperplasia	4-fold
Atypical ductal hyperplasia	4-fold
Ductal involvement by cells of atypical ductal hyperplasia	7-fold
Lobular carcinoma in situ	10-fold
Ductal carcinoma in situ	10-fold

Source: Modified from Dupont WD, et al: Risk factors for breast cancer in women with proliferative breast disease. *N Engl J Med* 312:146, 1985.

TABLE-3 (CLASSIFICATION OF BENIGN BREAST DISORDERS)

Nonproliferative disorders of the breast
Cysts and apocrine metaplasia
Duct ectasia
Mild ductal epithelial hyperplasia
Calcifications
Fibroadenoma and related lesions
Proliferative breast disorders without atypia
Sclerosing adenosis
Radial and complex sclerosing lesions
Ductal epithelial hyperplasia
Intraductal papillomas
Atypical proliferative lesions
Atypical lobular hyperplasia
Atypical ductal hyperplasia

Source: Modified from Consensus Meeting[29] with permission.

PATHOLOGY OF NONPROLIFERATIVE DISORDERS

The histologic differentiation of benign, atypical, and malignant changes is of paramount importance for management of benign breast diseases. Determining the clinical significance of these changes is a problem that is compounded by inconsistent nomenclature.

The classification system was originally developed by Page[26], which separates the various types of benign breast disorders and diseases into three clinical groups:

1. Nonproliferative disorders
2. Proliferative disorders without atypia
3. Proliferative disorders with atypia .

Nonproliferative disorders of the breast account for about 70% of benign breast conditions and carry no increased risk of breast cancer. This category includes cysts, fibroadenomas, duct ectasia, periductal mastitis, calcifications and related disorders.

Breast macrocysts are considered involutional disorder, have a high frequency of occurrence, and are often multiple. Duct ectasia is characterized by dilated subareolar ducts that are palpable and associated with thick nipple discharge.

Haagensen regarded duct ectasia as a primary event which leads to the stagnation of secretions, epithelial ulceration and resultant leakage of duct secretions (containing chemically irritating fatty acids) into periductal tissue.

This sequence produces a local inflammatory process with periductal fibrosis which results in nipple retraction. Another theory considers periductal mastitis as a primary process, which leads to weakening and secondary dilatation of ducts. It is possible that both processes occur together which explains the wide spectrum of problems seen, including nipple discharge, nipple retraction, inflammatory masses, and abscesses.

Calcium deposits are frequently seen in the breast. Most are benign and are due to cellular secretions and debris or may be due to trauma and inflammation. Calcifications that are strongly associated with cancer include microcalcifications, which vary in shape and density (<0.5 mm in size) and fine, linear calcifications, which may show branching. Fibroadenomas tend to have abundant stroma with histologically normal cellular elements. They are hormonal dependent similar to that of normal breast lobule.They lactate during pregnancy and involute in the postmenopausal period.

Adenomas of the breast are well circumscribed and are made up of benign epithelium with sparse stroma, which differentiates them from fibroadenomas[26].

They may be divided into tubular adenomas and lactating adenomas. Tubular adenomas occurs in young non pregnant women,

Whereas lactating adenomas occurs during pregnancy or during the postpartum period. Hamartomas are discrete breast tumors which are usually 2 to 4 cm in diameter, firm in consistency and sharply circumscribed. Adenolipomas are sharply circumscribed nodules of fatty tissue that has elements of normal breast lobules and duct.

FIBROCYSTIC DISEASE

The term fibrocystic disease is nonspecific. Frequently, it is used to describe symptoms, to rationalize the need for breast biopsy, and to explain breast biopsy results. Synonyms include chronic cystic disease, chronic cystic mastitis, fibrocystic changes, cystic mastopathy, Schimmelbusch's disease, mazoplasia, fibroadenomatosis, Reclus' disease, and Cooper's disease[26.] Fibrocystic disease refers to a spectrum of histopathologic changes that are best diagnosed and treated specifically.

PATHOLOGY OF PROLIFERATIVE DISORDERS WITHOUT CELLULAR ATYPIA:

Proliferative breast disorders without atypia include ductal epithelial hyperplasia, sclerosing adenosis, radial scars, complex sclerosing lesions and intraductal papillomas. Sclerosing adenosis is commonly seen during the reproductive and perimenopausal years and has no malignant potential.

Histological changes consist of ductal proliferation (proliferative), epithelial regression & stromal fibrosis (involutional). Sclerosing adenosis is causes distortion of breast lobular architecture and multiple microcysts predispose to this condition. It can sometimes present as a palpable mass. Benign calcifications are seen. Central sclerosis, apocrine metaplasia, epithelial proliferation and papilloma formation leads to the formation of radial scars to complex sclerosing lesions of the breast.

Radial scars are lesions less than 1cm in diameter, whereas larger ones are called complex sclerosing lesions. Radial scars are formed at sites of terminal duct branching (histological changes found to be radiating from a central area of fibrosis).

All of the histological features of larger complex sclerosing lesions are similar to radial scars, but there is a greater disturbance of papilloma formation, apocrine metaplasia, and occasionally sclerosing adenosis.

Mild ductal hyperplasia is characterized by the presence of three or four cell layers above the basement membrane. Moderate ductal hyperplasia is characterized by the presence of five or more cell layers above the basement membrane. Florid ductal epithelial hyperplasia occupies at least 70% of a minor duct lumen. It is found in >20% of breast tissue specimens, is either solid or papillary, and is associated with an increased cancer risk (see Table-2).

Intraductal papillomas arise from the major ducts of breast tissue, usually in premenopausal women. They generally are of size <0.5 cm in diameter but can grow as large as 5 cm. The presenting symptom is nipple discharge, which is either serous or bloody. On gross examination, intraductal papillomas are pinkish, friable and attached to the wall of the involved duct by a stalk. They have a very less malignant potential and it is not a risk for developing breast cancer (unless accompanied by atypia). However, multiple intraductal papillomas in younger women, which are less frequently associated with nipple discharge, have an increased risk of malignant transformation.

PATHOLOGY OF ATYPICAL PROLIFERATIVE DISEASES

The atypical proliferative diseases have some of the features of carcinoma in situ but lack a major defining feature of carcinoma. In 1978, Haagensen and colleagues described lobular neoplasam as a spectrum of disorders ranging from atypical lobular hyperplasia to lobular carcinoma in situ (LCIS).

CLINICAL ASSESSMENT AND INVESTIGATIONS

A detailed history and clinical examination will point to the diagnosis in most cases.

INVESTIGATIONS

- Ultrasound examination is done in all patients presenting with mastalgia.
- Mammogram is done in women aged 40 years and above.
- FNAC is done in patients with clinically palpable lump or nodularity and in patients with ultrasound findings of abnormalities.
- Patients with FNAC reports of fibroadenoma with lump size >3cm went in for excision biopsy.

BREAST IMAGING MODALITIES

MAMMOGRAPHY:

Screening:

Mammography, is suitable for screening especially in women above 40yrs of age.

Diagnostic:

Mammography is indicated as a diagnostic method in determining whether a lesion has a malignant potential or benign. It also screens for occult disease found in the surrounding tissue.

CONVENTIONAL MAMMOGRAPHY

Mammography is practically a high-resolution x-ray imaging of compressed breast. This process involves radiation transmission through the breast tissue and the eventual projection of anatomical structures on a film screen/image sensor.

Two views of each breast,

- Craniocaudal (CC) view
- Mediolateral oblique (MLO - 45^0) view

are obtained by mammography.

Additional views may fashioned for individual cases based on the location of breast lesion.

Misconceptions regarding the risk of radiation from mammography persist, despite the fact that no women has shown to develop breast cancer as a result of mammography. Studies show even after multiple examinations at doses much higher than the current dose of 3 to 4 mGy (0.3– 0.40 rad) has no positive correlation with development of breast cancer. The adverse effects of screening include pain and discomfort (breast compression), patient recall to do additional imaging and false-positive biopsies. The risk benefit ratio from screening, are in favour of detecting early lesions[21].

The sensitivity of mammography depends on the patient factor like composition and density of the tissue. It is difficult to look for small lesions in denser tissue, even though some small foci of calcification can be seen. Initially, mammogram is used to detect any mass or calcifications followed by architectural distortion.

A mass by definition is a space occupying lesion imaged in two different views in mammography. It is further categorized by its shape, margins, density, size, orientation and calcifications.

Micro calcifications are seen as bright dot-spots on screening mammograms, usually in the form of clusters. These are nothing but calcium deposits from cell secretion and necrotic debris. The shape and the distribution of calcifications in breast tissue indicate malignancy.

Benign micro calcifications are usually smooth and sharply defined and have high uniform density. Malignant micro calcifications appear in irregular shape and are variably distributed through breast tissue[23, 24].

In the official BI-RADS publication, the calcifications have been described by its appearance and distribution in the breast tissue[23, 24, 25].

TABLE-4 ADVANTAGES AND LIMITATIONS OF MAMMOGRAPHY

Advantages	Limitations
Better in detection of spiculated masses	Solid and cystic masses cannot be differentiated
Better detection of microcalcification	Not done in lactation and pregnancy
Multiple lesions can be better made out with relation to each other	Sensitivity decreases in dense breast & breast infections
Sterotactic biopsy can be done.	Not done in very painful tender breast
	Not done in flat masses and mimics of breast masses (bony or pleural lesions)
	Complete visualization of the breast is not possible in any single view
	Very large breasts could not be evaluated adequately

FIG:8 MAMMOGRAPHY OF BREAST SHOWING DIFFERENT DENSITIES:

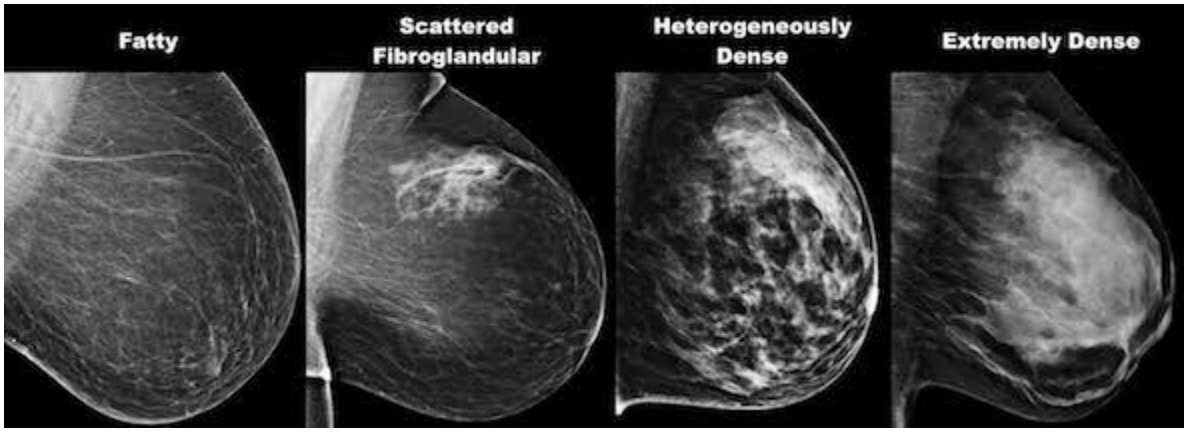
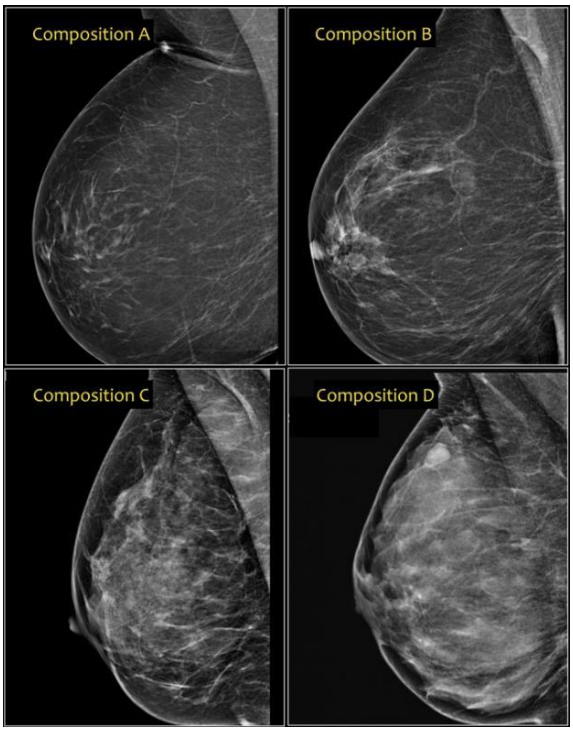


FIG:9 COMPOSITION A HAS LOW RISK, WHILE B &C HAVE MEDIUM RISK AND COMPOSITION D HAVE HIGH RISK FOR DEVELOPING BREAST CANCER



ULTRASONOGRAPHY OF BREAST:

USG is mainly used as a cheap and efficient tool to differentiate cystic lesion from solid breast masses. USG can be safely performed in young or pregnant patients as it do not produce any form of ionizing radiation. USG is useful in detecting breast masses which are hidden on mammogram and to evaluate breast lesions in younger women especially less than 30yrs of age. Abnormalities demonstrated on the mammogram can further be followed up using USG. USG is also a useful tool in the guidance of therapeutic procedures and biopsies.

Women younger than 30years have dense glandular breast tissue which reduces the diagnostic sensitivity of mammogram, but USG is especially useful in these cases. Evaluation of breast abscesses is better done with USG. Fine needle aspiration cytology (FNAC) of the lesion can be done under ultrasound guidance.

The overall sensitivity of ultrasound in detecting breast lumps was 92.5%. The sensitivity of ultrasound in detection of palpable breast lumps was 95%. However its role in diagnosis of carcinoma of the breast needs further evaluation before it can be used for screening of carcinoma breast.

TABLE-5 ADVANTAGES AND LIMITATIONS OF USG:

Advantages	Limitations
To detect the type of lesion - cystic or solid and contents within (echoes, debris, septae)	Fairly well-defined malignant masses can be labelled benign
Better used in tender breast and infective condition.	The lesion can be obscured by fat and air.
Dense breasts are evaluated better	Microcalcifications can be missed
No radiation exposure, better in pregnancy and lactation	Sensitivity depends on operator
It is real time and whole breast region can be evaluated even in large breast.	Multicentric lesion and isoechoic lesions can be missed
Vascularity can be commented	
Flat bony lesions and mimics of the breast masses can be evaluated	

FIG:10 USG OF A BREAST CYST:

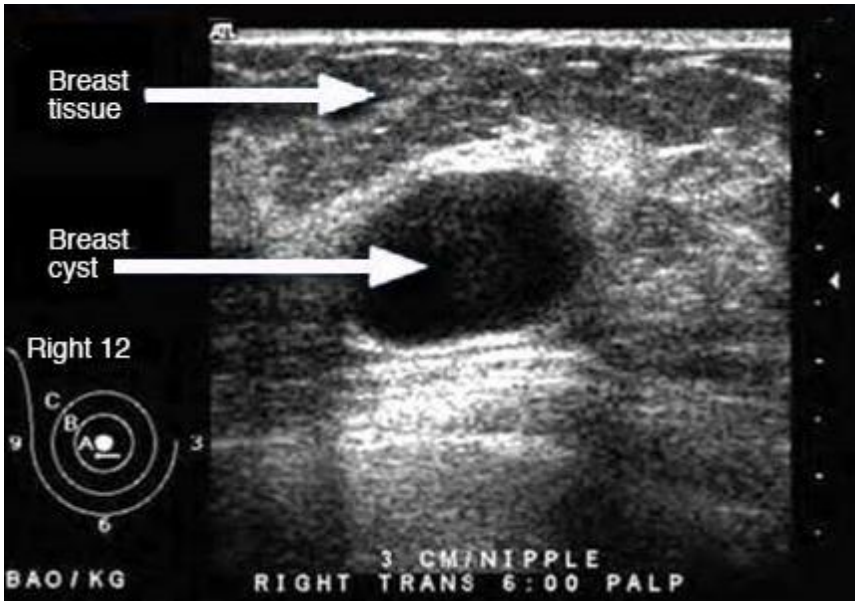
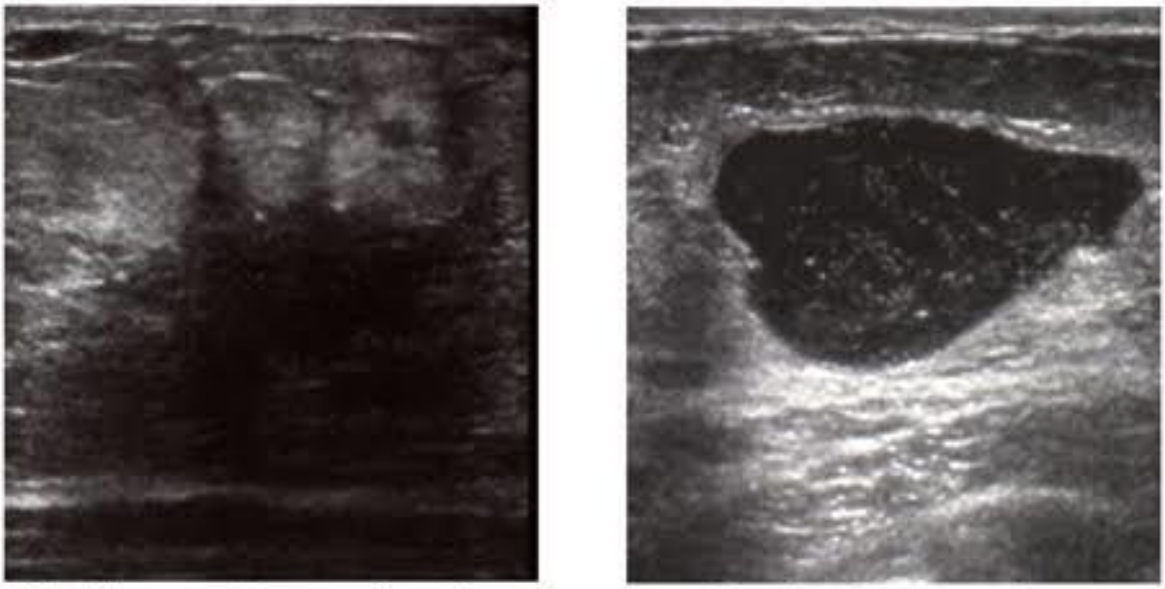


FIG:11 USG DIFFERENTIATION BETWEEN BENIGN AND MALIGNANT LESIONS:



FNAC:

Fine needle aspiration cytology (FNAC) of the palpable breast masses has become a well accepted diagnostic technique. It provides a sensitive and economical method of obtaining cytological material for examination. It can be done during an OPD visit without the need of anesthesia thus eliminating the cost of outpatient surgery.

