PDCC IN BREAST SURGERY

CURRICULUM

GUIDELINES for COMPETENCY BASED POSTGRADUATE TRAINING PROGRAMME for PDCC in BREAST SURGERY

Program outcome

A post graduate student pursuing PDCC (Breast Surgery) course will acquire adequate knowledge at least in the following aspects

(a) Basic Sciences as applied to Breast –Anatomy, Development and Physiology

(b) Clinical, experimental, comparative, investigative, surgical, and applied aspects of Breast Diseases serve their region, state, and country in a cost-effective manner

(c) Recent advances like molecular profiling, Oncoplastic procedures in the Management of Breast cancer and other Breast disorders/diseases for the progress of the specialty and practice up to dated skill and knowledge

SUBJECT SPECIFIC LEARNING OBJECTIVES

At the end of the course the candidate who is eligible for a DM degree in Endocrinology should A During PDCC program, a student will acquire:

1. Knowledge in the basic, comparative, translational, and clinical aspects of Breast illness to understand the disease burden, distribution, determinants in the region and country.
2. Clinical, diagnostic, critical thinking, problem solving, self-directed learning and Surgical procedural skills required in treatment of Breast illness, in particular Breast Cancer, Benign breast Diseases.
3. Skills as related to formulating research questions, initiating, conducting, and analyzing translational, clinical, surgical, and epidemiologic research. The students shall focus on research oriented toward ease of access, lower the cost of treatment, novel treatment, of commonly encountered Breast diseases.
4. Team leadership and networking skills to train the medical and paramedical fraternity in the state, country, and region about the common Breast illness.
5. Communication skills necessary for counselling and educating patients and team members at local, national, regional, and internal forum.
6. Attitudes and values that will allow him or her to provide compassionate, responsive, and respectful ethical care to the patient.

A. Theoretical Knowledge:

a) The student will acquire knowledge in all aspects relevant to the practice of common Breast diseases, including Breast Cancer and benign breast diseases, in the state, country, and region. This includes training and expertise in Mastology capable of providing specialist care to our citizens, being a teacher and guiding researcher in Mastology, to promote the research in the state, region and the country.

b) She/ He will acquire and be able to impart necessary knowledge, skill, and attitudes to diagnose and manage in a cost-effective manner to solve various clinical problems commonly seen in the local community and at secondary and tertiary care centers of the region and country. Special emphasis should be placed on Breast cancer screening programs to reduce the disease burden in the region.

B. **Surgical Skills**

The student will acquire surgical expertise in all aspects relevant to the practice of common Breast diseases, including Breast Cancer and benign breast diseases.

C. **Teaching skill**

The student will be able to teach relevant aspects of breast diseases to resident doctors, junior colleagues, nursing and para-medical staff to enhance the skilled work force at local level.

D. **Research methodology**

Student will be able to identify and investigate a research problem, prevailing in the local community or state or country, using appropriate methodology.

E. **Group approach**

Student will participate in multi-disciplinary meetings with experts in Surgery/ Breast Surgery/ Breast Surgical Oncology, Radiology, Pathology, Oncology, Laboratory Medicine, and other allied clinical disciplines. This will help them to integrate acquired knowledge and apply them aptly.

SUBJECT SPECIFIC COMPETENCIES

At the end of the course, the student will acquire the following competencies under the three domains:

A. Cognitive domain (Knowledge domain)

By the end of the course, the student will be able to

i. Demonstrate that he/she is well versed with the past and current literature on relevant aspects of basic, preventive, investigative, clinical, surgical, and interventional procedures. They shall also be capable to diagnose and manage breast cancer patients and benign breast disease patients.

ii. Demonstrate a thorough knowledge of epidemiology of Breast cancer which are prevalent at local, regional, state, and country level; natural history, pathological abnormalities, etiopathogenesis, clinical manifestations and principles of management of common Breast disorders such as fibroadenoma, ANDI disorders, Gynaecomastia etc.

iii. Plan appropriate investigations applicable for diagnosis and management in a cost- effective manner and interpret correctly the results of various routine and specialized investigations necessary for proper management of the patients with breast diseases. They shall be able to judicially prioritize their investigation and treatment to meet the resource limitations of the state or country.

iv. Recognize and manage Breast Malignancies, both rare and common, in particular those which are prevalent in the local setting.

v. Be able to plan and conduct a research proposal in the specialty in accordance with guidelines of Ethics Committee and critically evaluate published literature in medical journal. Research shall be focused on local, regional, and national health priorities.

vi. Acquire relevant knowledge of biostatistics to be able to critically read and judge new literature and interpret its application in the context of the country

vii. Recognize the value of ethical principles of patient care and research, particularly in context of Indian values and beliefs.

viii. Be able to take decisions regarding hospitalization or timely referral to other consultants of various specialties recognizing his/her limitations in these areas. This will help the country in efficient use of scare health care resources.

ix. Have a basic knowledge of data science as it applies to breast disorders - including artificial intelligence machine learning devices and wearables.

