



Non surgical management of breast cancer

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- ▶ Invasive breast cancer systemic therapy
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- ▶ Radiation therapy

Management of High risk lesions

▶ Atypical ductal hyperplasia

NSABP-1, Tamoxifen 20mg 5 years, 85% reduction in the risk of developing invasive breast cancer

▶ Non invasive breast cancer

1-Lobular Carcinoma in situ

NSBP1 and P2, Tamoxifen and Raloxifen 56% reduction in the risk of developing invasive breast cancer

2-Ductal carcinoma in situ

NSABP B-24 BCS+ radiation+tamoxifen reduction in recurrence.

NSABP B-35 and NSABP B-43

Invasive breast cancer

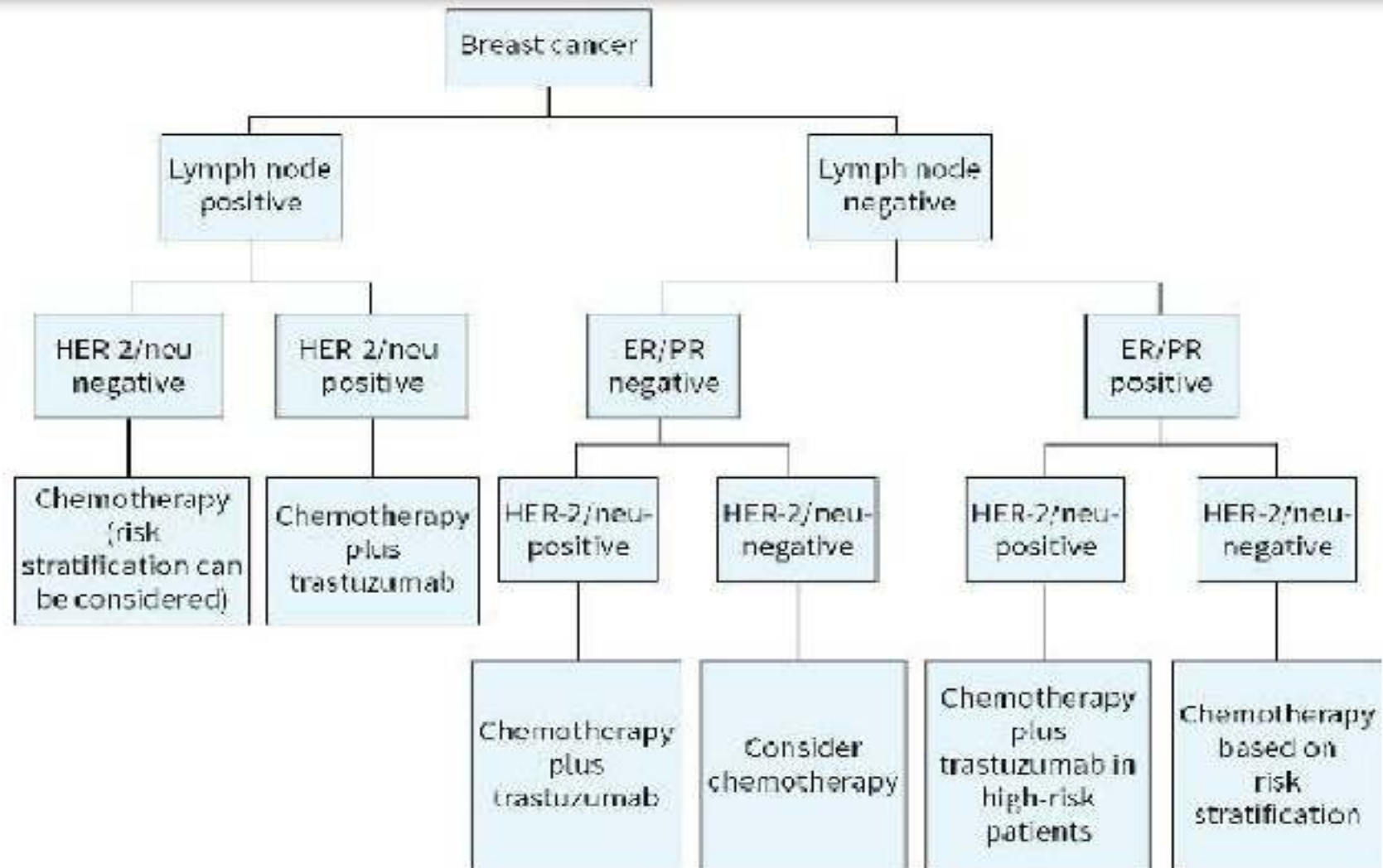


A multidisciplinary team should manage breast cancer, with the input from breast surgeon, reconstructive breast surgeon, radiologist, pathologist, medical oncologist, radiation oncologist, other key members of multidisciplinary team should include genetic consular, psychologist, social worker, nurses, navigators.