PROCEDURE:

The patient is informed about the procedure and informed consent obtained from the patient before subjecting to fine needle aspiration cytology of the breast lump. The standard procedure was followed, making use of a 10ml syringe bearing a 22-gauze needle. The mass is located clinically and fixed in position with free hand. The skin over the puncture site is sterilized with spirit or betadine. The needle is placed over the skin and its direction determined before it is introduced in the mass in one swift motion. This minimized the discomfort to the patient. Once the tumor is engaged full vacuum is applied, while the needle is moved back and forth in the mass with short strokes. The syringe is observed for appearance of any specimen. When this appeared, the syringe pistol is slowly released and allowed to return to the neutral position. The needle is then withdrawn from the mass. The needle is temporarily removed from the apparatus, and the syringe is filled with air by pulling back the plunger. The needle is reattached, and the specimen is expressed on to a glass slide. It is then immersed in a fixative 95% methyl alcohol.

FIG:12 FNAC OF BREAST:

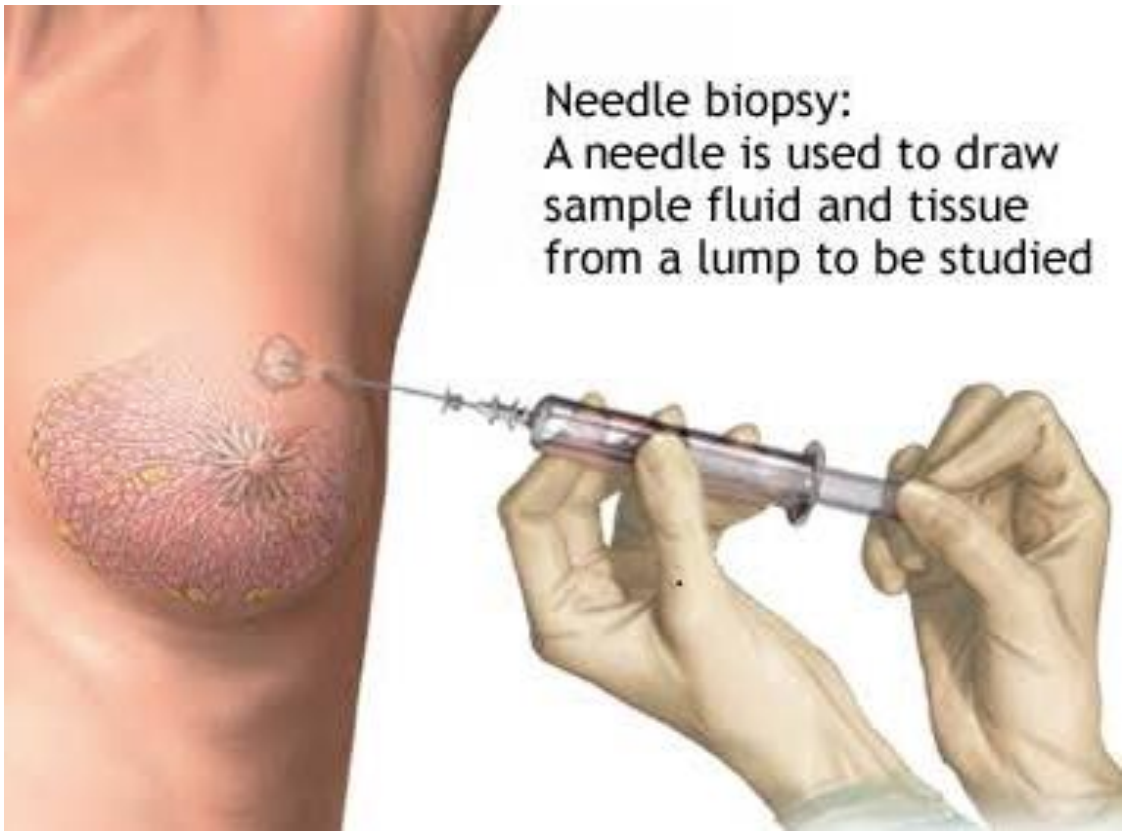


FIG:13 FIBROADENOMA (FNAC)

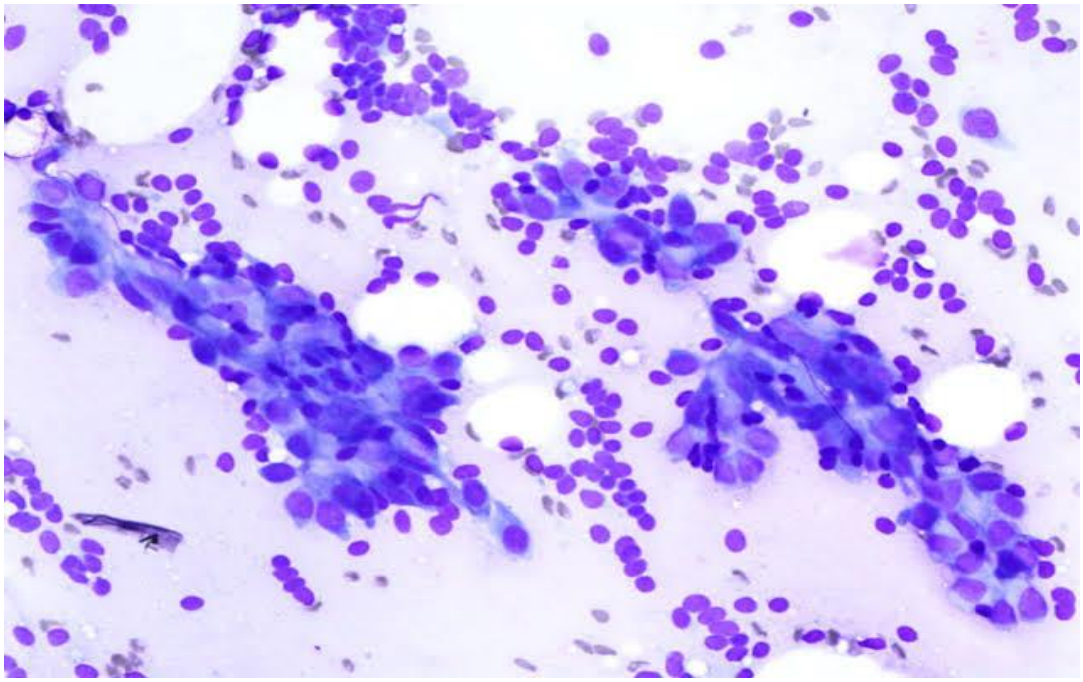
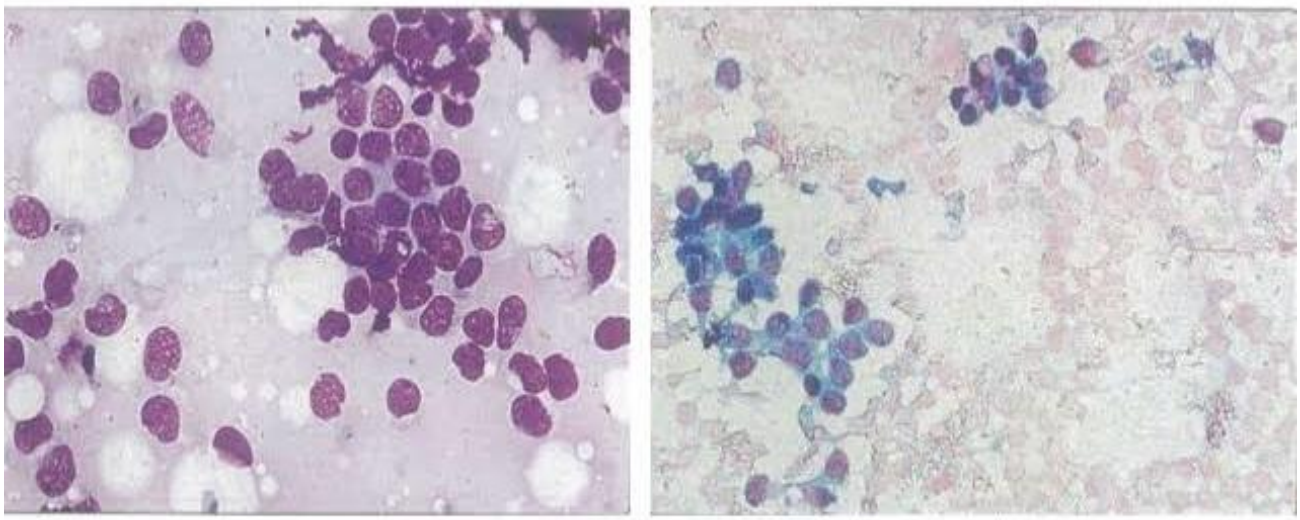


FIG:14 DUCTAL CARCINOMA IN SITU:



RESULTS

AGE AND MASTALGIA:

TABLE-6 AGE DISTRIBUTION

AGE	NUMBER OF PATIENTS	PERCENTAGE
15-20	44	22%
21-25	78	39%
26-30	42	21%
31-35	22	11%
36-40	10	5%
41-45	4	2%

CHART-1 SPLIT UP BASED ON CLINICAL EXAMINATIONS:

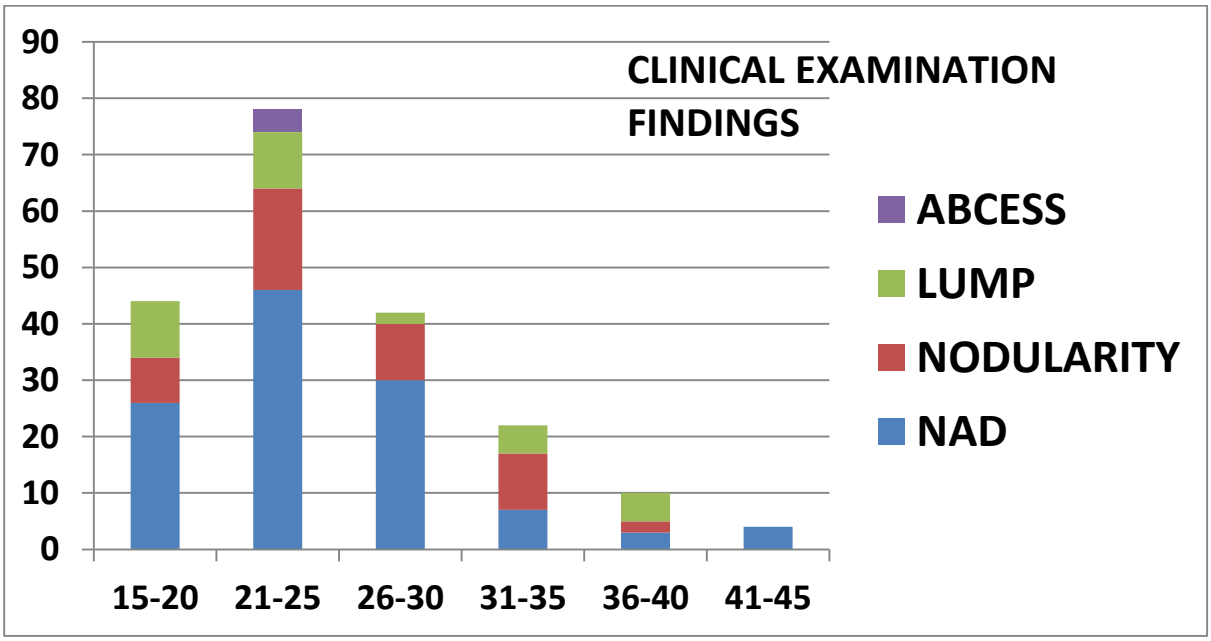
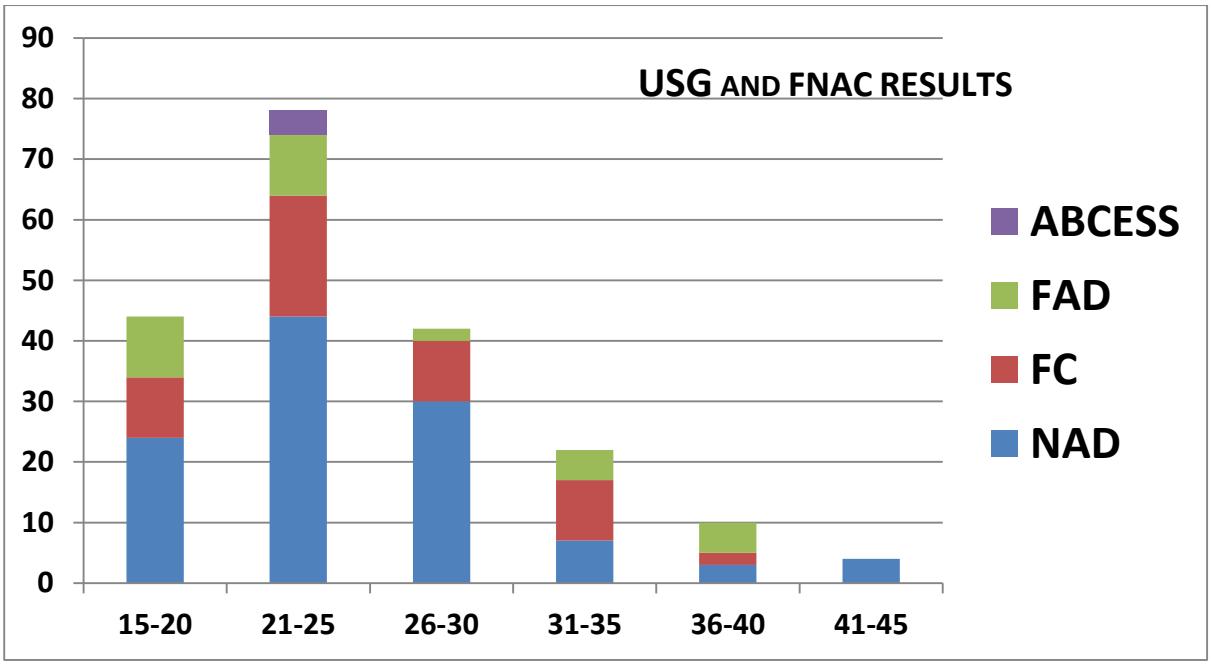


TABLE-7 AGE GROUP CORRELATIONS:

AGE GROUP	CLINICAL EXAMINATION				USG AND FNAC			
	NAD	NODULARITY	LUMP	ABCESS	NAD	FC	FAD	ABCESS
15-20(44pts)	26	8	10	-	24	10	10	-
21-25(78pts)	46	18	10	4	44	20	10	4
26-30(42pts)	30	10	2	-	30	10	2	-
31-35(22pts)	7	10	5	-	7	10	5	-
36-40(10pts)	3	2	5	-	3	2	5	-
41-45(4pts)	4	0	0	-	4	0	0	-
TOTAL(200pts)	116	48	32	4	112	52	32	4

CHART-2 SPLIT UP BASED ON USG AND FNAC RESULTS:

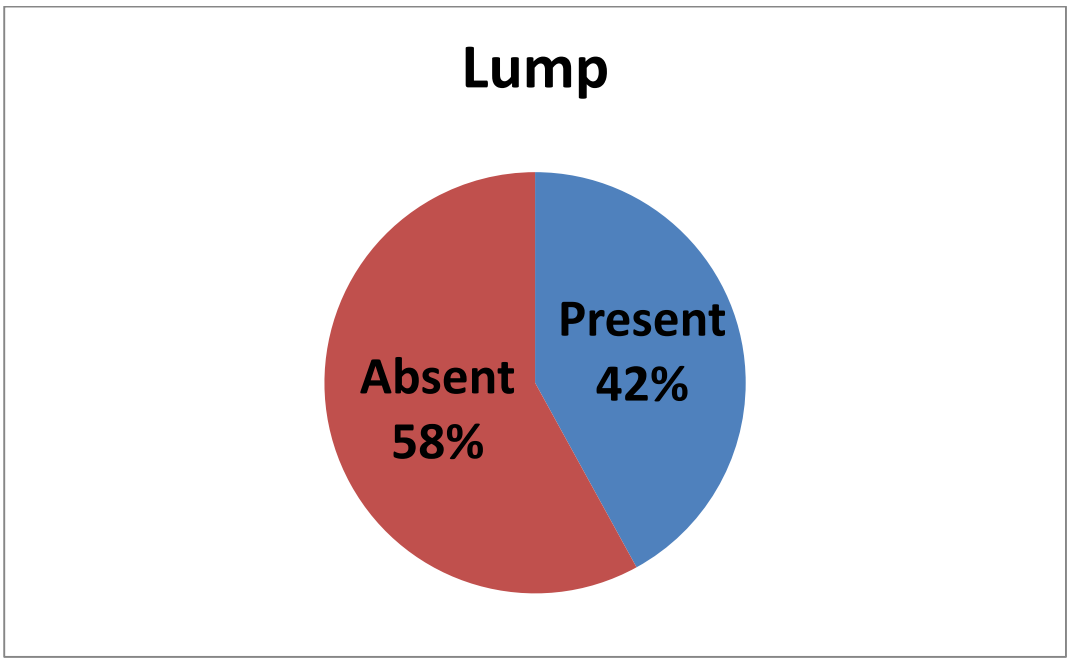


LUMP AND MASTALGIA:

TABLE-8 LUMP AND MASTALGIA

LUMP	NUMBER OF PATIENTS (n=200)	PERCENTAGE
Present	84	42%
Absent	116	58%

CHART-3 LUMP AND MASTALGIA



CYCLICITY OF MASTALGIA:

TABLE-9 CYCLICITY OF MASTALGIA:

TYPE OF MASTALGIA	NUMBER OF PATIENTS (n=200)	PERCENTAGE
Cyclical	88	44%
Non Cyclical	112	56%

CHART-4 CYCLICITY OF MASTALGIA:

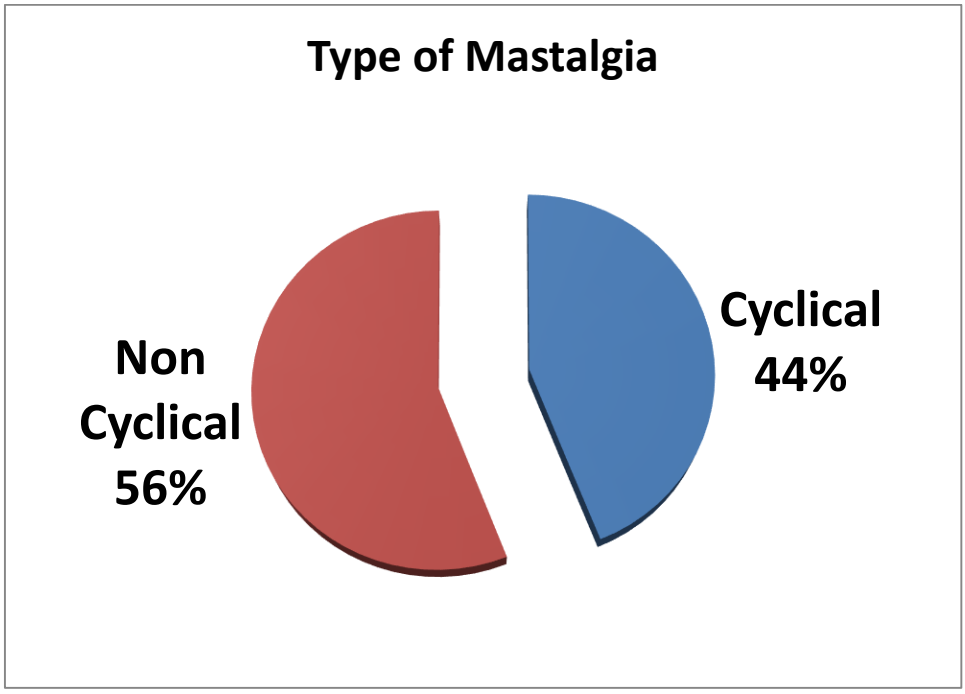


CHART-5 CORRELATION BETWEEN CYCLICITY AND CLINICAL EXAMINATION FINDINGS:

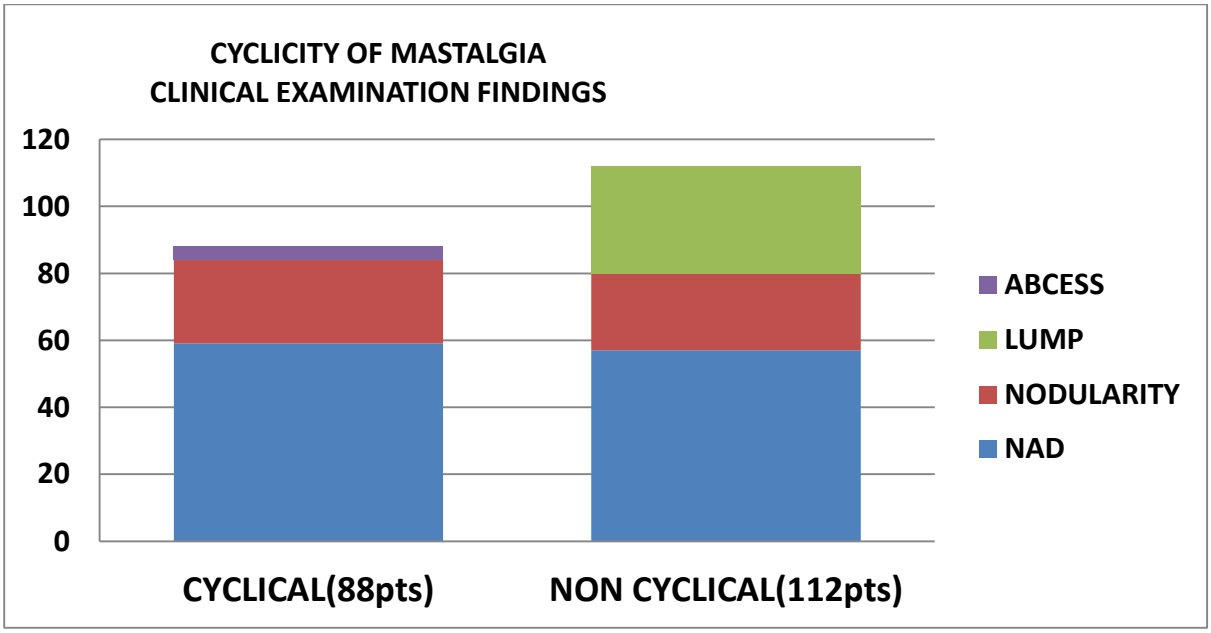
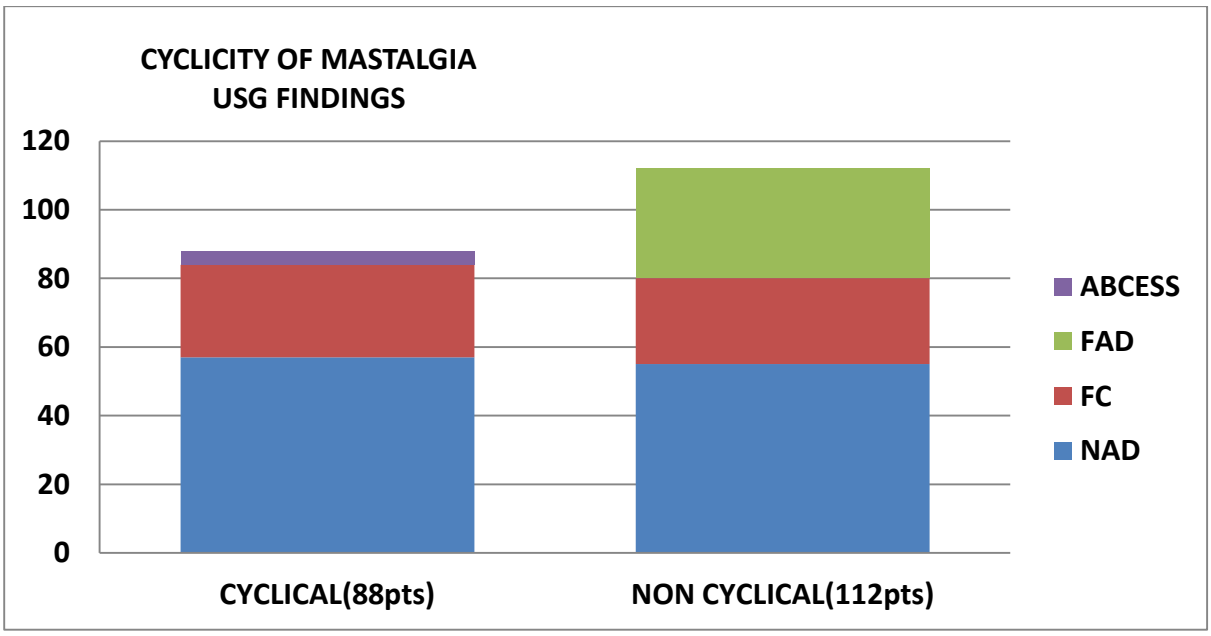


CHART-6 CORRELATION BETWEEN CYCLICITY AND USG&FNAC FINDINGS:



MENSTURAL CYCLE AND MASTALGIA:

TABLE-10 MENSTURAL CYCLE AND MASTALGIA

MENSTURAL CYCLES	NUMBER OF PATIENTS (n=200)	PERCENTAGE
REGULAR	142	71%
IRREGULAR	58	29%

CHART-7 MENSTURAL CYCLE AND MASTALGIA:

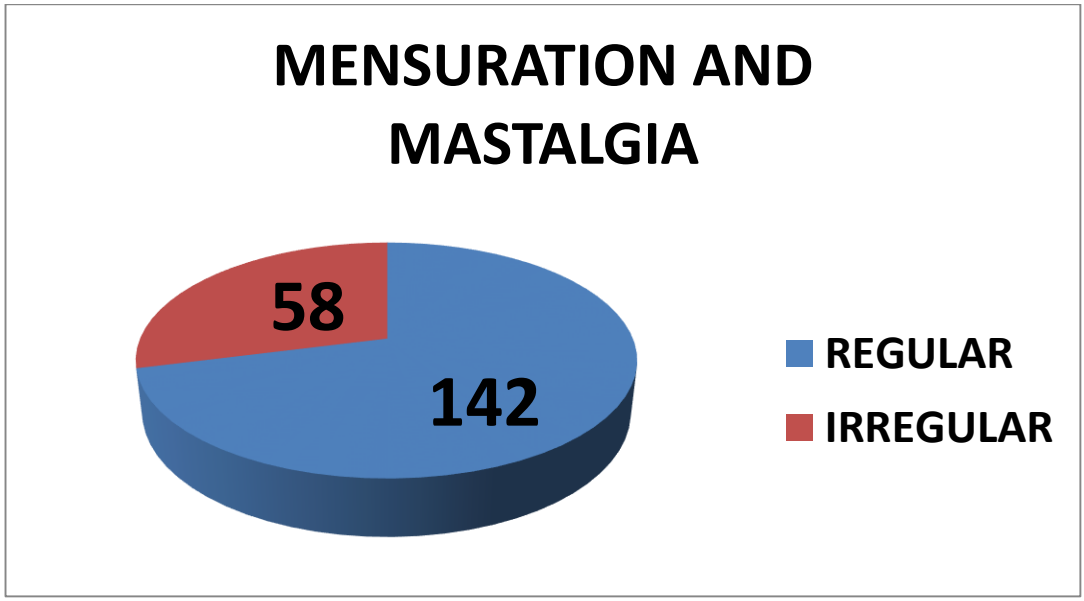


CHART-8 CORRELATION BETWEEN MENSTURAL CYCLE AND CLINICAL EXAMINATION FINDINGS:

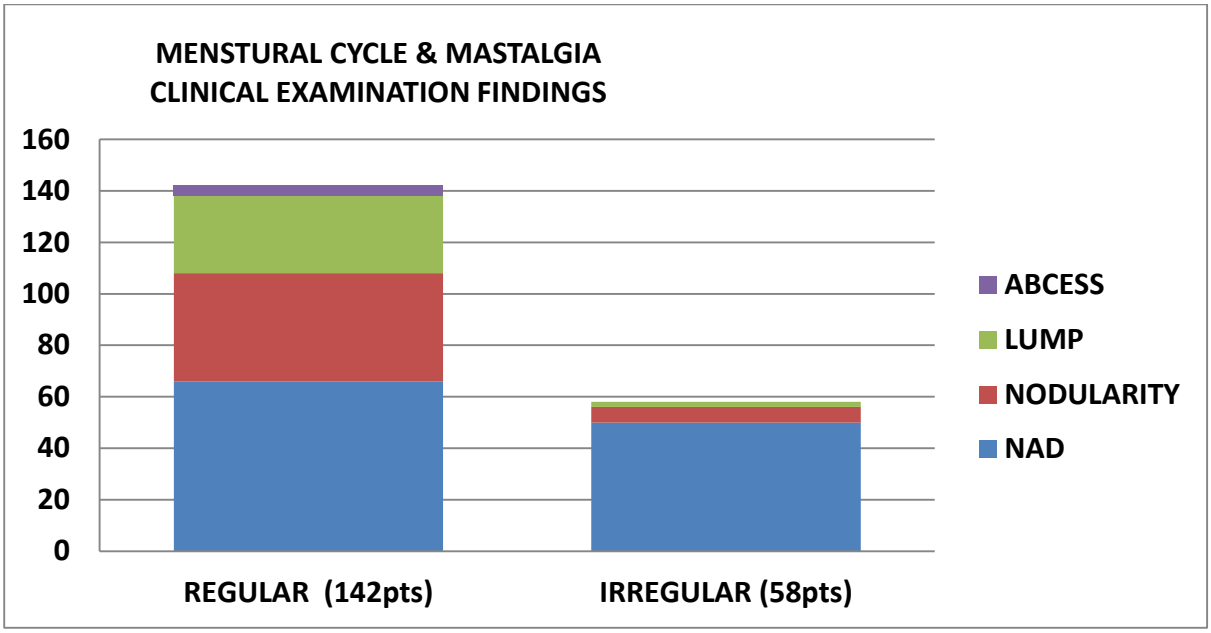
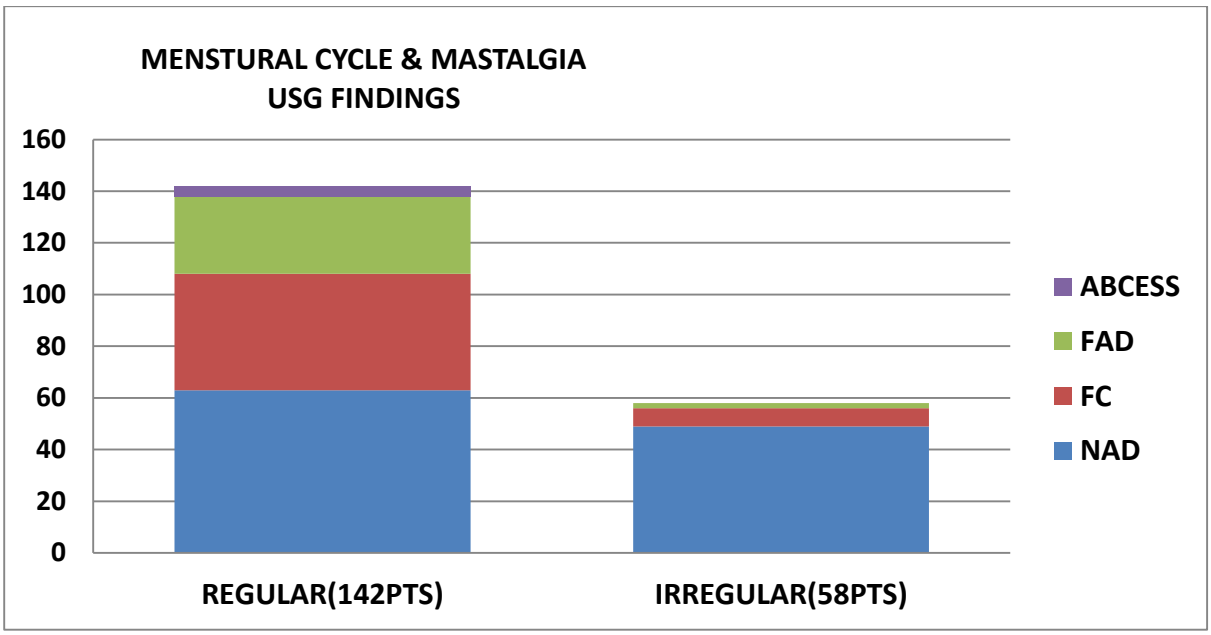


CHART-9 CORRELATION BETWEEN MENSTURAL CYCLE AND USG&FNAC FINDINGS:



PREVIOUS BENIGN BREAST DISEASES:

CHART-10 PREVIOUS BENIGN BREAST DISEASES:

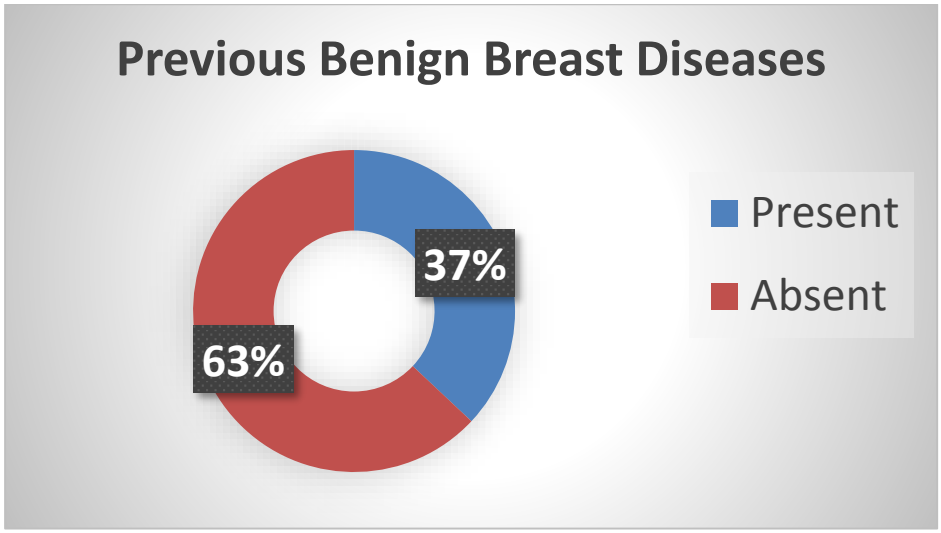


CHART-11 CLINICAL EXAMINATION FINDINGS IN INDUVIDUALS WITH PREVIOUS HISTORY OF BENIGN BREAST DISEASES:

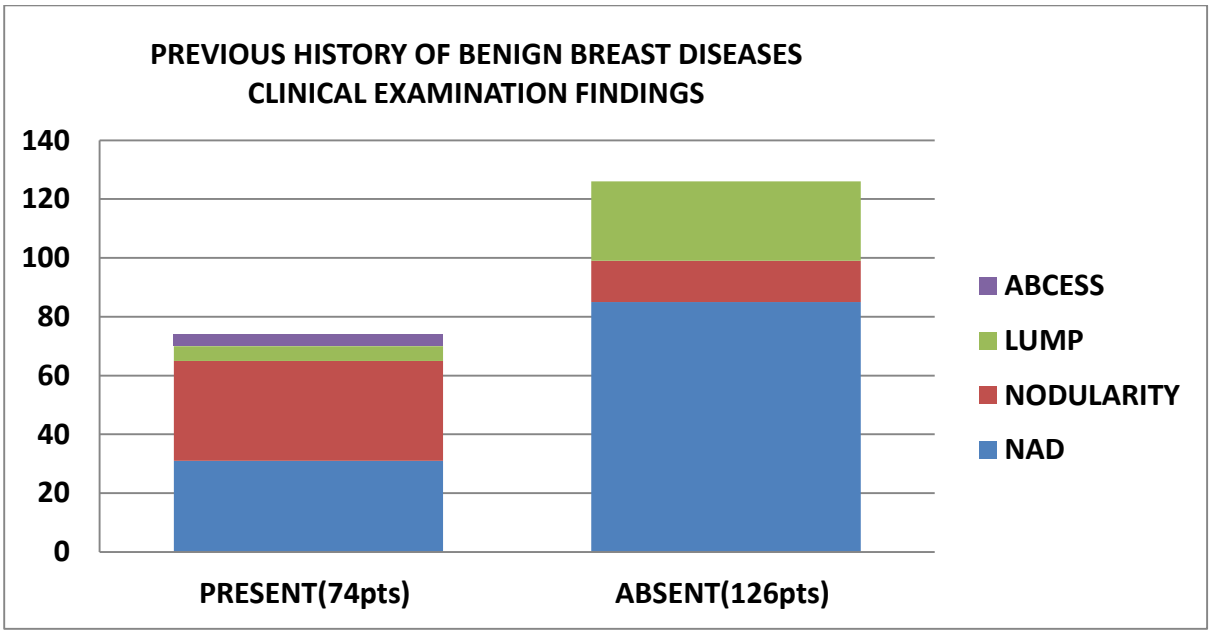
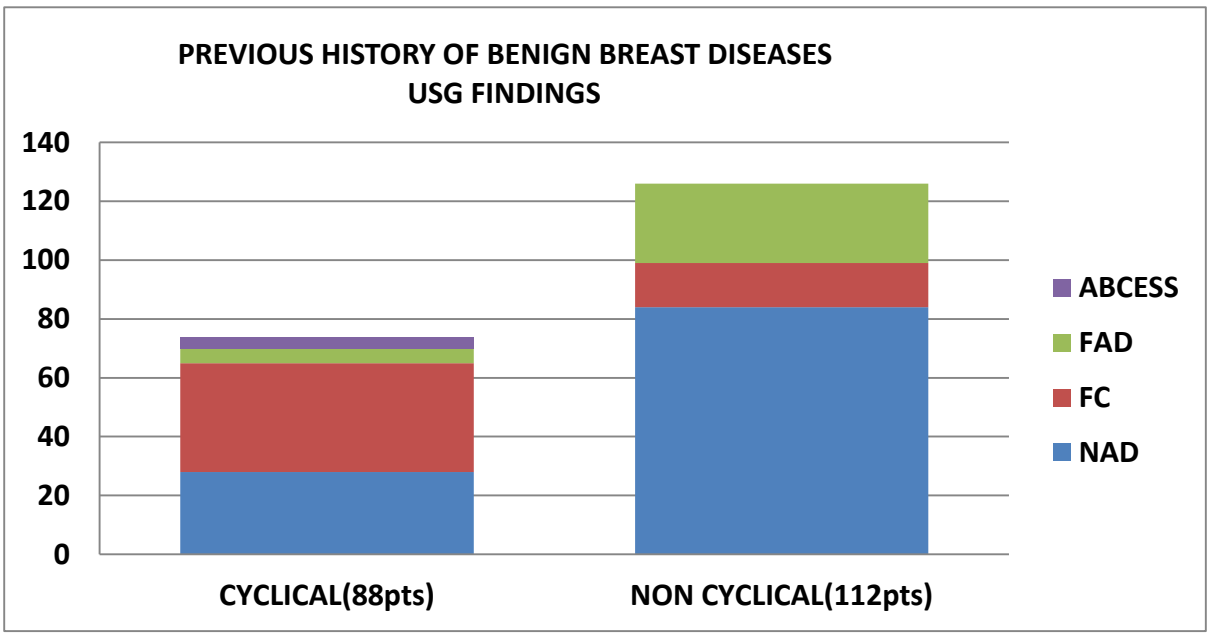


CHART-12 USG AND FNAC FINDINGS IN INDUVIDUALS WITH PREVIOUS HISTORY OF BENIGN BREAST DISEASES:

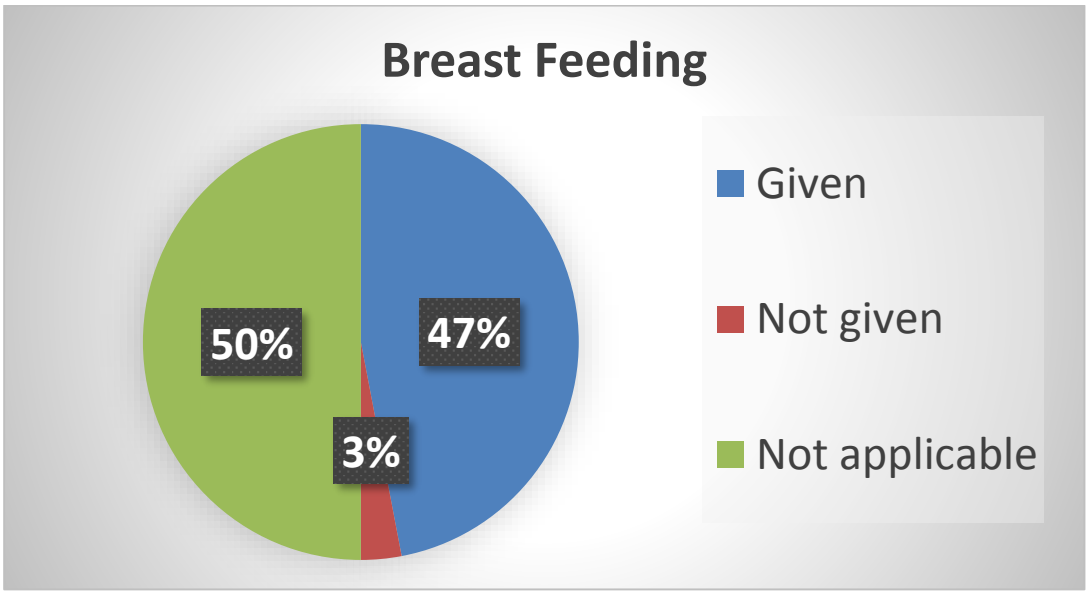


- Among the 74pts presented with previous history of benign breast diseases 46pts found to have pathological and radiological findings (37pts with fibrocystic disease, 5pts with fibroadenoma and 4pts with abscess).
- Among the 126pts presented with previous history of benign breast diseases 42pts found to have pathological and radiological findings (15pts with fibrocystic disease and 27pts with fibroadenoma).

BREAST FEEDING AND MASTALGIA:

- Breast feeding history is not applicable in 50% of unmarried patients(100pts).
- Out of the remaining 100 patients, 94(47%) gave positive breastfeeding history
- Only 6 (3%)patients didn't breastfeed.

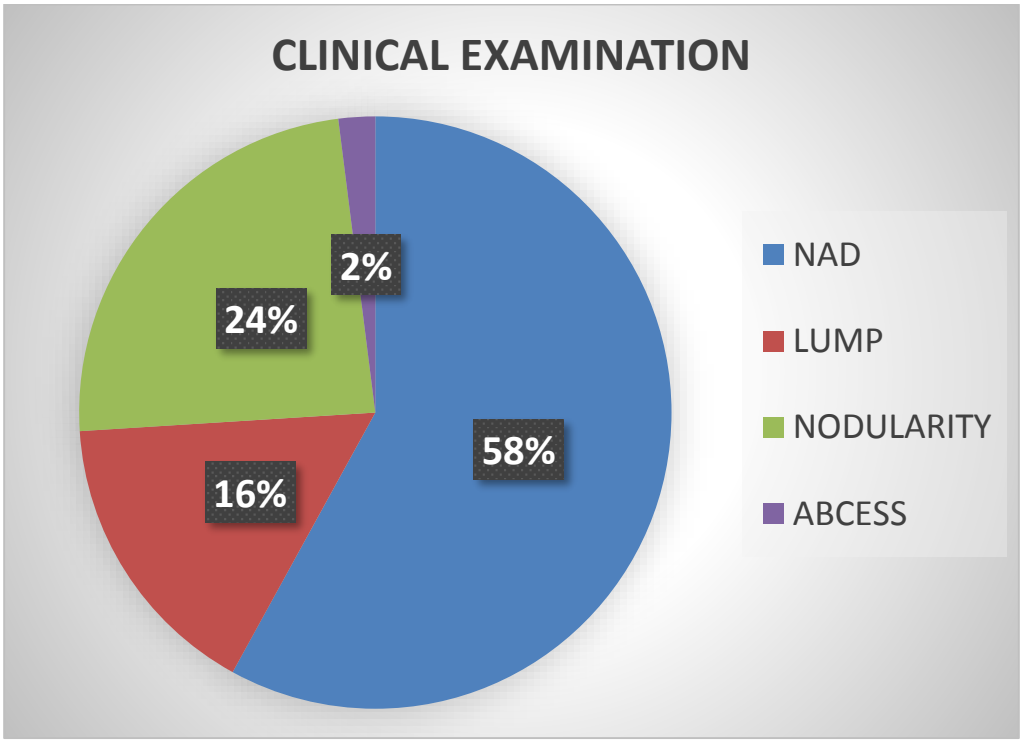
CHART-13 BREASTFEEDING AND MASTALGIA:



CLINICAL EXAMINATION IN PATIENTS WHO PRESENTED WITH COMPLAINTS OF LUMP BREAST:

- 97pts (48%) presented with complaints of breast lump/lumpiness.
- 84pts (42%) were found to have lump/nodularity/abcess on clinical examination.
  - 48pts (24%) had nodularity on clinical examination.
  - 32pts (16%) had lump breast on clinical examination.
  - 4pts (2%) had abscess on clinical examination.

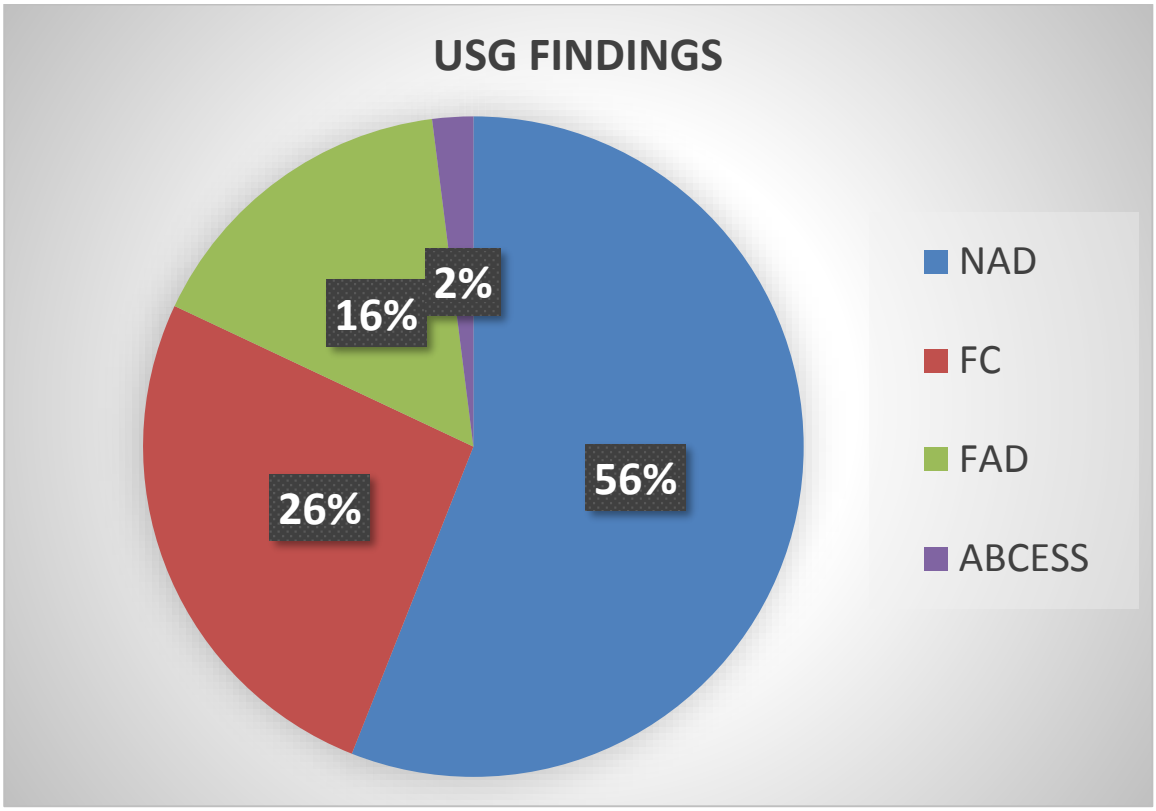
CHART-14 CLINICAL EXAMINATION FINDINGS:



USG CORRELATION:

- 97pts (48%) presented with complaints of breast lump/lumpiness.
- 84pts (42%) were found to have lump/nodularity/abscess on clinical examination.
- 88pts (44%) were found to have lump/nodularity/abscess in USG.
  - 52pts (26%) had fibrocystic disease on USG.
  - 32pts (16%) had fibroadenoma on USG.
  - 4pts (2%) had abscess on USG.

CHART-15 USG CORRELATION:



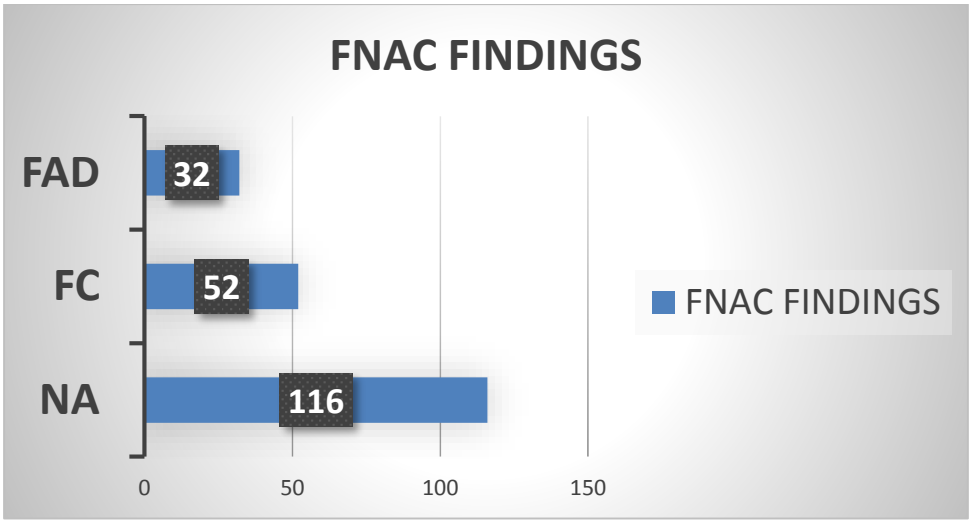
FNAC CORRELATION:

- 88pts (44%) were found to have lump/nodularity/abscess in USG.
- Among them 84pts (42%) went in for FNAC (except the 4pts with abscess).
  - 52pts (26%) had fibrocystic disease on FNAC.
  - 32pts (16%) had fibroadenoma on FNAC.

TABLE-11 FNAC CORRELATION:

FNAC FINDINGS	NUMBER OF PATIENTS	PERCENTAGE
NOT APPLICABLE	116	58%
FC	52	26%
FAD	32	16%

CHART-16 FNAC CORRELATION



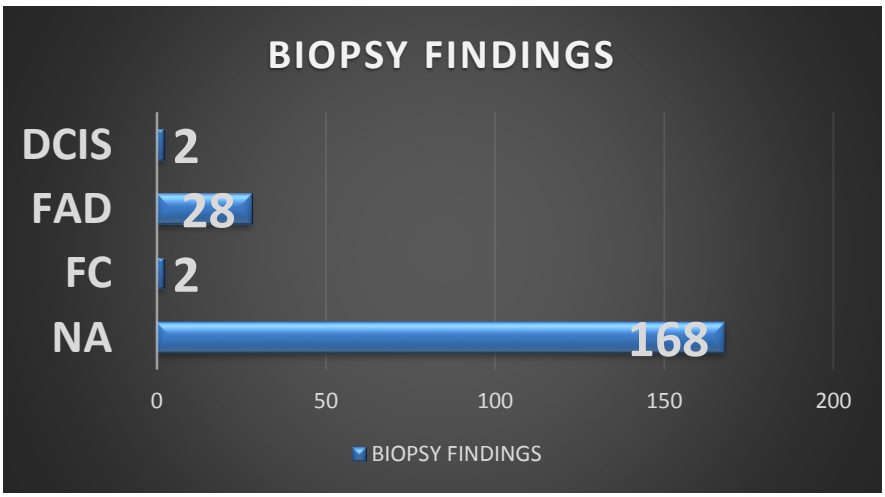
EXCISION BIPOPSYCORRELATION:

- 32pts who had fibroadenoma in USG and FNAC went in for excision biopsy.
  - 28pts had fibroadenoma.
  - 2pts had fibrocystic changes.
  - 2pts had Ductal Carcinoma In Situ (DCIS).

TALBE-12 EXCISIONAL BIOPSY REULTS

EXISIONAL BIOPSY RESULTS	NUMBER OF PATIENTS	PERCENTAGE
NOT APPLICABLE	168	84%
FC	2	1%
FAD	28	14%
DCIS	2	1%

CHART-17 EXISIONAL BIOPSY RESULTS:



DISCUSSION

AGE AND MASTALGIA:

- Mastalgia is more prevalent among women of reproductive age.
- The range of ages involved that are included in this study is between 15and 45 years.(TABLE-6) .
- The average age of patients presenting in our series is 25.7 years.The median age is 24 years.
- In Cardiff breast clinic study also corresponds to similar observations that mastalgia is more a disease of women of reproductive age group.
- The median age of their age group was 36 years and their study population included 212 women (age ranging between 12 and 51 years)[11].
- The results shows 122 patients were in the age group of 25 or less.
- These results highlight the fact that 4 cases (2%) was diagnosed by USG which were apparently got left out in clinical examination. Interestingly all the 4 cases fall below the age of 25yrs.(TABLE-7).

CYCLICITY AND MASTALGIA:

- Breast pain can be classified as cyclical and non-cyclical in relation to their occurrence with menstrual cycle.
- Cyclical mastalgia occurs 1-2 weeks prior to mensus and often bilateral, diffusely involves the whole of the breast with occasional radiation to the upper arm and axilla.
- Cyclical mastalgia is usually seen among women 30-40 years of age.
- It is found to be relieved spontaneously with onset of mensus in nearly 22% of patients and being persistent in 65% of patients despite treatment.
- Among the 88pts presented with cyclical pain 31pts found to have pathological and radiological findings (27pts with fibrocystic disease and 4pts with abscess).
- Among the 112pts presented with non cyclical pain 57pts found to have pathological and radiological findings (25pts with fibrocystic disease and 32pts with fibroadenoma).

TABLE-13 SPLIT UP OF LESIONS IN RELATION TO CYCLICITY:

CYCLICITY OF MASTALGIA	CLINICAL EXAMINATION				USG AND FNAC			
	NAD	NODULARITY	LUMP	ABCESS	NAD	FC	FAD	ABCESS
CYCLICAL (88pts)	59	25	0	4	57	27	0	4
NON CYCLICAL (112pts)	57	23	32	0	55	25	32	0
TOTAL (200pts)	116	48	32	4	112	52	32	4

- In a study conducted by srivastav et al non-cyclical mastalgia is slightly more prevalent than cyclical mastalgia in women of north india.
- In our study too similar results observed, that is non-cyclical mastalgia is found to be slightly more prevalent than cyclical mastalgia.

MENSTURAL CYCLE AND MASTALGIA:

- It is popularly believed that when breast pain due to altered hormonal status occurs in women due to engorgement and ductal dilatation it is logical to think that uterus function in relation to this hormonal disarray should also be altered which can manifests as irregular menstrual cycles.
- But this is not supported by the results observed as in our study.
- Most of the patients have regular menstrual cycles (71%).
- Among the 142pts presented with regular cycles 79pts found to have pathological and radiological findings (45pts with fibrocystic disease, 30pts with fibroadenoma and 4pts with abscess).
- Among the 58pts presented with irregular cycles 9pts found to have pathological and radiological findings (7pts with fibrocystic disease and 2pts with fibroadenoma).