B. Affective domain, i.e., attitudes including communication and professionalism (course outcome)

The student should:

- Have empathy for patients and their family members
- Discuss options, including advantages and disadvantages of each investigation and treatment. She/He should be able to discuss medical and surgical issues with them in local, regional or national language using non-scientific terms.
- Become confident communicators and should be well accomplished professionals who could serve for the betterment of its country and advancement of science.
- Have developed skills to debate, deliver scientific lecture, participate in panel discussions, and hold group discussions and be ready to deliver the knowledge received by him/her during the course**.** Such skill will elevate the status of the region or country on national or international forum.
- Be able to function as a part of a team, develop an attitude of cooperation with colleagues,

and interact with the patient and the clinician or other colleagues to provide the best possible diagnosis or opinion. They shall have attitude to share their knowledge and skill with medical fraternity serving in resource limited setting of the country

- To abide with the laws of the country, always adopt ethical principles and maintain proper etiquette in dealing with patients, relatives and other health personnel and to respect the rights of the patient including the right to information and second opinion
- Develop communication skills to write reports and give professional opinion as well as to interact with patients, relatives, peers and paramedical staff, and for effective teaching.

C. Psychomotor domain

At the end of the course, the student will have acquired following skills

C.1. The student should be able to perform independently the following procedures and/ or interpret the results of:

A. Will be able to perform:

1. Core needle biopsies (Both unguided and image guided)
2. Tumor Mapping and TIVAD insertions/removals
3. Fibroadenoma excision, WLE of suspicious lesions
4. Mastectomies – Simple, Palliative, modified radical mastectomy, skin sparing mastectomy
5. Sentinel Lymph node biopsy– SLNB (using dye, Radiocolloid material and/or ICG), Axillary sampling/ Low Axillary sampling
6. Axillary dissection
7. Breast Conservation surgeries- conventional and oncoplastic (OPS), at least level 1 OPS

B. Will be able to interpret:

1. Radiologic studies for diagnosis and treatment of Breast diseases including:
    - i) Plain X-ray/ USG, Mammography, CT scan/MRI
    - ii) radionuclide imaging including PET scan
    - iii) DXA for osteoporosis and body composition studies.
2. Ancillary tests: like genetic counseling and basic molecular genetic tests applicable to breast cancer predisposition/ familial breast cancers

C. 2. The student will be able to observe or perform under supervision the following procedures –desirable skills

a. Fine needle aspiration cytology
b. Breast ultrasound
c. Oncoplastic surgeries (Level 1 and 2)
d. Breast reconstruction after mastectomy

Syllabus

Course contents:

1) Cognitive domain

a) Basic Sciences as applied to Breast

i) Embryology and Physiology of the breast

(1) Embryology,

(2) Development during puberty, proliferation during pregnancy, involution after lactation, involution during menopause

(3) Anomalies, Abnormalities and syndromic association in breast development including amastia, hypoplasia, hyperplasia, tubular breast, accessory/supernumery breast and nipples.

ii) Surgical anatomy of the breast and the axilla

(1) Surface marking of the breast,

(2) Muscles and fascias of the thoracic wall and axillary region,

(3) Blood supply to the breast, overlying skin and nipple-areola complex as well as vascular anatomy of the axilla,

(4) Neural anatomy of the breast, thoracic wall, axillary area and the upper arm.