- **Systemic therapy**
- **Adjuvant therapy**



General principle of adjuvant therapy:



General principle of adjuvant therapy:



- ▶ Chemotherapy for following patients:
- ▶ ER/PR negative patients.
- ▶ Triple negative patients.
- ▶ HER-2/neu positive patients.
- ▶ Node positive patients.
- ▶ High risk patient based on oncotype DX, Mammaprint, or other prognostic classification.
- ▶ Patient under the age of 35 years.



Continue



- ▶ ER/PR positive patient should be considered for anti estrogen therapy.
- ▶ HER-2/neu positive patients should be considered for HER-2/neu targeted therapy.



Adjuvant therapy decision:




▶ The decision is based on:

- 1- stage
- 2- Nodal status
- 3- Tumor biology
- 4- Age
- 5- Comorbid condition
- 6- Performance status
- 7- Patient preference
- 8- Risk benefit discussion
- 9- Life expectancy



Adjuvant therapy in HER-2/neu negative patients



- ▶ A variety of adjuvant regimens have been used across the world, there is no major difference in efficacy among the regimens.
- ▶ Dose dense AC followed by paclitaxel.
- ▶ TC chemo every 21 days.
- ▶ AC chemo 4 cycles followed by PAC
- ▶ TAC, FAC, FEC, EC for 8 cycles.
- ▶ PALOMA 2 and 3 trials  Ibrance



Adjuvant therapy in HER-2/neu positive patients



- ▶ AC followed by T chemo + trastuzumab
- ▶ TCH
- ▶ Dose dense AC followed by Pac + trastuzumab
- ▶ TCHP