TABLE-14 SPLIT UP OF LESIONS IN INDUVIDUALS BASED ON MENSTRUAL HISTORY:

MENSTURAL CYCLE	CLINICAL EXAMINATION				USG AND FNAC			
	NAD	**NODULARITY**	**LUMP**	**ABCESS**	**NAD**	**FC**	**FAD**	**ABCESS**
REGULAR (142pts)	**66**	**42**	**30**	**4**	**63**	**45**	**30**	**4**
IRREGULAR (58pts)	**50**	**6**	**2**	**0**	**49**	**7**	**2**	**0**
TOTAL (200pts)	**116**	**48**	**32**	**4**	**112**	**52**	**32**	**4**

- Out of the 200 patients who underwent the study 142 patients (71%) had regular cycles.
- 58patients (29%) had irregular cycles on eliciting history.
- Srivastav et al conducted a similar study in north Indian women and observed similar results.

PREVIOUS HISTORY AND MASTALGIA:

TABLE-15 PREVIOUS HISTORY OF BENIGN BREAST DISEASES:

HISTORY	NUMBER OF PATIENTS	PERCENTAGE
Present	**74**	**37%**
Absent	**126**	**63%**

- Previous history of benign breast symptoms is found to have a frequent association with the patients currently presenting with mastalgia.
- History of previous benign diseases for which the patient had received medical or surgical treatment is elicited in 37% of individuals in our study.

TABLE-16 SPLIT UP OF LESIONS IN INDUVIDUALS WITH PREVIOUS HISTORY OF BENIGN BREAST DISEASES:

PREVIOUS HISTORY	CLINICAL EXAMINATION				USG AND FNAC			
	NAD	**NODULARITY**	**LUMP**	**ABCESS**	**NAD**	**FC**	**FAD**	**ABCESS**
PRESENT **(74pts)**	**31**	**34**	**5**	**4**	**28**	**37**	**5**	**4**
ABSENT **(126pts)**	**85**	**14**	**27**	**0**	**84**	**15**	**27**	**0**
TOTAL**(200pts)**	**116**	**48**	**32**	**4**	**112**	**52**	**32**	**4**

- Out of the 200 patients who underwent this study 74 (37%) patients had positive history of previous benign breast diseases.
- 126 (63%) patients had no such history.
- This is a significant positive correlation.

BREASTFEEDING AND MASTALGIA:

- In an epidemiological study by srivastav et al from AIIMS observed that there is no significant relation between breastfeeding and mastalgia.
- In this study also there was no significant correlation found between breastfeeding and mastalgia.

In our part of the world breastfeeding practices are strong and most of the mothers who participated in the study gave history for breastfeeding.

TABLE-17 BREAST FEEDING AND MASTALGIA:

BREAST FEEDING	NO OF WOMEN	PERCENTAGE
Given	**94**	**47%**
Not given	**6**	**3%**
Not Applicable	**100**	**50%**

- Only 3% of women have not given breast milk.
- And this seemingly increased incidence of breast pain among breastfed mothers is attributable to the strong breastfeeding practice of women who participated in the study.

MASTALGIA AND LUMP:

- Mastalgia as a clinical condition is far more prevalent then lump breast.
- But lump breast draws the attention of the patient to the previously prevalent breast pain and make them to approach a doctor for medical advice.
- In a clinical study published by Kelley et al breast lump is found to be associated with breast pain presented in 29% of patients(n= 350 patient).
  - ✓ 97pts (48%) presented with complaints of breast lump/lumpiness.
  - ✓ 84pts (42%) were found to have lump/nodularity/abscess on clinical examination.
  - ✓ 88pts (44%) were found to have lump/nodularity/abscess in USG.
  - ✓ Among them 84pts (42%) went in for FNAC (except the 4pts with abscess).
  - ✓ 32pts who had fibroadenoma in USG and FNAC went in for excision biopsy.

TABLE-18 WORKUP IN CASES PRESENTED WITH MASTALGIA

Patient complained of lumpiness	Patient found to have Lump/ Nodularity/ Abscess on clinical examination	Patient found to have Fibroadenoma/ Fibrocystic disease/ Abscess on USG	Patient with Fibroadenoma/ Fibrocystic disease in USG underwent FNAC	Patients with FNAC reports of Fibroadenoma (lump >3cm) went for Excision Biopsy
Present in 97pts (48%)	Present in 84pts (42%)	Present in 88pts (44%)	84pts went in for FNAC	32pts went in for Excision Biopsy
	Nodularity in 48pts	FC in 52pts	FC in 52pts	28pts had FAD
	Lump in 32pts	FAD in 32pts	FAD in 32pts	2pts had FC
	Abscess in 4 pts	Abscess in 4 pts	-	2pts had DCIS
Absent in 103pts (52%)	Absent in 116pts (58%)	Absent in 112pts (56%)	-	-

- 4pts (2%) with nodularity were missed in clinical examination especially in age group below 25yrs. These were picked up by USG.
- There seems to be a near 100% correlation between USG and FNAC establishing the USG superiority in breast lesions.
- The 32pts with USG and FNAC results as fibroadenoma and lesion more than3cm in size underwent excision biopsy and in those:
  - 2pts (1%) were found to have fibrocystic changes.
  - 2pts (1%) were found to have DCIS.

CONCLUSION:

1. Non-cyclical mastalgia is more prevalent than cyclical mastalgia among women in south India which needs more evaluation.
2. Lumpiness of one or both breasts is a frequently associated complaint with mastalgia which needed detailed history, clinical examination and investigations to differentiate benign from malignant lesions.
3. Presence of previous history of benign breast diseases or treatment is a risk factor for mastalgia which may be due to improper diagnosis and management.
4. USG is the best diagnostic tool in young females as they have dense breasts.
5. Triple assessment for any breast lump or mastalgia forms gold standard in diagnosis.

BIBLIOGRAPHY

1) Barton MB, Elmore JG, Fletcher SW (1999) breast symptom among women enrolled in a health maintenance organization: frequency, evaluation and outcome. Ann Intern Med 130:651–657
2) Ader DN, South-Paul J, Adera T, Deuster PA (2001) Cyclical mastalgia: prevalence and associated health behavioral factors. J Psychosom Obstet Gynaecol 22:71–76
3) Mansel RE, Webster DJT, Sweetland HM (2009) Breast pain and nodularity. In: Mansel RE, Webster DJT, Sweetland HM (eds) Benign disorders and disease of the breast, 3rd edn. Saunders Elsevier, Philadelphia, pp 107–138
4) Kumar S, Rai R, Das V, Dwivedi V, Kumar S, GG A (2010) Visual analogue scale for assessing breast nodularity in non discrete lumpy breasts: the Lucknow Cardiff breast nodularity scale. The Breast 19:238–242
5) Wisbey JR, Kumar S, Mansel RE, Preece PE, Pye JK, Hughes LE (1983) Natural history of breast pain. Lancet ii:672–674
6) Smith RL, Pruthi S, Fitzpatrick LA (2004) Evaluation and man-agement of breast pain. Mayo Clin Proc 79(3):353–372
7) Malarkey WB, Schrooeder LL, Stevens VC, James AG, Lanese RR (1977) Twenty four hour preoperative endocrine profiles in women with benign and malignant breast disease. Cancer Res 37:4655–4659
8) Sitruk-Ware R, Sterkers N, Mauvais-Jarvis P (1979) Benign breast disease.1: hormonal investigation. Obstet Gynecol 53:457–460
9) Peters F, Pickcardt CR, Zimmerman G (1981) PRL, TSH and thyroid hormones in benign breast disease. Klin Wochenschr 59:403–407

10) Kumar S, Mansel RE, Scanlon MF, Hughes LE (1984) Altered responses of prolactin, luteinizing hormone and follicle stimulating hormone secretion to thyrotrophin releasing hormone/gonadotro-pin releasing hormone stimulation in cyclical mastalgia. Br J Surg 71:870–873

11) Journal of the royal society of medicine: The long term course of mastalgia (J R Soc Med 1998;91:462-464): E L Davies FRCS ; C A Gateley MD; R E Mansel MS.

12) Walsh, P.V., Bulbrook, R.D., Stell, P.M., Wang, D.Y., McDicken, I.W. and George, W.D. (1984) Serum Progesterone Concentration during the Luteal Phase in Women with Benign Breast Disease. European Journal of Cancer and Clinical Oncology, 20, 1339-1343

13) Preece PE, Richards AR, Owen GM (1975) Mastalgia and total body water.(Br Med J 4:498–500)

14) Preece PE, Mansel R, Hughes LE (1978) Mastalgia: psychoneu-rosis or organic disease?(Br Med J I:9–30)

15) Minton JP, Foeking MK, Webster DJT (1979) Response of fibro-cystic disease to caffeine withdrawal and correlation with cyclic nucleotides with breast disease. Am J Obstet Gynaecol 135:157

16) Ernster VL, Mason L, Goodson WH (1982) Effects of caffeine free diet on benign breast disease: a randomized trial. Surgery 91:263– 267

17) Peters F, Diemer P, Mecks O (2003) Severity of mastalgia in relation to milk duct dilatation. Obstet Gynaecol 101(1):54–60

18) Butler P, Applied Radiological Anatomy. Cambridge United Kingdom: Cambridge University Press;1999.

19) Sloane JP. Biopsy pathology of the breast. New York: Wiley;1985.

20) Haagensen CD. Diseases of the breast. Philadelphia: Saunders;1971

21) Feig S.A. Adverse effects of screening mammography Stephen. Radiographics. 2004;42(September):807-19.

22) Ursin G, Ma H, Wu AH, Bernstein L, Salane M, Parisky YR, et al. Mammographic density and breast cancer in three ethnic groups. Cancer Epidemiol Biomarkers Prev 2003;12(4):332–8.

23) Highnam R, Brady M. Mammographic Image Analysis. Dordrecht: Kluwer Academic Publishers; 1999.

24) Bassett L, Jackson V, Jahan R, Fu Y, Gold R. Diagnosis of diseases of the breast. W.B. Saunders Company: Philadelphia; 1997.

25) Monsees BS. Evaluation of breast microcalcifications. Radiol Clin North Am 1995;33:1109-21.

26) Schwartzs Principles of surgery, 10th edition (F. Charles Brunicardi, Dana K. Andersen, Timothy R. Billiar, David L. Dunn, John G. Hunter, Jeffery B. Matthews, Raphael E. Pollock)

27) Beenken SW, et al: History of the therapy of breast cancer, in Bland and Copeland (eds): *The Breast: Comprehensive Management of Benign and Malignant Disorders.* Philadelphia: Saunders, 2004, p 5.

28) Halsted WS: I. The results of operations for the cure of cancer of the breast performed at the Johns Hopkins Hospital from June, 1889, to January, 1894. *Ann Surg* 20:497, 1894. [PMID: 17860107]

29) Le Dran F: Mémoire avec une précis de plusieurs observations sur le cancer. *Mem Acad Roy Chir Paris* 3:1, 1757.

30) Haagensen CD, Stout AP: Carcinoma of the breast (II. Criteria of Operability). *Ann Surg* 118:859, 1943. [PMID: 17858315].

31) Lonnerdal B: Nutritional and physiologic significance of human milk proteins. *Am J Clin Nutr* 77:1537S, 2003.

32) Rosenbloom AL: Breast physiology: Normal and abnormal development and function, in Bland KI, Copeland EM III (eds): *The Breast: Comprehensive Management of Benign and Malignant Diseases.* Philadelphia: WB Saunders, 1998,

33) Van de Perre P: Transfer of antibody via mother's milk. *Vaccine* 21:3374, 2003.

34) Bland KI, Graves TA: Gynecomastia, in Bland KI, Copeland EM III (eds): *The Breast: Comprehensive Management of Benign and Malignant Diseases.* Philadelphia: WB Saunders, 1998, p 153.

35) Bland KI: Inflammatory, infectious, and metabolic disorders of the breast, in Bland KI, Copeland EM III (eds): *The Breast: Comprehensive Management of Benign and Malignant Diseases*. Philadelphia: WB Saunders, 1998, p 75.

36) Furlong AJ, et al: Periductal inflammation and cigarette smoke. *J Am Coll Surg* 179:417, 1994. [PMID: 7921391]

37) Zuska J, Crile G Jr., Ayres WW: Fistulas of lactifierous ducts. *Am J Surg* 81:312, 1951. [PMID: 14819475]

38) Camiel MR: Mondor's disease in the breast. *Am J Obstet Gynecol* 152(7 Pt 1):879, 1985.

39) Hughes LE, Mansel RE, Webster DJ: Aberrations of normal development and involution (ANDI): A new perspective on pathogenesis and nomenclature of benign breast disorders. *Lancet* 2:1316, 1987. [PMID: 2890912]

40) Archer F, Omar M: The fine structure of fibro-adenoma of the human breast. *J Pathol* 99:113, 1969. [PMID: 5361282]

41) Page DL, Anderson TJ: *Diagnostic Histopathology of the Breast.* Edinburgh: Churchill Livingstone, 1987.

42) Page DL, Simpson JF: Benign, high-risk, and premalignant lesions of the breast, in Bland KI, Copeland EM III (eds): *The Breast: Comprehensive Management of Benign and Malignant Diseases.* Philadelphia: WB Saunders, 1998, p 191.

43) Consensus Meeting: Is "fibrocystic disease" of the breast precancerous? *Arch Pathol LabMed* 110:171, 1986.

44) Haagensen CD: *Diseases of the Breast,* 3rd ed. Philadelphia: WB Saunders, 1986.

45) Haagensen CD, et al: Lobular neoplasia (so -called lobular carcinoma in situ) of the breast. *Cancer* 42:737, 1978. [PMID: 209887]

46) Gadd MA, Souba WW: Evaluation and treatment of benign breast disorders, in Bland KI, Copeland EM III (eds): *The Breast: Comprehensive Management of Benign and Malignant Diseases.* Philadelphia: WB Saunders, 1998, p 233.

47) Marchant DJ: Benign breast disease. *Obstet Gynecol Clin North Am* 29:1, 2002. [PMID: 11892859]

48) Nurko J, et al: Interim results from the FibroAdenoma Cryoablation Treatment Registry. *Am J Surg* 190:647; discussion 651, 2005.

49) Blackburn GL, et al: Diet and breast cancer. *J Womens Health (Larchmt)* 12:183, 2003. [PMID: 12737717]

50) Bland KI, Romrell LJ: Congenital and acquired disturbances of breast development and growth, in Bland KI, Copeland EM III (eds): *The Breast: Comprehensive Management of Benign and Malignant Diseases.* Philadelphia: WB Saunders, 1998, p 214.

51) Romrell LJ, Bland KI: Anatomy of the breast, axilla, chest wall, and related metastatic sites, in Bland KI, Copeland EM III (eds): *The Breast: Comprehensive Management of Benign and Malignant Diseases.* Philadelphia: WB Saunders, 1998, p 19.

52) Lonnerdal B: Nutritional and physiologic significance of human milk proteins. *Am J Clin Nutr* 77:1537S, 2003.

53) Rosenbloom AL: Breast physiology: Normal and abnormal development and function, in Bland KI, Copeland EM III (eds): *The Breast: Comprehensive Management of Benign and Malignant Diseases.* Philadelphia: WB Saunders, 1998,

54) Van de Perre P: Transfer of antibody via mother's milk. *Vaccine* 21:3374, 2003.

55) Bland KI, Graves TA: Gynecomastia, in Bland KI, Copeland EM III (eds): *The Breast: Comprehensive Management of Benign and Malignant Diseases.* Philadelphia: WB Saunders, 1998, p 153.

56) Bland KI: Inflammatory, infectious, and metabolic disorders of the breast, in Bland KI, Copeland EM III (eds): *The Breast: Comprehensive Management of Benign and Malignant Diseases*. Philadelphia: WB Saunders, 1998, p 75.

57) Hughes LE, Mansel RE, Webster DJ: Aberrations of normal development and involution (ANDI): A new perspective on pathogenesis and nomenclature of benign breast disorders. *Lancet* 2:1316, 1987. [PMID: 2890912]

58) Archer F, Omar M: The fine structure of fibro-adenoma of the human breast. *J Pathol* 99:113, 1969. [PMID: 5361282]

59) Page DL, Anderson TJ: *Diagnostic Histopathology of the Breast.* Edinburgh: Churchill Livingstone, 1987.

60) Page DL, Simpson JF: Benign, high-risk, and premalignant lesions of the breast, in Bland KI, Copeland EM III (eds): *The Breast: Comprehensive Management of Benign and Malignant Diseases.* Philadelphia: WB Saunders, 1998, p 191.

61) Consensus Meeting: Is "fibrocystic disease" of the breast precancerous? *Arch Pathol LabMed* 110:171, 1986.

62) Haagensen CD: *Diseases of the Breast,* 3rd ed. Philadelphia: WB Saunders, 1986.

63) Haagensen CD, et al: Lobular neoplasia (so -called lobular carcinoma in situ) of the breast. *Cancer* 42:737, 1978. [PMID: 209887]

64) Gadd MA, Souba WW: Evaluation and treatment of benign breast disorders, in Bland KI, Copeland EM III (eds): *The Breast: Comprehensive Management of Benign and Malignant Diseases.* Philadelphia: WB Saunders, 1998, p 233.

65) Marchant DJ: Benign breast disease. *Obstet Gynecol Clin North Am* 29:1, 2002. [PMID: 11892859]

66) Nurko J, et al: Interim results from the Fibroadenoma Cryoablation Treatment Registry. *Am J Surg* 190:647; discussion 651, 2005.

67) The Long-Term Course of Mastalgia E L Davies, FRCS,C A Gateley, MD,M Miers, MD R E Mansel, MS Department of Surgery, University of Wales College of Medicine, Heath Park, Cardiff CF4 4XN, UK

68)Benign breast diseases: epidemiology, evaluation, and management B Rungruang, JL KELLEY - Clinical obstetrics and gynecology, 2011 - journals.lww.com

69)Indian J Surg (May–June 2014) 76(3):217–222 DOI 10.1007/s12262-013-0813-8A Systematic Review of Current Understanding and Management of Mastalgia Kamal Kataria & Anita Dhar & Anurag Srivastava & Sandeep Kumar & Amit Goyal.