(5) Lymphatic drainage patterns to ipsilateral axilla, sub- and supraclavicular nodal basins, internal mammary nodal basin and contralateral axilla.

iii) Applied Surgical anatomy of the breast and the axilla: this knowledge will help a breast surgeon to:

(1) Plan surgical treatment with excellent knowledge of surgical anatomy of the breast and axilla to minimize the risk of surgical complications: for example nerve damage or skin envelope necrosis, lymphedema,

(2) Perform mastectomy avoiding skin envelope necrosis or leaving excess breast tissue behind

(3) Perform sentinel node biopsy minimize false negative findings without damage to the intercostobrachial nerves

(4) Perform axillary lymph node dissection without leaving residual disease without damage to long thoracic nerve, pectoral nerve and vessels, thoracodorsal nerve and vessels and axillary plexus

b) Clinical Mastology – Diagnostic Workup, Management of Breast related Diseases

i) Diagnostic work-up of breast conditions

(1) History and clinical examination Assess history and understand its role in the management of benign and malignant breast diseases and conditions

(2) Evaluate clinical symptoms and signs and understand its role in the management of benign and malignant breast diseases and conditions

- Puberty, menopause, pregnancies, lactation, menopause, hormonal treatments
- Family history
- Previous breast conditions and procedures

- Co-morbidities, medications
- Symptoms of benign or malignant breast diseases or conditions
- Symptoms suggestive of nodal or distant metastases

(3)Triple assessment: clinical examination, breast imaging and percutaneous needle biopsies

- Inspection for signs suspicious for breast cancer, like skin retraction, eczema of the nipple areola complex, bears asymmetry, erythema etc.
- Palpation of breasts, regional nodal basins and abdomen
- Assessment of nipple discharge

Breast imaging and percutaneous needle biopsies

- Counsel patients regarding breast imaging methods and percutaneous needle biopsies:

Indications, limitations and how these are performed

- Evaluate mammograms and breast MRIs
- perform fine needle aspiration cytology sampling and core needle biopsy

ii) Breast imaging

(1) Mammography- indications, sensitivity and specificity, factors influencing sensitivity and specificity, interpretation, Role in Breast Cancer screening

(2) Breast ultrasound- indications, sensitivity and specificity, factors influencing sensitivity and specificity, perform and interpret ultrasound and utility of elastography in breast lumps, using it as an adjunct to do tumor mapping

(3) Ultrasound and stereotactic guided breast biopsies, how performed, indications and contraindications

(4) Breast MRI

- How performed, indications and contraindications, sensitivity and specificity, factors influencing sensitivity and specificity in invasive cancer and in DCIS
- The role in surveillance of high risk women
- The role when contradictory findings in triple diagnosis
- The role in determining response in patients with neo adjuvant treatment
- The role in detecting contralateral cancer
- The role when planning breast conserving surgery
- The influence on second surgeries due to insufficient margins
- The limited influence on local recurrences
- Management of lesions detected only in MRI
- The benefits and risks of MRI: highly sensitive but risk of 'unnecessary' mastectomies

iii) Percutaneous needle biopsies

(1) Fine needle aspiration cytology – how performed, indications and contraindications, sensitivity and specificity, factors influencing sensitivity and specificity

(2) Core needle biopsy- how performed, indications and contraindications, sensitivity and specificity, factors influencing sensitivity and specificity

(3) Vacuum assisted biopsy- how performed, indications and contraindications, sensitivity and specificity, factors influencing sensitivity and specificity

iv) Benign breast diseases and conditions - Incidence, aetiology and risk factors and management.

(1) Diagnose or exclude cancer or benign breast conditions based on the findings in triple

diagnosis or on history and clinical examination only

(2) Counsel regarding the nature of these diseases and conditions and their management

(3) Conservative and surgical management of gynaecomastia

(4) Conservative and surgical management of puerperal mastitis, periductal mastitis and granulomatous mastitis

(5) Conservative and surgical management of breast cysts and nipple discharge

(6) Conservative and surgical management of benign breast tumours (fibroadenoma, benign phyllodes tumour, lactating adenoma, nipple adenoma, papilloma)

(7) Perform excisional biopsy of borderline/high risk lesions

v) Ruling out cancer, and management of following common and uncommon conditions:

(1) Gynaecomastia
(2) Nipple discharge
(3) Fibrocystic disease
(4) Cyclic and non-cyclic mastalgia
(5) Breast hypertrophia
(6) Puerperal mastitis
(7) Periductal mastitis
(8) Breast fistula
(9) Other mastitis
(10) Granulomatous mastitis
(11) Mondor's disease
(12) Fibroadenoma
(13) Lactating adenoma
(14) Adenoma of the nipple
(15) Benign phyllodes tumour
(16) Macrocysts (simple, complicated, and complex)
(17) Papilloma

vi) Breast cancer: incidence, aetiology and risk factors

A. Assessment of breast cancer risk according to age and ethnicity and gender

B. Knowledge about non-genetic factors that increase or decrease breast cancer risk

- Age and gender
- Exposure to endogenous oestrogens/hormones:

Puberty and menopause, parity and lactation, oophorectomy

- Exposure to exogenous oestrogens/hormones:
- Hormonal contraception, IVF, hormone replacement therapy, Anti-oestrogens etc
- Obesity
- Alcohol consumption
- Dietary factors
- Previous radiotherapy
- Proliferative, non-high risk lesions of the breast (fibro adenoma, sclerosing adenosis, intaductal papilloma etc)
- High risk lesions (lobular neoplasia in situ, atypical ductal hyperplasia, columnar cell hyperplasia)

C.Genetic predisposition: breast cancer risk and risk of other malignancies

- BRCA1 and BRCA 2 mutations

- Li-Fraumeni syndrome
- Cowden syndrome
- Ataxia-teleangiectasia
- Low penetration mutations like CHEK-2 gene

D.Risk estimation models (Gail, Claus, Tyrer- Cuzick, BOADICCEA)

E. Management of high and moderate risk women

- Surveillance with breast imaging
- Risk reducing surgery: breast and ovary
- Chemoprevention

F. **Breast Cancer Screening**

- Quality requirements (EUSOMA)
- Compliance
- Influence on breast cancer mortality and survival
- Factors influencing sensitivity
- False positive findings and over diagnosis and their influence on quality of life

G. Breast cancer: biology, natural history and prognosis

(1) Basic concepts in cancer biology

- Cell kinetics, proliferation, apoptosis and the balance between cell death and cell proliferation
- Angiogenesis and lymphangiogenesis
- Genome maintenance mechanisms to prevent cancer
- Intercellular and intermolecular adhesion mechanisms and signalling pathways
- Immunological mechanisms that either prevent or promote cancer growth and dissemination
- Potential effects of surgery and surgery-related events on cancer biology (e.g. angiogenesis)

(2) Natural history, prognosis, prognostic and predictive factors

- Patterns of local regional and distant dissemination
- Differences in dissemination patterns due to biological tumour subtypes
- Tumour and nodal stages
- Tumour grade
- Ki-67 expression
- Histological subtypes in invasive cancer
- Histological growth patterns in DCIS
- Biological subtypes in invasive cancer
- Oestrogen and progesterone receptor expression
- HER-2 neu(expression and mutation
- The role of "conventional" breast pathology (costs, benefits and limitations)
- The role of DNA microarrays (costs, benefits and limitations)
- Differences and similarities in tumour biology between sporadic and hereditary breast cancer
- The influence of circulating tumour cells on prognosis
- The risk of and risk factors for synchronous and metachronous contralateral breast cancer
- Prognostic estimation tools: Adjuvant online, Nottingham Prognostic Index, PREDICT, CTS5 score). Differences and applicability

H. Breast cancer: Staging

- Clinical staging of the primary tumour and the axilla and its accuracy

- Preoperative axillary staging by ultrasound and FNA (sensitivity and specificity)
- Surgical staging of the axilla - indications, methods, sensitivity, advantages, disadvantages
- CT- scan: how performed, the indications, sensitivity and specificity
- PET- scan: how performed, the indications, sensitivity and specificity
- Isotope bone- scan: how performed, indications, sensitivity and specificity
- Clinical and pathological TNM-classification
- Stage migration caused by more accurate staging, like detecting micrometastases in sentinel lymph node biopsy

I. Management of borderline and high risk lesions

- Atypical ductal hyperplasia, lobular neoplasia in situ vs pleomorphic lobular cancer in situ, columnar cell hyperplasia, papilloma
- The prevalence of in situ and invasive cancer when detected in core needle/vacuum assisted biopsy
- Breast cancer risk after excisional biopsy of these lesions

J. Localization of impalpable lesions (benign, borderline or malignant)

- Guide wire
- ROLL (radioguided occult lesion localization)
- RSL (radioguided seed localization)
- Guidance by intraoperative ultrasound
- Advantages and disadvantages of various localization methods
- The role of specimen radiography

K. The role of Multidisciplinary Team meeting in breast cancer

- Multimodality treatment of breast cancer
- EUSOMA guidelines regarding multidisciplinary teams and meetings