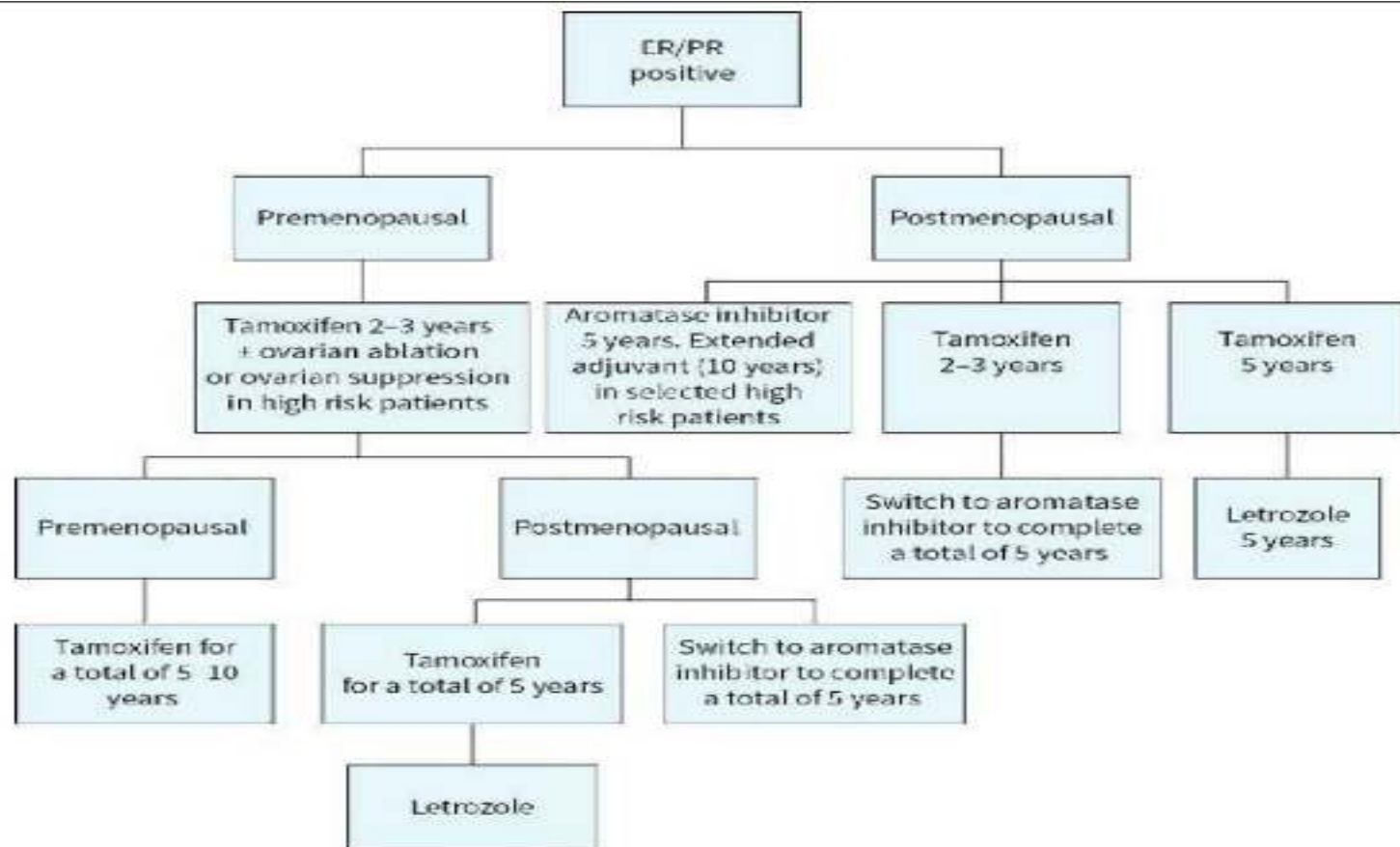
Neoadjuvant chemotherapy



- ▶ Neo adjuvant chemo can be considered for any patient with locally advanced breast cancer (IIB, IIIA, IIIB, IIIC) and inflammatory breast cancer. But in IIIA, IIIB, IIIC, and inflammatory breast cancer it is the treatment of choice.



Adjuvant endocrine therapy:



3 Adjuvant endocrine therapy.

Adjuvant endocrine therapy



- ▶ As per the oxford overview analysis tamoxifen can decrease mortality by about 30% recurrence by 50% in hormone receptor positive patients.
- ▶ Endocrine agent used in the treatment of breast cancer:
- ▶ **SERM:**
- ▶ Tamoxifen 20 mg/d PO
- ▶ Previous 5 years but ATLAS showed a continued benefit of 10 years
- ▶ Low dose tamoxifen 5 mg po per day
- ▶ Toremifene 60mg/d PO



Continue



- ▶ **Estrogen receptor down regulator:**
- ▶ Fulvestrant 500mg day1, day15 and then once a month intramuscular.
- ▶ **Aromatase inhibitors:**
- ▶ Anastrozole 1mg /d PO
- ▶ Letrozole 2.5mg/d PO
- ▶ Exemestane 25mg/d PO
- ▶ **LHRH agonist in premenopausal women:**
- ▶ Leuprolide 7.5mg,22.5mg, 30mg/dose
- ▶ **GnRH agonist analog**
- ▶ Goselone 3.5 mg, 10.8mg /dose



Targeted therapy



- ▶ Trastuzumab
- ▶ Ado trastuzumab
- ▶ Pertuzumab
- ▶ Lapatinib

Radiation therapy:



II. RADIOTHERAPY Approach

❖ Indications;

1. Conservative Breast Surgery adjuvant [Breast]
2. Total Mastectomy [Axilla]
3. High-risk of relapse patients
 - 1) Invasive Carcinoma
 - 2) Extensive in-situ Carcinoma
 - 3) Age < 35 years
 - 4) Multifocal disease
4. Bone secondaries [Palliative]
5. Atrophic Schirrous Carcinoma [Curative]
6. Pre-Operatively (reduce tumour size and downstage)
7. >4 +ve Axillary LN, Pectoral fascia involvement, positive surgical margins, Extra-nodal spread



Radiation therapy



- ▶ Radiotherapy is an integral part of BCS it is associated with large reduction in local recurrence and positive impact on survival.
- ▶ Standard radiation dose 45 to 50.4 Gy at 1.8 to 2 Gy per fraction.
- ▶ Post BCS
- ▶ Post mastectomy



Dose and fractionation



Post Mastectomy Radiation Therapy

Conventional dose fraction regimen to a total of 50–50.4 Gy at 1.8 Gy to 2.0 Gy per daily fraction is recommended for post mastectomy adjuvant radiation therapy.