ANEXURE 1- CONSENT FORM

நோயாளியின் ஒப்புதல் படிவம்

ஆராய்ச்சியின் விபரம் :

ஆராய்ச்சி மையம். அரசு திருநெல்வேலி மருத்துவக் கல்லூரி மருத்துவமனை

நோயாளியின் பெயர் : நோயாளியின் வயது

பதிவு எண் :

நோயாளி கீழ்க்கண்டவற்றுள் கட்டங்களை ( ) செய்யவும்

1.	மேற்குறிப்பிட்டுள்ள ஆராய்ச்சியின் நோக்கதையும் பயனையும் முழுவதுமாக புரிந்து கொண்டேன். மேலும் எனது அனைத்து சந்தேகங்களையும் கேட்டு அதற்கான விளக்கங்களையும் தெளிவுபடுத்தி கொண்டேன்.	☐
2.	மேலும் இந்த ஆராய்ச்சிக்கு எனது சொந்த விருபத்தின் பெயரின் பங்கேற்கிறேன் என்றும். மேலும் எந்த நேரத்திலும் எவ்வித முன்னேறிவிப்பின்றியும் இந்த ஆராய்சியிலிருந்து விலக முழுமையான உரிமையுள்ளதையும். இதற்கு எவ்வித சட்ட பினைப்பும் இல்லை என்பதையும் அறிவேன்.	☐
3.	ஆராய்ச்சியாளரோ, ஆராய்ச்சி உதவியாளரோ, ஆராய்ச்சி உபயத்தாரோ, ஆராய்ச்சி பேராசிரியரோ, ஒழுங்குநெறி செயற்குழு உறுப்பினர்களோ எப்போது வேண்டுமானாலும் எனது அனுமதியின்றி எனது உள்நோயாளி / வெளி நோயாளி பதிவுகளை இந்த ஆராய்ச்சிக்காகவோ அல்லது எதிர்கால பிற ஆராய்ச்சிக்காகவோ பயன்படுத்திக் கொள்ளலாம் என்றும் மேலும் இந்த நிபந்தனை. நான் இவ்வராய்ச்சியிலிருந்து விலகினாலும் தகும் என்றும் ஒப்புக் கொள்கிறேன். ஆயினும் எனது அடையாளம் சம்பந்தப்பட்ட எந்த பதிவுகளும் (சட்டபூர்வமான தேவைகள் தவிர) வெளியிடப்படமாட்டாது என்ற உறுதிமொழியின் பெயரில் இந்த ஆராய்ச்சியிலிருந்து கிடைக்கப்பெறும் முடிவுகளை வெளியிட மறுப்புத் தெரிவிக்கமாட்டேன் என்று உறுதியளிக்கிறேன்.	☐
4.	இந்த ஆராய்ச்சிக்காக என்னுடைய மார்ர்பகத்தினை சோதனை செய்து ஏதேனும் கட்டி உள்ளதா என்பதை அறிய மருத்துவருக்கு அனுமதி அளிக்கிறேன் மேலும் கட்டி ஏதேனும் இருப்பின் அதில் ஊசி போட்டு அதை பரிசோதனை செய்யப்படும் என்பதையும் மருத்துவர் மூலம் அறிந்து கொணடடேன்.	☐
5.	இந்த ஆராய்ச்சிக்கு நான் முழுமனதுடன் சம்மதிக்கிறேன். என்றும் மேலும் ஆராய்ச்சிக் குழுவினர் எனக்கு அளிக்கும் அறிவுரைகளை தவறாது பின்பற்றுவேன் என்றும் உறுதியளிக்கிறேன்.	☐
6.	இந்த ஆராய்ச்சிக்கு தேவைப்படும் அனைத்து மருத்துவப் பரிசோதனைகளுக்கும் ஒத்துழைப்புத்தருவேன் என்றும் உறுதியளிக்கிறேன்.	☐
7.	இந்த ஆராய்ச்சிக்கு யாருடைய வற்புறுத்தலும் இன்றி எனது சொந்த விருப்பத்தின் பெயரிலும் சுய அறிவுடனும் முழு மனதுடனும் சம்மதிக்கிறேன் என்று இதன் மூலம் ஒப்புக்கொள்கிறேன்.	☐

நோயாளியின் கையொப்பம் பெருவிரல் கைரேகை

இடம் : தேதி:

ஆராய்ச்சியாளரின் கையொப்பம்

இடம் : தேதி :

PROFORMA

Name: **Op number:**

Age:

Sex:

Religion

Occupation

Residence

Chief complaints:

1) Mastalgia

Duration

Side

Cyclical

2) Breast lump:

Side

Duration

3) Nipple changes:

Discharge/recent changes/indrawn

4) H/o trauma, fever

5) Any other complaints:

Past history:

Previous history of Benign breast diseases and treatment

History of drug intake:

Menstrual history:

Age of menarche:

Cycles: Reg/Ireg

Marital history: married/unmarried

Birth control pills:

Menopause:

Hormone replacement therapy:

Past obstetric history:

No of pregnancies:

Age at each pregnancy:

Breastfeeding of each child:

Last child birth:

Total years of breastfeeding:

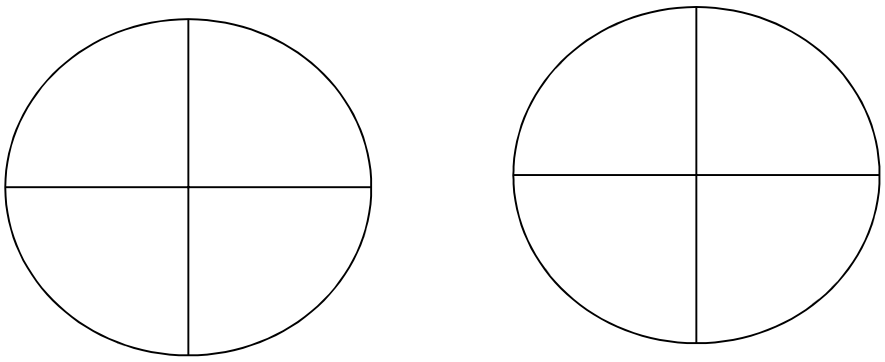
Family history:

General physical examination:

Vital signs:

Local examination:

RIGHT LEFT



SYSTEMIC EXAMINATION:

CVS

RS

ABDOMEN

PROVISIONAL DIAGNOSIS:

INVESTIGATION:
URINE A/S/D:
CBC:
BLOOD SUGAR: ,UREA: ,CREATININE: .

USG BREAST:

MAMMOGRAPHY:

FNAC:

EXCISIONAL BIOPSY:

FINAL DIAGNOSIS:

SN	NAME	AGE	CYCLICAL PAIN	LUMP	OTHER HISTORY	PREVIOUS BREAST DISEASE	CYCLES	BREAST FEEDING	CLINICAL EXAMINATION	USG	FNAC	EXCISION BIOPSY
1	AMBIGA	23	YES	YES	-	YES	Reg	-	NODULARITY	FC	FC	-
2	SELVI	24	YES	NO	-	NO	Reg	-	NAD	NAD	-	-
3	KANAGAVALLI	22	NO	NO	-	NO	Ireg	-	NAD	NAD	-	-
4	KASTURI	32	NO	YES	-	NO	Reg	YES	LUMP	FAD	FAD	FAD
5	KRISHNAVENI	37	YES	YES	-	YES	Reg	YES	NODULARITY	FC	FC	-
6	SUBBU LAKSHMI	27	YES	NO	-	NO	Ireg	YES	NAD	NAD	-	-
7	RANI	25	NO	YES	-	YES	Reg	YES	NODULARITY	FC	FC	-
8	THANGATHAI	24	YES	NO	G/E MALAISE	NO	Ireg	-	NAD	NAD	-	-
9	ESSAKIAMMAL	24	YES	YES	-	YES	Reg	YES	NODULARITY	FC	FC	-
10	UMA	27	NO	NO	-	NO	Ireg	YES	NAD	NAD	-	-
11	PETCHITHAI	25	YES	NO	H/O TRAUMA	NO	Reg	NO	NAD	NAD	-	-
12	MARIYAM	28	YES	NO	-	NO	Reg	YES	NAD	NAD	-	-
13	MURUGESWARI	21	NO	NO	-	NO	Ireg	-	NAD	NAD	-	-
14	CHRISTY REGINA	25	NO	YES	-	NO	Reg	YES	LUMP	FAD	FAD	FAD
15	CHANDRA	24	YES	NO	-	NO	Reg	-	NAD	NAD	-	-
16	KAVITHA	21	NO	YES	-	NO	Reg	-	LUMP	FAD	FAD	FAD
17	AMBIGA	27	YES	YES	-	YES	Reg	NO	NODULARITY	FC	FC	-
18	RANI	28	YES	NO	-	NO	Reg	YES	NAD	NAD	-	-
19	AYYAMMAL	35	NO	NO	-	YES	Reg	YES	NAD	NAD	-	-
20	PARKATHNISHA	21	YES	YES	-	YES	Reg	-	NODULARITY	FC	FC	-
21	JEYA	23	NO	NO	-	NO	Ireg	-	NAD	NAD	-	-
22	USHA	22	YES	NO	H/O FEVER	YES	Reg	-	ABCESS	ABCESS	-	-
23	MADATHI	38	NO	YES	-	YES	Reg	YES	LUMP	FAD	FAD	DCIS
24	ANTONY MARY	25	YES	YES	-	YES	Reg	YES	NODULARITY	FC	FC	-
25	KAVITHA	24	NO	NO	-	NO	Reg	-	NAD	NAD	-	-
26	SELVI	23	NO	YES	-	NO	Reg	-	LUMP	FAD	FAD	FAD
27	PARVATHY	29	NO	NO	-	NO	Ireg	YES	NAD	NAD	-	-
28	SAROJA	24	YES	NO	-	NO	Reg	YES	NAD	NAD	-	-
29	MAARI	29	YES	YES	-	YES	Reg	YES	NODULARITY	FC	FC	-
30	MALIKA	23	YES	NO	-	NO	Ireg	-	NAD	NAD	-	-
31	SUNDARI	33	NO	YES	-	YES	Reg	YES	NODULARITY	FC	FC	-
32	THANGAMARI	25	NO	YES	-	NO	Reg	YES	LUMP	FAD	FAD	FAD

33	FARIYA	21	NO	YES	-	YES	Ireg	-	NODULARITY	FC	FC	-
34	SUMATHI	20	YES	NO	-	NO	Reg	-	NAD	NAD	-	-
35	VALLI	25	NO	NO	-	NO	Ireg	YES	NAD	NAD	-	-
36	LAKSHMI	20	YES	NO	-	NO	Reg	-	NAD	NAD	-	-
37	SAMEENA	19	YES	YES	-	NO	Ireg	-	NODULARITY	FC	FC	-
38	PADMA	24	YES	NO	-	NO	Reg	-	NAD	NAD	-	-
39	THANGASELVI	23	NO	NO	-	NO	Ireg	-	NAD	NAD	-	-
40	NAGOORAMMAL	43	NO	NO	H/O GIDINESS	YES	Ireg	YES	NAD	NAD	-	-
41	KALAIVANI	19	YES	NO	-	NO	Reg	-	NAD	NAD	-	-
42	PAPPA	40	NO	NO	G/E MALAISE	YES	Reg	YES	NAD	NAD	-	-
43	RAGINI	20	NO	YES	-	NO	Reg	-	LUMP	FAD	FAD	FAD
44	AISWARYA	19	YES	NO	-	NO	Reg	-	NAD	NAD	-	-
45	MAHARANI	22	YES	YES	-	YES	Reg	-	NAD	FC	FC	-
46	CHITRAKANI	23	YES	NO	-	NO	Reg	-	NAD	NAD	-	-
47	CHANDRA	19	NO	YES	-	NO	Reg	-	LUMP	FAD	FAD	FAD
48	SHEEBA	27	NO	NO	H/O TRAUMA	NO	Ireg	YES	NAD	NAD	-	-
49	ESAKKIAMMAL	35	NO	YES	-	NO	Reg	YES	NODULARITY	FC	FC	-
50	CHANDRA	29	YES	NO	-	NO	Reg	YES	NAD	NAD	-	-
51	MANJU	25	YES	YES	-	NO	Reg	YES	NODULARITY	FC	FC	-
52	UMA	24	YES	NO	-	NO	Reg	YES	NAD	NAD	-	-
53	SARA	17	NO	NO	-	YES	Ireg	-	NAD	NAD	-	-
54	BALAMMAL	32	NO	YES	-	NO	Reg	YES	LUMP	FAD	FAD	FC
55	MUTHU	25	NO	YES	-	NO	Reg	-	NODULARITY	FC	FC	-
56	SELVARANI	28	NO	NO	-	NO	Reg	YES	NAD	NAD	-	-
57	MALA	18	YES	YES	-	NO	Reg	-	NODULARITY	FC	FC	-
58	MALIKA	25	NO	NO	-	YES	Ireg	-	NAD	NAD	-	-
59	INDRA	25	NO	YES	-	YES	Reg	-	NODULARITY	FC	FC	-
60	RAJALAKSMI	24	NO	NO	-	NO	Reg	-	NAD	NAD	-	-
61	ARUMUGATHAI	23	NO	NO	-	NO	Ireg	-	NAD	NAD	-	-
62	MARY	19	YES	NO	-	YES	Reg	-	NAD	NAD	-	-
63	KARPAGAM	26	NO	NO	-	YES	Ireg	YES	NAD	NAD	-	-
64	PETCHIAMMAL	36	NO	YES	-	YES	Reg	YES	LUMP	FAD	FAD	DCIS
65	MOOKAMMAL	35	NO	NO	-	NO	Reg	YES	NAD	NAD	-	-
66	MUPIDATHI	28	NO	YES	-	YES	Ireg	YES	NODULARITY	FC	FC	-
67	VALLIAMMAL	32	NO	YES	-	NO	Reg	YES	NODULARITY	FC	FC	-

68	MUTHU LAKSHMI	19	NO	YES	-	NO	Reg	-	LUMP	FAD	FAD	FAD
69	JEYASEELA	29	NO	NO	-	NO	Reg	YES	NAD	NAD	-	-
70	CHANDRA	27	NO	NO	-	YES	Ireg	YES	NAD	NAD	-	-
71	DEEPA	19	YES	NO	-	NO	Reg	-	NAD	NAD	-	-
72	RAMALAKSMI	24	YES	NO	-	YES	Reg	NO	ABCESS	ABCESS	-	-
73	OPPACHIAMMAL	40	NO	YES	-	YES	Reg	YES	LUMP	FAD	FAD	FAD
74	SYLVIA	17	YES	YES	-	YES	Reg	-	NODULARITY	FC	FC	-
75	UMA	27	NO	NO	-	NO	Ireg	YES	NAD	NAD	-	-
76	PARVATHY	26	NO	NO	-	YES	Ireg	YES	NAD	NAD	-	-
77	SUMATHI	22	YES	NO	-	NO	Reg	-	NAD	NAD	-	-
78	SAMEERA	19	YES	YES		YES	Ireg	-	NAD	FC	FC	-
79	VALLIYAMMAL	44	NO	NO	G/E FATIGABILITY	YES	Reg	YES	NAD	NAD	-	-
80	ANNATHAI	29	NO	YES	-	NO	Reg	YES	LUMP	FAD	FAD	FAD
81	SARASWATHY	32	NO	YES	-	YES	Reg	YES	NODULARITY	FC	FC	-
82	JEYARANI	21	NO	YES	-	NO	Ireg	-	LUMP	FAD	FAD	FAD
83	KALA	31	NO	YES	-	NO	Reg	YES	NODULARITY	FC	FC	-
84	MANIMALA	23	YES	NO	-	NO	Reg	-	NAD	NAD	-	-
85	VALLI	24	YES	NO	-	YES	Reg	-	NAD	NAD	-	-
86	STELLA	18	YES	NO	-	NO	Ireg	-	NAD	NAD	-	-
87	PUSHPA	34	NO	NO	-	NO	Reg	YES	NAD	NAD	-	-
88	RANI	27	NO	NO	-	NO	Reg	YES	NAD	NAD	-	-
89	MURUGAMMAL	28	NO	YES	-	YES	Reg	YES	NODULARITY	FC	FC	-
90	SELVI	35	NO	NO	-	YES	Reg	YES	NAD	NAD	-	-
91	KUMARI	20	YES	NO	-	NO	Ireg	-	NAD	NAD	-	-
92	PONESSAKI	29	NO	NO	-	YES	Reg	YES	NAD	NAD	-	-
93	MUTHU LAKSHMI	19	NO	YES	-	NO	Reg	-	LUMP	FAD	FAD	FAD
94	SALOMI	18	YES	NO	-	NO	Ireg	-	NAD	NAD	-	-
95	SATHYA	26	NO	YES	-	YES	Reg	YES	NODULARITY	FC	FC	-
96	PETHCIAMMAL	24	YES	NO	-	NO	Reg	-	NAD	NAD	-	-
97	SYEDALIFATHIMA	17	NO	YES	-	NO	Reg	-	LUMP	FAD	FAD	FAD
98	KALIVANI	15	YES	NO	-	NO	Ireg	-	NAD	NAD	-	-
99	SARANYA	19	YES	YES	-	YES	Reg	-	NODULARITY	FC	FC	-
100	ARUNA	18	YES	NO	-	NO	Ireg	-	NAD	NAD	-	-
101	LAKSMI	28	YES	NO	-	NO	Reg	YES	NAD	NAD	-	-
102	PONNAMAL	35	NO	NO	-	YES	Reg	YES	NAD	NAD	-	-