L. Breast cancer: Psychosocial and follow-up care. 'Survivorship' issues

- The need of psychological or social support in women with newly diagnosed breast cancer and during the entire course of disease
- The role of follow-up care in breast cancer survivors: detecting recurrences, influence on survival
- Methods in follow-up and the frequency of follow-up
- Conservative and surgical management of lymphoedema
- Chronic pain and sensory disorders after breast cancer treatment
- Endocrine issues in breast cancer survivors, like menopause symptoms and bone health
- Palliation of symptoms and psycho-social support in metastatic setting,
- Depression, anxiety and fear of recurrences, future pregnancies
- Cognitive disorders
- Sexual health

M. Other breast malignancies- incidence, diagnosis and treatment modalities

-Malignant and borderline phyllodes tumour
- Sarcomas
- Metastases from other malignancies
- Lymphoma in the breast or axilla

N. Research and Evidence based medicine

- The p-value and its relation to the sample size; the importance of power analysis and sample size calculation in trials

- The difference between statistical and clinical significance
- Intent-to-treat and per protocol analysis
- Protocol violation and how to avoid it
- Significance of completeness of follow-up, proportion of patients lost to follow-up
- Types of bias and how to avoid them
- Prospective and retrospective study setting
- study settings (randomized, prospective non-randomized, case- control, retrospective etc)
- Definitions of phase I, phase II, phase III and phase IV trials

(i) - Definitions of absolute and relative risk reduction or advantage
- Definition of number need to treat and number need to harm analyses
- Understand the difference between survival and mortality
- Choosing relevant outcome measures: survival, and quality of life
- Relationship between response to (systemic) treatment and survival
- Stage migration and the relationship between more accurate staging (like breast MRI or parasternal sentinel node biopsy) and survival
- Levels of evidence and how these influence treatment recommendations

22. Quality assurance in diagnosis and treatment of breast diseases

- Quality measures
- EUSOMA Guidelines regarding diagnosis and treatment of breast diseases, breast unit and training of breast specialists

c) Recent Advances

i) Axillary metastases with unknown primary

- Differential diagnosis and how to distinguish between axillary metastases from breast cancer and other malignancies (for example melanoma)
- The role of imaging modalities, such as breast MRI
- The role of pathology
- The role of CT and PET-CT scans to rule out distant disease or other malignancy than breast cancer
- Treatment (surgery, radiotherapy, systemic)

ii) Breast cancer in young women

- Need for genetic counselling/testing
- Local, regional and systemic treatment
- Local, regional and distant recurrences
- Survival
- Fertility, pregnancy and contraception
- Premature menopause due to breast cancer treatment

iii) Breast cancer in elderly

- Tailoring local, regional and systemic treatments according to co-morbidities and patient preference
- Local, regional and distant recurrences
- Survival

iv) Breast Cancer in Pregnancy

v) Male breast cancer

- Risk factors for male breast cancer
- Need for genetic counselling/testing
- Surgical treatment
- Adjuvant treatment
- Local, regional and distant recurrences
- Survival

vi) Molecular profiling, Newer Adjuvant and neo adjuvant, Targeted treatment in breast cancer

A. Systemic treatment

- Agents and regimen used in adjuvant/neoadjuvant setting
- Indications and contraindications
- Tools used to help in decision making (such as Adjuvant!online, Oncotype DX etc), advantages, disadvantages
- Influence on local and regional recurrences and survival
- Molecular profiling and their targets for treatment.
- Newer Cellular/molecular targets for chemotherapy, endocrine and targeted treatments, and their mechanisms
- Common side effects and their management
- Interaction with surgery, like effect on wound healing
- Local and regional recurrences and survival after adjuvant and neoadjuvant systemic treatments

B. Radiotherapy- breast, thoracic wall and regional nodal basins

- Indications and contraindications
- Influence on local and regional recurrences and survival
- Most common side effects and their management
- Partial breast radiotherapy: methods, indications, contraindications, advantages, disadvantages
- Interaction with surgery, like effect on wound healing
- Radiotherapy and breast reconstruction
- Acute and late side-effects and complications

2) Psychomotor domain

i) Surgical treatment of non-invasive and invasive breast cancer, and Paget's disease of the breast

A. Breast conservation- indications and contraindications

- Indications and contraindications for breast conservation
- The location, size and the multifocality/multicentricity of the tumour
- The size and the shape of the breast
- The predicted aesthetic outcome after breast conservation
- The role of neo adjuvant systemic treatment in facilitating breast conservation, including indications and contraindications as well as evaluating the response
- Patient preference
- Is patient willing and fit for radiotherapy?