▪





Modality	Description
Radiation therapy	
Indications	<ul style="list-style-type: none">■ Adjuvant treatment after lumpectomy for DCIS and early stage invasive breast cancer■ Adjuvant treatment after mastectomy for high risk locally advanced disease (including inflammatory breast cancer)■ Palliative treatment for metastatic disease
Techniques	<ul style="list-style-type: none">■ Whole-breast EBRT is delivered using 3D-CRT or IMRT for DCIS and early-stage invasive breast cancer.■ Selected nodal irradiation to the supraclavicular, axilla, and internal mammary nodes is indicated only when there is pathologically documented metastatic disease in the lymph nodes■ Partial breast irradiation using brachytherapy or EBRT can be considered in selected cases■ In locally advanced disease, irradiation of breast (or chest wall), supraclavicular, axilla, with or without internal mammary lymph nodes is planned

CT simulation



- ▶ The inclination is limited to a 10–15° angle for 70 cm, and 17.5–20° for larger 85cm aperture CT scanners or simulator planning.



Fig. 9.5 Complex treatment techniques, such as tangential breast irradiation, can be problematic to setup on diagnostic CT scanners or older CT simulators (70-cm bore) because of bore-size limitations. The modern large-bore (85-cm) CT scanner developed by Marconi (now part of Philips) designed specifically for radiation oncology applications has solved this problem.