103	DHIVYA	21	YES	YES	-	YES	Reg	-	NODULARITY	FC	FC	-
104	SUDHA	23	NO	NO	-	NO	Ireg	-	NAD	NAD	-	-
105	MEKALA	22	YES	NO	H/O FEVER	YES	Reg	-	ABCESS	ABCESS	-	-
106	THAMARAI	38	NO	YES	-	YES	Reg	YES	LUMP	FAD	FAD	FAD
107	SAROJA	25	YES	YES	-	YES	Reg	YES	NODULARITY	FC	FC	-
108	VALLI	24	NO	NO	-	NO	Reg	-	NAD	NAD	-	-
109	SUNDARI	23	NO	YES	-	NO	Reg	-	LUMP	FAD	FAD	FAD
110	ALAGU	29	NO	NO	-	NO	Ireg	YES	NAD	NAD	-	-
111	MEENA	24	YES	NO	-	NO	Reg	YES	NAD	NAD	-	-
112	SUBBU	29	YES	YES	-	YES	Reg	YES	NODULARITY	FC	FC	-
113	LEELA	23	YES	NO	-	NO	Ireg	-	NAD	NAD	-	-
114	VASANTHI	33	NO	YES	-	YES	Reg	YES	NODULARITY	FC	FC	-
115	VADIVU	25	NO	YES	-	NO	Reg	YES	LUMP	FAD	FAD	FAD
116	DEEPA	21	NO	YES	-	YES	Ireg	-	NODULARITY	FC	FC	-
117	PONNU	20	YES	NO	-	NO	Reg	-	NAD	NAD	-	-
118	RAGINI	24	NO	NO	-	NO	Reg	-	NAD	NAD	-	-
119	MALIKA	23	NO	NO	-	NO	Ireg	-	NAD	NAD	-	-
120	INDRA	19	YES	NO	-	YES	Reg	-	NAD	NAD	-	-
121	CHITRA	26	NO	NO	-	YES	Ireg	YES	NAD	NAD	-	-
122	RAMALAKSHMI	36	NO	YES	-	YES	Reg	YES	LUMP	FAD	FAD	FAD
123	SUGANYA	35	NO	NO	-	NO	Reg	YES	NAD	NAD	-	-
124	SULEKA	28	NO	YES	-	YES	Ireg	YES	NODULARITY	FC	FC	-
125	SARASWATHY	32	NO	YES	-	NO	Reg	YES	NODULARITY	FC	FC	-
126	RIZWAN	19	NO	YES	-	NO	Reg	-	LUMP	FAD	FAD	FAD
127	JEBARANI	29	NO	NO	-	NO	Reg	YES	NAD	NAD	-	-
128	ANNAM	27	NO	NO	-	YES	Ireg	YES	NAD	NAD	-	-
129	FATHIMA	19	YES	NO	-	NO	Reg	-	NAD	NAD	-	-
130	DURGA	24	YES	NO	-	YES	Reg	NO	ABCESS	ABCESS	-	-
131	THAYAMMAL	40	NO	YES	-	YES	Reg	YES	LUMP	FAD	FAD	FAD
132	ROJA	17	YES	YES	-	YES	Reg	-	NODULARITY	FC	FC	-
133	PARVATHY	27	NO	NO	-	NO	Ireg	YES	NAD	NAD	-	-
134	SUMATHI	26	NO	NO	-	YES	Ireg	YES	NAD	NAD	-	-
135	MARY	22	YES	NO	-	NO	Reg	-	NAD	NAD	-	-
136	ELIZABETH	19	YES	YES		YES	Ireg	-	NAD	FC	FC	-
137	SANKARAVADIVU	44	NO	NO	G/E FATIGABILITY	YES	Reg	YES	NAD	NAD	-	-

138	SANGEEETHA	29	NO	YES	-	NO	Reg	YES	LUMP	FAD	FAD	FAD
139	SANTHYA	32	NO	YES	-	YES	Reg	YES	NODULARITY	FC	FC	-
140	ALMEENA	21	NO	YES	-	NO	Ireg	-	LUMP	FAD	FAD	FAD
141	SUMITHRA	31	NO	YES	-	NO	Reg	YES	NODULARITY	FC	FC	-
142	MUTHU	23	YES	NO	-	NO	Reg	-	NAD	NAD	-	-
143	MARIYAM	25	NO	NO	-	NO	Ireg	YES	NAD	NAD	-	-
144	BACKIYAM	20	YES	NO	-	NO	Reg	-	NAD	NAD	-	-
145	BANU	19	YES	YES	-	NO	Ireg	-	NODULARITY	FC	FC	-
146	SINDHU	24	YES	NO	-	NO	Reg	-	NAD	NAD	-	-
147	REVATHI	23	NO	NO	-	NO	Ireg	-	NAD	NAD	-	-
148	PETHCHITHAI	43	NO	NO	H/O GIDINESS	YES	Ireg	YES	NAD	NAD	-	-
149	STELLA MARY	19	YES	NO	-	NO	Reg	-	NAD	NAD	-	-
150	VADIVAMMAL	40	NO	NO	G/E MALAISE	YES	Reg	YES	NAD	NAD	-	-
151	PRIYA	20	NO	YES	-	NO	Reg	-	LUMP	FAD	FAD	FAD
152	RENUKA	19	YES	NO	-	NO	Reg	-	NAD	NAD	-	-
153	DEVI	22	YES	YES	-	YES	Reg	-	NAD	FC	FC	-
154	DHARSHINI	23	YES	NO	-	NO	Reg	-	NAD	NAD	-	-
155	KALAIARASI	19	NO	YES	-	NO	Reg	-	LUMP	FAD	FAD	FAD
156	UMA	27	NO	NO	H/O TRAUMA	NO	Ireg	YES	NAD	NAD	-	-
157	ABMBIGA	35	NO	YES	-	NO	Reg	YES	NODULARITY	FC	FC	-
158	ESTHER	29	YES	NO	-	NO	Reg	YES	NAD	NAD	-	-
159	VIJAYA	25	YES	YES	-	NO	Reg	YES	NODULARITY	FC	FC	-
160	POOMARI	24	YES	NO	-	NO	Reg	YES	NAD	NAD	-	-
161	SUBHA	17	NO	NO	-	YES	Ireg	-	NAD	NAD	-	-
162	KANNAMAL	32	NO	YES	-	NO	Reg	YES	LUMP	FAD	FAD	FC
163	SUGUNA	25	NO	YES	-	NO	Reg	-	NODULARITY	FC	FC	-
164	PRIYA	28	NO	NO	-	NO	Reg	YES	NAD	NAD	-	-
165	MURUGESH	18	YES	YES	-	NO	Reg	-	NODULARITY	FC	FC	-
166	MARISWARI	25	NO	NO	-	YES	Ireg	-	NAD	NAD	-	-
167	SREERAJI	25	NO	YES	-	YES	Reg	-	NODULARITY	FC	FC	-
168	THANGAMARI	24	YES	NO	-	YES	Reg	-	NAD	NAD	-	-
169	DIANA	18	YES	NO	-	NO	Ireg	-	NAD	NAD	-	-
170	ANNABAKIYAM	34	NO	NO	-	NO	Reg	YES	NAD	NAD	-	-
171	THEEPA	27	NO	NO	-	NO	Reg	YES	NAD	NAD	-	-
172	KAVITHA	28	NO	YES	-	YES	Reg	YES	NODULARITY	FC	FC	-

173	RAMANI	35	NO	NO	-	YES	Reg	YES	NAD	NAD	-	-
174	THERSA	20	YES	NO	-	NO	Ireg	-	NAD	NAD	-	-
175	RAJAMMAL	29	NO	NO	-	YES	Reg	YES	NAD	NAD	-	-
176	VINOTHA	19	NO	YES	-	NO	Reg	-	LUMP	FAD	FAD	FAD
177	SURYA	18	YES	NO	-	NO	Ireg	-	NAD	NAD	-	-
178	PARAMESWARI	26	NO	YES	-	YES	Reg	YES	NODULARITY	FC	FC	-
179	MARIYATHAI	24	YES	NO	-	NO	Reg	-	NAD	NAD	-	-
180	THOOYAMATHI	17	NO	YES	-	NO	Reg	-	LUMP	FAD	FAD	FAD
181	KIRUBA	15	YES	NO	-	NO	Ireg	-	NAD	NAD	-	-
182	NITHYA	19	YES	YES	-	YES	Reg	-	NODULARITY	FC	FC	-
183	MALAR	18	YES	NO	-	NO	Ireg	-	NAD	NAD	-	-
184	ESWARI	23	YES	YES	-	YES	Reg	-	NODULARITY	FC	FC	-
185	THILAGAVATHY	24	YES	NO	-	NO	Reg	-	NAD	NAD	-	-
186	KRITHIKA	22	NO	NO	-	NO	Ireg	-	NAD	NAD	-	-
187	CHANDRA	32	NO	YES	-	NO	Reg	YES	LUMP	FAD	FAD	FAD
188	PITCHAMMAL	37	YES	YES	-	YES	Reg	YES	NODULARITY	FC	FC	-
189	MANIMEGALAI	27	YES	NO	-	NO	Ireg	YES	NAD	NAD	-	-
190	PAVITHRA	25	NO	YES	-	YES	Reg	YES	NODULARITY	FC	FC	-
191	AISHA	24	YES	NO	G/E MALAISE	NO	Ireg	-	NAD	NAD	-	-
192	NANDHINI	24	YES	YES	-	YES	Reg	YES	NODULARITY	FC	FC	-
193	PANDESSWARI	27	NO	NO	-	NO	Ireg	YES	NAD	NAD	-	-
194	RAHAMAT	25	YES	NO	H/O TRAUMA	NO	Reg	NO	NAD	NAD	-	-
195	POOMA	28	YES	NO	-	NO	Reg	YES	NAD	NAD	-	-
196	PARVATHY	21	NO	NO	-	NO	Ireg	-	NAD	NAD	-	-
197	ESSAKITHAI	25	NO	YES	-	NO	Reg	YES	LUMP	FAD	FAD	FAD
198	MARESWARI	24	YES	NO	-	NO	Reg	-	NAD	NAD	-	-
199	BHARATHI	21	NO	YES	-	NO	Reg	-	LUMP	FAD	FAD	FAD
200	VELLAMMAL	27	YES	YES	-	YES	Reg	NO	NODULARITY	FC	FC	-

ANEXURE 1- CONSENT FORM

நோயாளியின் ஒப்புதல் படிவம்

ஆராய்ச்சியின் விபரம் :

ஆராய்ச்சி மையம். அரசு திருநெல்வேலி மருத்துவக் கல்லூரி மருத்துவமனை

நோயாளியின் பெயர் : நோயாளியின் வயது

பதிவு எண் :

நோயாளி கீழ்க்கண்டவற்றுள் கட்டங்களை ( ) செய்யவும்

1.	மேற்குறிப்பிட்டுள்ள ஆராய்ச்சியின் நோக்கதையும் பயனையும் முழுவதுமாக புரிந்து கொண்டேன். மேலும் எனது அனைத்து சந்தேகங்களையும் கேட்டு அதற்கான விளக்கங்களையும் தெளிவுபடுத்தி கொண்டேன்.	☐
2.	மேலும் இந்த ஆராய்ச்சிக்கு எனது சொந்த விருபத்தின் பெயரின் பங்கேற்கிறேன் என்றும். மேலும் எந்த நேரத்திலும் எவ்வித முன்னேறிவிப்பின்றியும் இந்த ஆராய்சியிலிருந்து விலக முழுமையான உரிமையுள்ளதையும். இதற்கு எவ்வித சட்ட பினைப்பும் இல்லை என்பதையும் அறிவேன்.	☐
3.	ஆராய்ச்சியாளரோ, ஆராய்ச்சி உதவியாளரோ, ஆராய்ச்சி உபயத்தாரோ, ஆராய்ச்சி பேராசிரியரோ, ஒழுங்குநெறி செயற்குழு உறுப்பினர்களோ எப்போது வேண்டுமானாலும் எனது அனுமதியின்றி எனது உள்நோயாளி / வெளி நோயாளி பதிவுகளை இந்த ஆராய்ச்சிக்காகவோ அல்லது எதிர்கால பிற ஆராய்ச்சிக்காகவோ பயன்படுத்திக் கொள்ளலாம் என்றும் மேலும் இந்த நிபந்தனை. நான் இவ்வராய்ச்சியிலிருந்து விலகினாலும் தகும் என்றும் ஒப்புக் கொள்கிறேன். ஆயினும் எனது அடையாளம் சம்பந்தப்பட்ட எந்த பதிவுகளும் (சட்டபூர்வமான தேவைகள் தவிர) வெளியிடப்படமாட்டாது என்ற உறுதிமொழியின் பெயரில் இந்த ஆராய்ச்சியிலிருந்து கிடைக்கப்பெறும் முடிவுகளை வெளியிட மறுப்புத் தெரிவிக்கமாட்டேன் என்று உறுதியளிக்கிறேன்.	☐
4.	இந்த ஆராய்ச்சிக்காக என்னுடைய மார்ர்பகத்தினை சோதனை செய்து ஏதேனும் கட்டி உள்ளதா என்பதை அறிய மருத்துவருக்கு அனுமதி அளிக்கிறேன் மேலும் கட்டி ஏதேனும் இருப்பின் அதில் ஊசி போட்டு அதை பரிசோதனை செய்யப்படும் என்பதையும் மருத்துவர் மூலம் அறிந்து கொணடடேன்.	☐
5.	இந்த ஆராய்ச்சிக்கு நான் முழுமனதுடன் சம்மதிக்கிறேன். என்றும் மேலும் ஆராய்ச்சிக் குழுவினர் எனக்கு அளிக்கும் அறிவுரைகளை தவறாது பின்பற்றுவேன் என்றும் உறுதியளிக்கிறேன்.	☐
6.	இந்த ஆராய்ச்சிக்கு தேவைப்படும் அனைத்து மருத்துவப் பரிசோதனைகளுக்கும் ஒத்துழைப்புத்தருவேன் என்றும் உறுதியளிக்கிறேன்.	☐
7.	இந்த ஆராய்ச்சிக்கு யாருடைய வற்புறுத்தலும் இன்றி எனது சொந்த விருப்பத்தின் பெயரிலும் சுய அறிவுடனும் முழு மனதுடனும் சம்மதிக்கிறேன் என்று இதன் மூலம் ஒப்புக்கொள்கிறேன்.	☐

நோயாளியின் கையொப்பம் பெருவிரல் கைரேகை

இடம் : தேதி:

ஆராய்ச்சியாளரின் கையொப்பம்

இடம் : தேதி :

PROFORMA

Name: **Op number:**

Age:

Sex:

Religion

Occupation

Residence

Chief complaints:

1) Mastalgia

Duration

Side

Cyclical

2) Breast lump:

Side

Duration

3) Nipple changes:

Discharge/recent changes/indrawn

4) H/o trauma, fever

5) Any other complaints:

Past history:

Previous history of Benign breast diseases and treatment

History of drug intake:

Menstrual history:

Age of menarche:

Cycles: Reg/Ireg

Marital history: married/unmarried

Birth control pills:

Menopause:

Hormone replacement therapy:

Past obstetric history:

No of pregnancies:

Age at each pregnancy:

Breastfeeding of each child:

Last child birth:

Total years of breastfeeding:

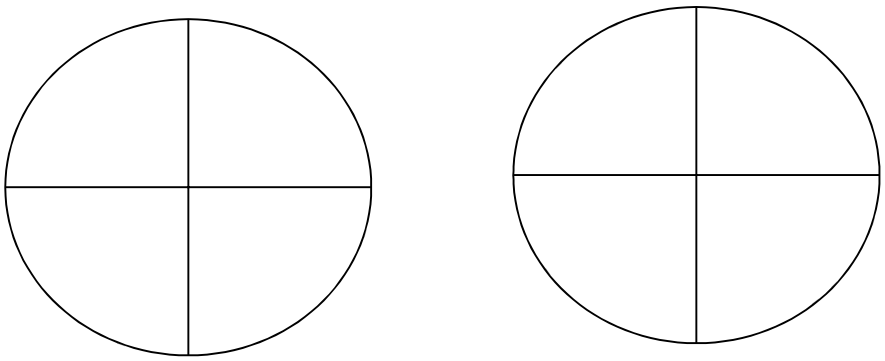
Family history:

General physical examination:

Vital signs:

Local examination:

RIGHT LEFT



SYSTEMIC EXAMINATION:

CVS

RS

ABDOMEN

PROVISIONAL DIAGNOSIS:

INVESTIGATION:
URINE A/S/D:
CBC:
BLOOD SUGAR: ,UREA: ,CREATININE: .

USG BREAST:

MAMMOGRAPHY:

FNAC:

EXCISIONAL BIOPSY:

FINAL DIAGNOSIS:

SN	NAME	AGE	CYCLICAL PAIN	LUMP	OTHER HISTORY	PREVIOUS BREAST DISEASE	CYCLES	BREAST FEEDING	CLINICAL EXAMINATION	USG	FNAC	EXCISION BIOPSY
1	AMBIGA	23	YES	YES	-	YES	Reg	-	NODULARITY	FC	FC	-
2	SELVI	24	YES	NO	-	NO	Reg	-	NAD	NAD	-	-
3	KANAGAVALLI	22	NO	NO	-	NO	Ireg	-	NAD	NAD	-	-
4	KASTURI	32	NO	YES	-	NO	Reg	YES	LUMP	FAD	FAD	FAD
5	KRISHNAVENI	37	YES	YES	-	YES	Reg	YES	NODULARITY	FC	FC	-
6	SUBBU LAKSHMI	27	YES	NO	-	NO	Ireg	YES	NAD	NAD	-	-
7	RANI	25	NO	YES	-	YES	Reg	YES	NODULARITY	FC	FC	-
8	THANGATHAI	24	YES	NO	G/E MALAISE	NO	Ireg	-	NAD	NAD	-	-
9	ESSAKIAMMAL	24	YES	YES	-	YES	Reg	YES	NODULARITY	FC	FC	-
10	UMA	27	NO	NO	-	NO	Ireg	YES	NAD	NAD	-	-
11	PETCHITHAI	25	YES	NO	H/O TRAUMA	NO	Reg	NO	NAD	NAD	-	-
12	MARIYAM	28	YES	NO	-	NO	Reg	YES	NAD	NAD	-	-
13	MURUGESWARI	21	NO	NO	-	NO	Ireg	-	NAD	NAD	-	-
14	CHRISTY REGINA	25	NO	YES	-	NO	Reg	YES	LUMP	FAD	FAD	FAD
15	CHANDRA	24	YES	NO	-	NO	Reg	-	NAD	NAD	-	-
16	KAVITHA	21	NO	YES	-	NO	Reg	-	LUMP	FAD	FAD	FAD
17	AMBIGA	27	YES	YES	-	YES	Reg	NO	NODULARITY	FC	FC	-
18	RANI	28	YES	NO	-	NO	Reg	YES	NAD	NAD	-	-
19	AYYAMMAL	35	NO	NO	-	YES	Reg	YES	NAD	NAD	-	-
20	PARKATHNISHA	21	YES	YES	-	YES	Reg	-	NODULARITY	FC	FC	-
21	JEYA	23	NO	NO	-	NO	Ireg	-	NAD	NAD	-	-
22	USHA	22	YES	NO	H/O FEVER	YES	Reg	-	ABCESS	ABCESS	-	-
23	MADATHI	38	NO	YES	-	YES	Reg	YES	LUMP	FAD	FAD	DCIS
24	ANTONY MARY	25	YES	YES	-	YES	Reg	YES	NODULARITY	FC	FC	-
25	KAVITHA	24	NO	NO	-	NO	Reg	-	NAD	NAD	-	-
26	SELVI	23	NO	YES	-	NO	Reg	-	LUMP	FAD	FAD	FAD
27	PARVATHY	29	NO	NO	-	NO	Ireg	YES	NAD	NAD	-	-
28	SAROJA	24	YES	NO	-	NO	Reg	YES	NAD	NAD	-	-
29	MAARI	29	YES	YES	-	YES	Reg	YES	NODULARITY	FC	FC	-
30	MALIKA	23	YES	NO	-	NO	Ireg	-	NAD	NAD	-	-