B. Breast conservation- the technique

- Level I and level II Oncoplastic techniques in breast conservation
- Modified Benelli, Mammoplasty, wise pattern, Grisotti, Batwing, Round-block

techniques
- The need for contralateral surgery for symmetry

C. Breast conservation- margins and local recurrences

- The influence of margin width on local recurrences
- The role of cavity shavings to ensure sufficient margins
- Risk of local recurrence and patient and tumour related risk factors for local recurrence after breast conservation
- The influence of breast radiotherapy on local recurrences
- The influence of adjuvant systemic treatment on local recurrences
- Treatment of local recurrences after breast conservation
- The influence of local recurrences on survival
- Nodal staging in patients with local recurrence after breast conservation and negative sentinel node biopsy

D.Methods to correct poor aesthetic outcome after breast conservation

ii) Oncoplastic breast surgery:

Level-1 and 2 oncoplastic surgical procedures: wide spectrum of procedures applicable to aesthetic and oncologically sound surgical management of breast cancers located in various locations in the breast. These will include both **volume displacement as well as volume replacement procedures viz Modified Benelli, Mammoplasty, wise pattern, Grisotti, Batwing, Round-block techniques**. Additionally, the following techniques are also helpful to achieve the twin goal of oncologically safe, and aesthetically appealing breast cancer surgery:

- Free fat grafting
- Partial breast reconstruction

iii) Mastectomy and total breast reconstruction

- Indications for mastectomy
- Immediate and delayed reconstruction- indications and contraindications.
- Nipple-areola complex sparing mastectomy, indications, contraindications. Risk of and risk factors for complications
- The risk of nipple involvement, the role of frozen section from central ducts
- Implant reconstructions – indications, contraindications, complications, costs
- Acellular dermal matrices and artificial nets-– indications, contraindications, complications, costs
- Pedicle and perforator flap reconstructions – most commonly used flaps like LD flap, LICAP flap, Thoraco abdominal flaps, their indications, contraindications, complications, costs
- Micro-vascular flaps – most commonly used flaps, their indications, contraindications, complications, costs
- Factors influencing aesthetic outcome after breast reconstruction
- Oncological safety of immediate and delayed reconstruction
- Influence of reconstruction on the patient's quality of life

iv) Skin sparing mastectomy

-indications
-techniques
-Reconstruction Methods and techniques

v) Sentinel node biopsy (SNB) in invasive cancer, DCIS and Paget's disease of the breast

- The sentinel node concept
- The indications and contraindications of SNB

Various techniques of SLNB including Dye, Radio-colloid and ICG

- Sensitivity of SNB and factors influencing the sensitivity
- The role and outcome of SNB in patients with local recurrence and previous axillary surgery
- The advantages, disadvantages and outcome of SNB before neoadjuvant systemic treatment
- The advantages, disadvantages and outcome of SNB after neoadjuvant systemic treatment
- The role of SNB outside the axilla, like in the internal mammary nodal basin
- Radioisotope localization- advantages and disadvantages
- Blue dye - advantages and disadvantages
- The role of preoperative lymphoscintigraphy (conventional and SPECT)
- The role of and methods for intraoperative assessment of sentinel node metastases
- The histopathological methods in assessment of the sentinel node metastases
- Other methods in assessment of the sentinel node metastases
- Classification of tumour positive sentinel node findings
- Management of patients with positive sentinel nodes (observation, axillary radiotherapy, axillary lymph node dissection)
- The advantages and limitations of nomograms predicting further nodal involvement
- Morbidity after sole SNB, and after further treatment of axilla with axillary radiotherapy and axillary lymph node dissection

vi) Axillary reverse mapping – indications and contraindications

vii) Axillary lymph node dissection (ALND) in invasive cancer and DCIS

- The indications and contraindications of ALND
- Advantages and morbidity of ALND in patients with axillary metastases
- The role of preserving intercostobrachial nerves
- Berg levels extent of ALND

Regional recurrences after axillary surgery (SNB, ALND)

- The risk of and risk factors for regional recurrences
- The influence of radiotherapy on regional recurrences
- The influence of adjuvant systemic treatment on regional recurrences
- Treatment of regional recurrences after SNB and ALND
- The influence of regional recurrences on survival

viii) Treatment of locally advanced and metastatic (stage IV) breast cancer

- The definition of locally advanced breast cancer
- Primary systemic treatment in locally advanced breast cancer (endocrine, chemotherapy and targeted treatments)
- Surgery in patients with locally advanced breast cancer
- The role of radiotherapy in locally advanced breast cancer
- Palliative surgical procedures in disseminated (stage IV), like palliative mastectomy, treatment and prevention of pathological fractures etc)
- Removal of primary tumor in disseminated breast cancer- influence on survival
- Removal of liver or pulmonary metastases- influence on survival
- The role palliative radiotherapy in disseminated breast cancer

- Palliative treatments to relieve symptoms like pain and nausea
- Social, psychological and spiritual support in patients with disseminated breast cancer

3) KNOWLEDGE AND SKILLS in allied subjects/ specialties, as applicable to practice of breast surgery, oncoplastic breast surgery and breast oncology:

The speciality in Breast Surgery requires **Knowledge and Skills** in following issues

1. **Anesthesia and pain management**
   - Evaluate patient's eligibility for general anesthesia in collaboration with the anesthesiologist
   - Evaluate patients eligibility for local or regional anesthesia
   - Perform local anesthesia, pain palliation for metastatic pain
2. **Postoperative complications**
   - Evaluate patient risk regarding postoperative complications and conduct preventive procedures
   - Counsel patients regarding their individual risk of surgical complications
   - Conservative and surgical management of wound healing complications
3. **Research and Evidence based medicine**
   Basics of epidemiology, Research methodology including clinical trials and scientific communication as applicable to breast surgery and oncology
   - Critical evaluation and discussion of clinical research articles
   - Evaluate the level of evidence
   - Apply evidence from clinical studies and guidelines in clinical work

TEACHING AND LEARNING METHODS

General principles

Acquisition of practical competencies being the keystone of post graduate medical education, PG training should be skills oriented. Learning in PG program should be essentially self-directed and primarily emanating from clinical and academic work. The formal sessions are merely meant to supplement this core effort.

Minimum Attendance: 80% in the clinical posting, and 80% in the academic sessions shall be mandatory for appearing in the final examination.
The total duration of course is 12 months, and thus minimum 80% of the tenure should have been completed before appearing in the exam.

Teaching Methodology

The post graduate student should be given the responsibility of managing and caring for patients in a gradual manner under supervision.

Formal teaching sessions

This should include regular bedside case presentations and demonstrations, didactic lectures, seminars, journal clubs, clinical meetings, and combined conferences with allied departments. This will comprise of the following:

	Minimum sessions
• Bedside rounds	- Five days per week
• Seminar	- once in 8 weeks
• Journal club	- once in two weeks
• Breast MDT Tumor Board Discussion	- Three days per week
• Pathology – Breast Surgery meet	- once in 4 weeks
• Breast-radiology conference	- once in 4 weeks
• Breast –Nuclear Medicine conference	-once in 4 weeks
• Clinical case discussion	- once a week
• Outpatient clinic	- thrice a week
• Mortality meeting	- once a month
• Combined Grand rounds/ Clinical meetings/CPCs (at Institution level)	- once a month
• Student project presentation	- once in 6 months

All above may refer to sessions conducted in given Department and not for each trainee.

Didactic Lectures

In addition, 10 lectures per year covering recent advances in all aspects of breast diseases would be taken by faculty. All post graduate students will be required to attend these lectures as well and short term basic and clinical courses on:

- Bio-statistics
- Research methodology and experimental lab medicine relevant to endocrinology
- Use of computers in medicine
- Bioethics, ethical issues in practice

In addition, student should attend accredited scientific meetings (CME, symposia, and conferences) once or twice a year.

- Additional sessions on Research methodology, use of computers in Medicine, Biostatistics, ethical and legal issues in practice, teaching methodology, hospital waste management, health economics, are suggested.
- The post graduate students shall be required to participate in the teaching and training programme of undergraduate and post graduate students and interns, paramedical staff (if available).
- Participation in the Community outreach/ Breast Cancer Awareness programs by the student is desirable.