31	SUNDARI	33	NO	YES	-	YES	Reg	YES	NODULARITY	FC	FC	-
32	THANGAMARI	25	NO	YES	-	NO	Reg	YES	LUMP	FAD	FAD	FAD
33	FARIYA	21	NO	YES	-	YES	Ireg	-	NODULARITY	FC	FC	-
34	SUMATHI	20	YES	NO	-	NO	Reg	-	NAD	NAD	-	-
35	VALLI	25	NO	NO	-	NO	Ireg	YES	NAD	NAD	-	-
36	LAKSHMI	20	YES	NO	-	NO	Reg	-	NAD	NAD	-	-
37	SAMEENA	19	YES	YES	-	NO	Ireg	-	NODULARITY	FC	FC	-
38	PADMA	24	YES	NO	-	NO	Reg	-	NAD	NAD	-	-
39	THANGASELVI	23	NO	NO	-	NO	Ireg	-	NAD	NAD	-	-
40	NAGOORAMMAL	43	NO	NO	H/O GIDINESS	YES	Ireg	YES	NAD	NAD	-	-
41	KALAIVANI	19	YES	NO	-	NO	Reg	-	NAD	NAD	-	-
42	PAPPA	40	NO	NO	G/E MALAISE	YES	Reg	YES	NAD	NAD	-	-
43	RAGINI	20	NO	YES	-	NO	Reg	-	LUMP	FAD	FAD	FAD
44	AISWARYA	19	YES	NO	-	NO	Reg	-	NAD	NAD	-	-
45	MAHARANI	22	YES	YES	-	YES	Reg	-	NAD	FC	FC	-
46	CHITRAKANI	23	YES	NO	-	NO	Reg	-	NAD	NAD	-	-
47	CHANDRA	19	NO	YES	-	NO	Reg	-	LUMP	FAD	FAD	FAD
48	SHEEBA	27	NO	NO	H/O TRAUMA	NO	Ireg	YES	NAD	NAD	-	-
49	ESAKKIAMMAL	35	NO	YES	-	NO	Reg	YES	NODULARITY	FC	FC	-
50	CHANDRA	29	YES	NO	-	NO	Reg	YES	NAD	NAD	-	-
51	MANJU	25	YES	YES	-	NO	Reg	YES	NODULARITY	FC	FC	-
52	UMA	24	YES	NO	-	NO	Reg	YES	NAD	NAD	-	-
53	SARA	17	NO	NO	-	YES	Ireg	-	NAD	NAD	-	-
54	BALAMMAL	32	NO	YES	-	NO	Reg	YES	LUMP	FAD	FAD	FC
55	MUTHU	25	NO	YES	-	NO	Reg	-	NODULARITY	FC	FC	-
56	SELVARANI	28	NO	NO	-	NO	Reg	YES	NAD	NAD	-	-
57	MALA	18	YES	YES	-	NO	Reg	-	NODULARITY	FC	FC	-
58	MALIKA	25	NO	NO	-	YES	Ireg	-	NAD	NAD	-	-
59	INDRA	25	NO	YES	-	YES	Reg	-	NODULARITY	FC	FC	-
60	RAJALAKSMI	24	NO	NO	-	NO	Reg	-	NAD	NAD	-	-
61	ARUMUGATHAI	23	NO	NO	-	NO	Ireg	-	NAD	NAD	-	-
62	MARY	19	YES	NO	-	YES	Reg	-	NAD	NAD	-	-
63	KARPAGAM	26	NO	NO	-	YES	Ireg	YES	NAD	NAD	-	-

64	PETCHIAMMAL	36	NO	YES	-	YES	Reg	YES	LUMP	FAD	FAD	DCIS
65	MOOKAMMAL	35	NO	NO	-	NO	Reg	YES	NAD	NAD	-	-
66	MUPIDATHI	28	NO	YES	-	YES	Ireg	YES	NODULARITY	FC	FC	-
67	VALLIAMMAL	32	NO	YES	-	NO	Reg	YES	NODULARITY	FC	FC	-
68	MUTHU LAKSHMI	19	NO	YES	-	NO	Reg	-	LUMP	FAD	FAD	FAD
69	JEYASEELA	29	NO	NO	-	NO	Reg	YES	NAD	NAD	-	-
70	CHANDRA	27	NO	NO	-	YES	Ireg	YES	NAD	NAD	-	-
71	DEEPA	19	YES	NO	-	NO	Reg	-	NAD	NAD	-	-
72	RAMALAKSMI	24	YES	NO	-	YES	Reg	NO	ABCESS	ABCESS	-	-
73	OPPACHIAMMAL	40	NO	YES	-	YES	Reg	YES	LUMP	FAD	FAD	FAD
74	SYLVIA	17	YES	YES	-	YES	Reg	-	NODULARITY	FC	FC	-
75	UMA	27	NO	NO	-	NO	Ireg	YES	NAD	NAD	-	-
76	PARVATHY	26	NO	NO	-	YES	Ireg	YES	NAD	NAD	-	-
77	SUMATHI	22	YES	NO	-	NO	Reg	-	NAD	NAD	-	-
78	SAMEERA	19	YES	YES		YES	Ireg	-	NAD	FC	FC	-
79	VALLIYAMMAL	44	NO	NO	G/E FATIGABILITY	YES	Reg	YES	NAD	NAD	-	-
80	ANNATHAI	29	NO	YES	-	NO	Reg	YES	LUMP	FAD	FAD	FAD
81	SARASWATHY	32	NO	YES	-	YES	Reg	YES	NODULARITY	FC	FC	-
82	JEYARANI	21	NO	YES	-	NO	Ireg	-	LUMP	FAD	FAD	FAD
83	KALA	31	NO	YES	-	NO	Reg	YES	NODULARITY	FC	FC	-
84	MANIMALA	23	YES	NO	-	NO	Reg	-	NAD	NAD	-	-
85	VALLI	24	YES	NO	-	YES	Reg	-	NAD	NAD	-	-
86	STELLA	18	YES	NO	-	NO	Ireg	-	NAD	NAD	-	-
87	PUSHPA	34	NO	NO	-	NO	Reg	YES	NAD	NAD	-	-
88	RANI	27	NO	NO	-	NO	Reg	YES	NAD	NAD	-	-
89	MURUGAMMAL	28	NO	YES	-	YES	Reg	YES	NODULARITY	FC	FC	-
90	SELVI	35	NO	NO	-	YES	Reg	YES	NAD	NAD	-	-
91	KUMARI	20	YES	NO	-	NO	Ireg	-	NAD	NAD	-	-
92	PONESSAKI	29	NO	NO	-	YES	Reg	YES	NAD	NAD	-	-
93	MUTHU LAKSHMI	19	NO	YES	-	NO	Reg	-	LUMP	FAD	FAD	FAD
94	SALOMI	18	YES	NO	-	NO	Ireg	-	NAD	NAD	-	-
95	SATHYA	26	NO	YES	-	YES	Reg	YES	NODULARITY	FC	FC	-
96	PETHCIAMMAL	24	YES	NO	-	NO	Reg	-	NAD	NAD	-	-

97	SYEDALIFATHIMA	17	NO	YES	-	NO	Reg	-	LUMP	FAD	FAD	FAD
98	KALIVANI	15	YES	NO	-	NO	Ireg	-	NAD	NAD	-	-
99	SARANYA	19	YES	YES	-	YES	Reg	-	NODULARITY	FC	FC	-
100	ARUNA	18	YES	NO	-	NO	Ireg	-	NAD	NAD	-	-
101	LAKSMI	28	YES	NO	-	NO	Reg	YES	NAD	NAD	-	-
102	PONNAMAL	35	NO	NO	-	YES	Reg	YES	NAD	NAD	-	-
103	DHIVYA	21	YES	YES	-	YES	Reg	-	NODULARITY	FC	FC	-
104	SUDHA	23	NO	NO	-	NO	Ireg	-	NAD	NAD	-	-
105	MEKALA	22	YES	NO	H/O FEVER	YES	Reg	-	ABCESS	ABCESS	-	-
106	THAMARAI	38	NO	YES	-	YES	Reg	YES	LUMP	FAD	FAD	FAD
107	SAROJA	25	YES	YES	-	YES	Reg	YES	NODULARITY	FC	FC	-
108	VALLI	24	NO	NO	-	NO	Reg	-	NAD	NAD	-	-
109	SUNDARI	23	NO	YES	-	NO	Reg	-	LUMP	FAD	FAD	FAD
110	ALAGU	29	NO	NO	-	NO	Ireg	YES	NAD	NAD	-	-
111	MEENA	24	YES	NO	-	NO	Reg	YES	NAD	NAD	-	-
112	SUBBU	29	YES	YES	-	YES	Reg	YES	NODULARITY	FC	FC	-
113	LEELA	23	YES	NO	-	NO	Ireg	-	NAD	NAD	-	-
114	VASANTHI	33	NO	YES	-	YES	Reg	YES	NODULARITY	FC	FC	-
115	VADIVU	25	NO	YES	-	NO	Reg	YES	LUMP	FAD	FAD	FAD
116	DEEPA	21	NO	YES	-	YES	Ireg	-	NODULARITY	FC	FC	-
117	PONNU	20	YES	NO	-	NO	Reg	-	NAD	NAD	-	-
118	RAGINI	24	NO	NO	-	NO	Reg	-	NAD	NAD	-	-
119	MALIKA	23	NO	NO	-	NO	Ireg	-	NAD	NAD	-	-
120	INDRA	19	YES	NO	-	YES	Reg	-	NAD	NAD	-	-
121	CHITRA	26	NO	NO	-	YES	Ireg	YES	NAD	NAD	-	-
122	RAMALAKSHMI	36	NO	YES	-	YES	Reg	YES	LUMP	FAD	FAD	FAD
123	SUGANYA	35	NO	NO	-	NO	Reg	YES	NAD	NAD	-	-
124	SULEKA	28	NO	YES	-	YES	Ireg	YES	NODULARITY	FC	FC	-
125	SARASWATHY	32	NO	YES	-	NO	Reg	YES	NODULARITY	FC	FC	-
126	RIZWAN	19	NO	YES	-	NO	Reg	-	LUMP	FAD	FAD	FAD
127	JEBARANI	29	NO	NO	-	NO	Reg	YES	NAD	NAD	-	-
128	ANNAM	27	NO	NO	-	YES	Ireg	YES	NAD	NAD	-	-
129	FATHIMA	19	YES	NO	-	NO	Reg	-	NAD	NAD	-	-

130	DURGA	24	YES	NO	-	YES	Reg	NO	ABCESS	ABCESS	-	-
131	THAYAMMAL	40	NO	YES	-	YES	Reg	YES	LUMP	FAD	FAD	FAD
132	ROJA	17	YES	YES	-	YES	Reg	-	NODULARITY	FC	FC	-
133	PARVATHY	27	NO	NO	-	NO	Ireg	YES	NAD	NAD	-	-
134	SUMATHI	26	NO	NO	-	YES	Ireg	YES	NAD	NAD	-	-
135	MARY	22	YES	NO	-	NO	Reg	-	NAD	NAD	-	-
136	ELIZABETH	19	YES	YES		YES	Ireg	-	NAD	FC	FC	-
137	SANKARAVADIVU	44	NO	NO	G/E FATIGABILITY	YES	Reg	YES	NAD	NAD	-	-
138	SANGEEETHA	29	NO	YES	-	NO	Reg	YES	LUMP	FAD	FAD	FAD
139	SANTHYA	32	NO	YES	-	YES	Reg	YES	NODULARITY	FC	FC	-
140	ALMEENA	21	NO	YES	-	NO	Ireg	-	LUMP	FAD	FAD	FAD
141	SUMITHRA	31	NO	YES	-	NO	Reg	YES	NODULARITY	FC	FC	-
142	MUTHU	23	YES	NO	-	NO	Reg	-	NAD	NAD	-	-
143	MARIYAM	25	NO	NO	-	NO	Ireg	YES	NAD	NAD	-	-
144	BACKIYAM	20	YES	NO	-	NO	Reg	-	NAD	NAD	-	-
145	BANU	19	YES	YES	-	NO	Ireg	-	NODULARITY	FC	FC	-
146	SINDHU	24	YES	NO	-	NO	Reg	-	NAD	NAD	-	-
147	REVATHI	23	NO	NO	-	NO	Ireg	-	NAD	NAD	-	-
148	PETHCHITHAI	43	NO	NO	H/O GIDINESS	YES	Ireg	YES	NAD	NAD	-	-
149	STELLA MARY	19	YES	NO	-	NO	Reg	-	NAD	NAD	-	-
150	VADIVAMMAL	40	NO	NO	G/E MALAISE	YES	Reg	YES	NAD	NAD	-	-
151	PRIYA	20	NO	YES	-	NO	Reg	-	LUMP	FAD	FAD	FAD
152	RENUKA	19	YES	NO	-	NO	Reg	-	NAD	NAD	-	-
153	DEVI	22	YES	YES	-	YES	Reg	-	NAD	FC	FC	-
154	DHARSHINI	23	YES	NO	-	NO	Reg	-	NAD	NAD	-	-
155	KALAIARASI	19	NO	YES	-	NO	Reg	-	LUMP	FAD	FAD	FAD
156	UMA	27	NO	NO	H/O TRAUMA	NO	Ireg	YES	NAD	NAD	-	-
157	ABMBIGA	35	NO	YES	-	NO	Reg	YES	NODULARITY	FC	FC	-
158	ESTHER	29	YES	NO	-	NO	Reg	YES	NAD	NAD	-	-
159	VIJAYA	25	YES	YES	-	NO	Reg	YES	NODULARITY	FC	FC	-
160	POOMARI	24	YES	NO	-	NO	Reg	YES	NAD	NAD	-	-
161	SUBHA	17	NO	NO	-	YES	Ireg	-	NAD	NAD	-	-
162	KANNAMAL	32	NO	YES	-	NO	Reg	YES	LUMP	FAD	FAD	FC

163	SUGUNA	25	NO	YES	-	NO	Reg	-	NODULARITY	FC	FC	-
164	PRIYA	28	NO	NO	-	NO	Reg	YES	NAD	NAD	-	-
165	MURUGESH	18	YES	YES	-	NO	Reg	-	NODULARITY	FC	FC	-
166	MARISWARI	25	NO	NO	-	YES	Ireg	-	NAD	NAD	-	-
167	SREERAJI	25	NO	YES	-	YES	Reg	-	NODULARITY	FC	FC	-
168	THANGAMARI	24	YES	NO	-	YES	Reg	-	NAD	NAD	-	-
169	DIANA	18	YES	NO	-	NO	Ireg	-	NAD	NAD	-	-
170	ANNABAKIYAM	34	NO	NO	-	NO	Reg	YES	NAD	NAD	-	-
171	THEEPA	27	NO	NO	-	NO	Reg	YES	NAD	NAD	-	-
172	KAVITHA	28	NO	YES	-	YES	Reg	YES	NODULARITY	FC	FC	-
173	RAMANI	35	NO	NO	-	YES	Reg	YES	NAD	NAD	-	-
174	THERSA	20	YES	NO	-	NO	Ireg	-	NAD	NAD	-	-
175	RAJAMMAL	29	NO	NO	-	YES	Reg	YES	NAD	NAD	-	-
176	VINOTHA	19	NO	YES	-	NO	Reg	-	LUMP	FAD	FAD	FAD
177	SURYA	18	YES	NO	-	NO	Ireg	-	NAD	NAD	-	-
178	PARAMESWARI	26	NO	YES	-	YES	Reg	YES	NODULARITY	FC	FC	-
179	MARIYATHAI	24	YES	NO	-	NO	Reg	-	NAD	NAD	-	-
180	THOOYAMATHI	17	NO	YES	-	NO	Reg	-	LUMP	FAD	FAD	FAD
181	KIRUBA	15	YES	NO	-	NO	Ireg	-	NAD	NAD	-	-
182	NITHYA	19	YES	YES	-	YES	Reg	-	NODULARITY	FC	FC	-
183	MALAR	18	YES	NO	-	NO	Ireg	-	NAD	NAD	-	-
184	ESWARI	23	YES	YES	-	YES	Reg	-	NODULARITY	FC	FC	-
185	THILAGAVATHY	24	YES	NO	-	NO	Reg	-	NAD	NAD	-	-
186	KRITHIKA	22	NO	NO	-	NO	Ireg	-	NAD	NAD	-	-
187	CHANDRA	32	NO	YES	-	NO	Reg	YES	LUMP	FAD	FAD	FAD
188	PITCHAMMAL	37	YES	YES	-	YES	Reg	YES	NODULARITY	FC	FC	-
189	MANIMEGALAI	27	YES	NO	-	NO	Ireg	YES	NAD	NAD	-	-
190	PAVITHRA	25	NO	YES	-	YES	Reg	YES	NODULARITY	FC	FC	-
191	AISHA	24	YES	NO	G/E MALAISE	NO	Ireg	-	NAD	NAD	-	-
192	NANDHINI	24	YES	YES	-	YES	Reg	YES	NODULARITY	FC	FC	-
193	PANDESSWARI	27	NO	NO	-	NO	Ireg	YES	NAD	NAD	-	-
194	RAHAMAT	25	YES	NO	H/O TRAUMA	NO	Reg	NO	NAD	NAD	-	-
195	POOMA	28	YES	NO	-	NO	Reg	YES	NAD	NAD	-	-

196	PARVATHY	21	NO	NO	-	NO	Ireg	-	NAD	NAD	-	-
197	ESSAKITHAI	25	NO	YES	-	NO	Reg	YES	LUMP	FAD	FAD	FAD
198	MARESWARI	24	YES	NO	-	NO	Reg	-	NAD	NAD	-	-
199	BHARATHI	21	NO	YES	-	NO	Reg	-	LUMP	FAD	FAD	FAD
200	VELLAMMAL	27	YES	YES	-	YES	Reg	NO	NODULARITY	FC	FC	-

LEGEND:

FAD : Fibroadenoma of the Breast

FC : Fibrocystic Disease of the Breast

NAD : No Abnormality Detected

Reg : Regular menstrual cycles

Ireg : Irregular menstrual cycles

USG : Ultrasonography

FNAC : Fine Needle Aspiration Cytology

DCIS : Ductal Carcinoma In Situ