Research

- PDCC student will be required to participate in ongoing research projects in fields of breast surgery under the guidance of the faculty. He/she will be encouraged to submit a research plan within 6 weeks after joining the course and prepare 1 original paper for publication/ready for sending to a journal for publication. In addition, the PDCC student will participate in various departmental research activities.
- A post graduate student of a post graduate degree course in super specialties would be required to present one poster presentation or read one paper at a national/state conference; should write a research paper from his/her work which should be published/accepted for publication/sent for publication during the period of his postgraduate studies
- **Log Book:** During the training period, the post graduate student should maintain a Log Book indicating the duration of the postings/work done in Wards, OPDs, OTs and Casualty. This should indicate the procedures assisted and performed, and the teaching sessions attended. The purpose of the Log Book is to:
  a) Help maintain a record of the work done during training,
  b) Enable Consultants to have direct information about the work; intervene if necessary,
  c) Use it to assess the experience gained periodically.

  The Log Book should be used to aid the internal evaluation of the student. The Log book shall be checked and assessed periodically by the faculty members imparting the training. It should be signed by the Head of the Department. A proficiency certificate from the Head of Department regarding the clinical competence and skillful performance of procedures by the student will be necessary before he/she would be allowed to appear in the examination.
- The student will be **encouraged to participate in the e-learning activities of the Department.**

Suggested Readings:

Sno	Title	Editor	Authors	Year of publication	Publisher
1.	Cancer – Principles and Practice of Oncology, 11th Ed	Devita, Hellman and Rosenberg	Devita, Lawrence and Rosenberg	2019	LWW
2.	Operative Techniques in Breast, Endocrine and Oncologic Surgery	Michael S Sabel	Michael W Mulholland	2015	LWW
3.	Atlas of Breast Surgery	Jatoi, Kaufmann, Petit	Gabriele Schroder	2004	Springer
4.	Mastery of Surgery 7th Ed	Fischer	Josef E Fischer	2019	LWW
5.	Diseases of the Breast 5th Ed		Jay Harris, Monica Marrow, Lippman and Kent Osborne	2010	LWW
6.	Oncologic Breast Surgery		Carlo Mariotti	2014	Springer
7.	Oncoplastic Breast Surgery – A guide to clinical practice 2nd Ed		Fitzal and Schrenk	2015	Springer
8.	Surgery of the Breast – Principles and Art 3rd Ed		Scott L Spear	2011	LWW
9.	Triple Negative Breast Cancer		Xiyun Deng and Faqing Tang	2021	World Scientific Publishing
10.	Principles of Surgery 11th ed	Schwartz	Charles Brunicardi	2019	McGraw Hill

11.	Short practice of Surgery	Bailey and Love	Ronan O'connell	2023	CRC Press
12.	Textbook of Surgery 21st ed	Sabiston	Townsend	2022	Elsevier

List of journals:

1. The Breast Journal - Hindawi
2. Breast Cancer Research by Biomed Central
3. Breast Cancer Research and Treatment - Springer
4. Clinical Breast Cancer – Elsevier
5. Journal of Clinical Oncology – ASCO (LWW)
6. Surgical oncology clinics of North America – Elsevier
7. Journal of Breast Imaging – Oxford academic
8. The Breast – ESMO (Elsevier)
9. JAMA oncology – AMA
10. Annals of Breast Surgery – AME
11. World Journal of Surgery – Springer
12. World journal of Surgical Oncology – BMC
13. New England Journal of Medicine –
14. Lancet Oncology – Sciencedirect
15. The Lancet – Sciencedirect
16. Indian journal of Surgery – Springer
17. Indian journal of Surgical Oncology – Springer
18. British Journal of Surgery – Oxford Academic

Requirements for PDCC in Breast Surgery

Recommended Minimal Operative Experience

Operation	Performed	Assisted
Modified Radical Mastectomy	06	20
Conservative Breast Surgery (WLE + ALND)	04	10
Breast Reconstruction after mastectomy	01	05
Oncoplastic Breast Surgery	04	10
Breast Lump excision/WLE	10	20
Axillary Sampling/SLNB	05	10
TIVAD insertions	15	20
Tumor Mapping	15	05
B/L Salpingo-oophorectomy	02	05

DURATION OF TRAINING - ONE YEAR.

NUMBER OF TRAINING POSITION: TWO

ELIGIBILITY: Course is open to candidates holding Master of Surgery (M.S.) degree in general surgery from an Indian University recognized by the institute or Diplomate in general surgery from National Board or any other examination approved by the institute for this purpose from time to time.

MODE OF SELECTION: Selection of candidates will be made on a national basis through entrance exam conducted by the Institute and Clinical assessment.