CT simulation

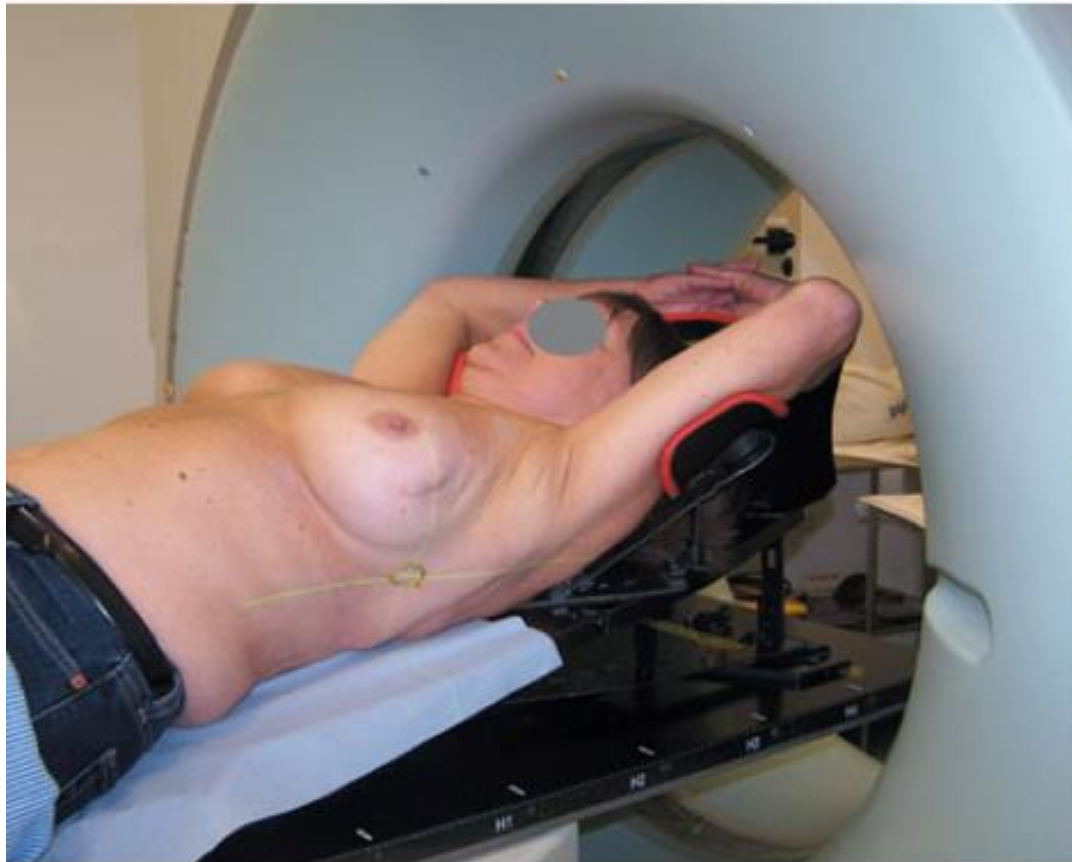
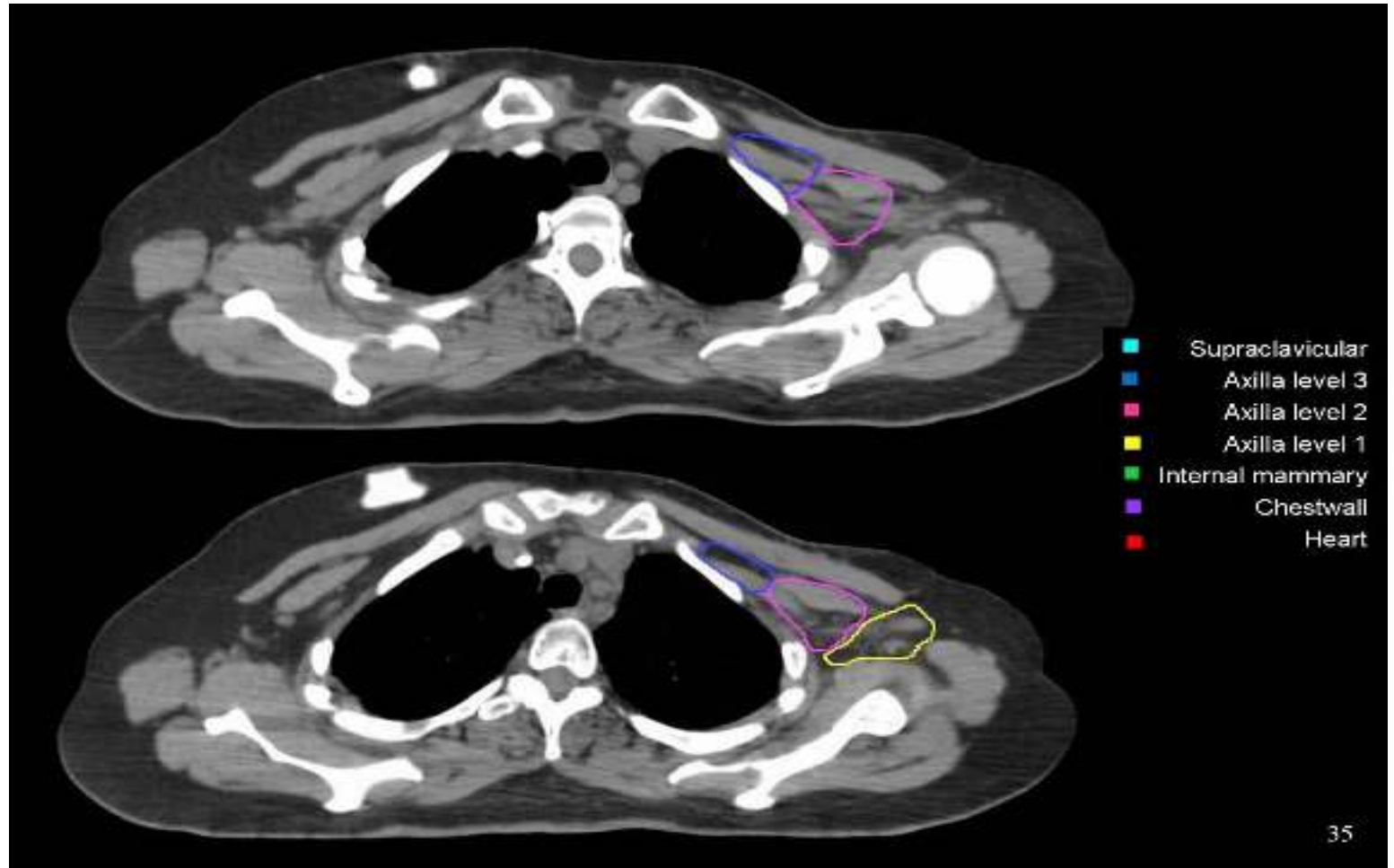
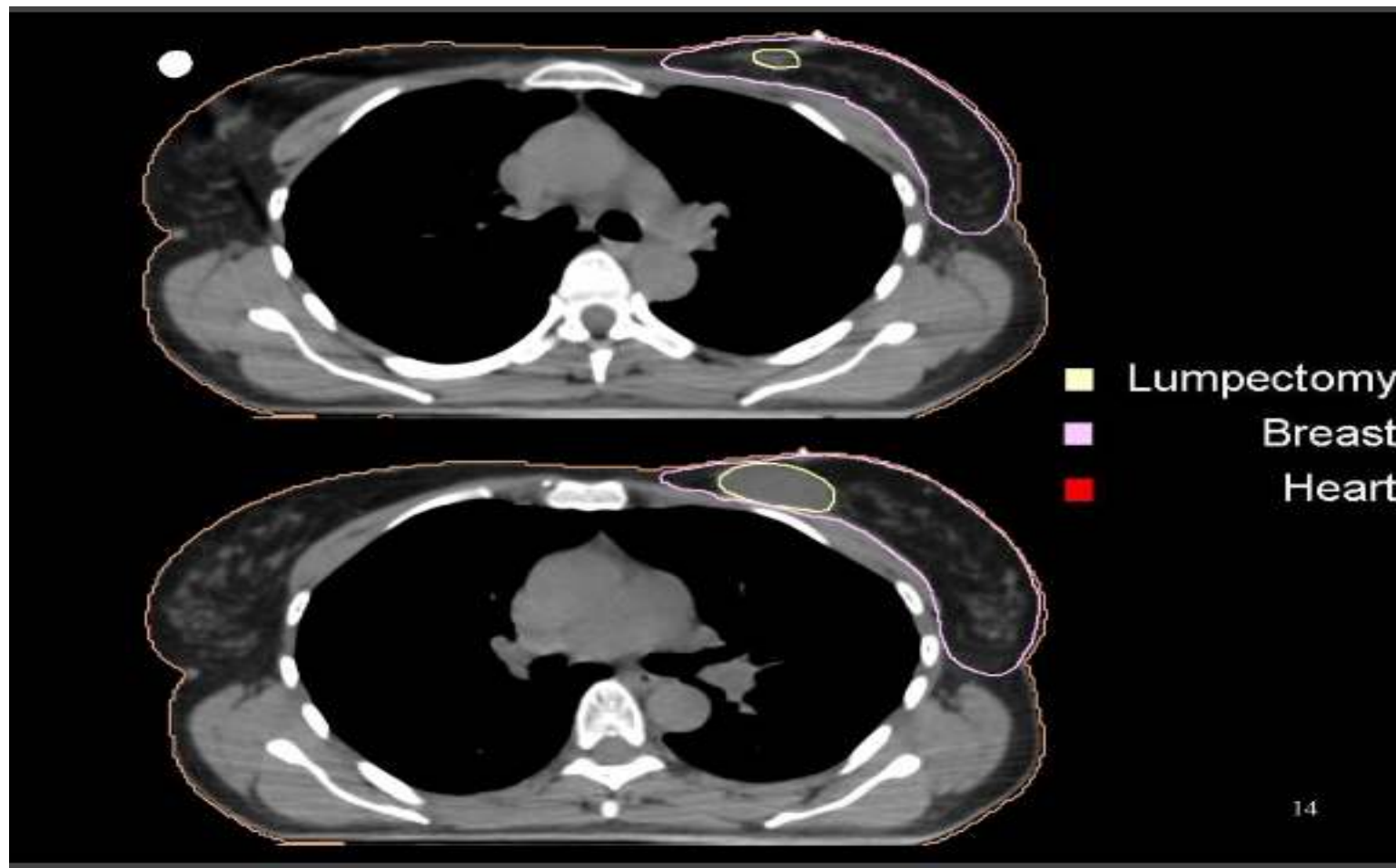


Figure 22.2 Large-bore CT scanner with patient immobilised on system using inclined plane, arms up, with reference points outlined with radio-opaque material and aligned with laser lights.

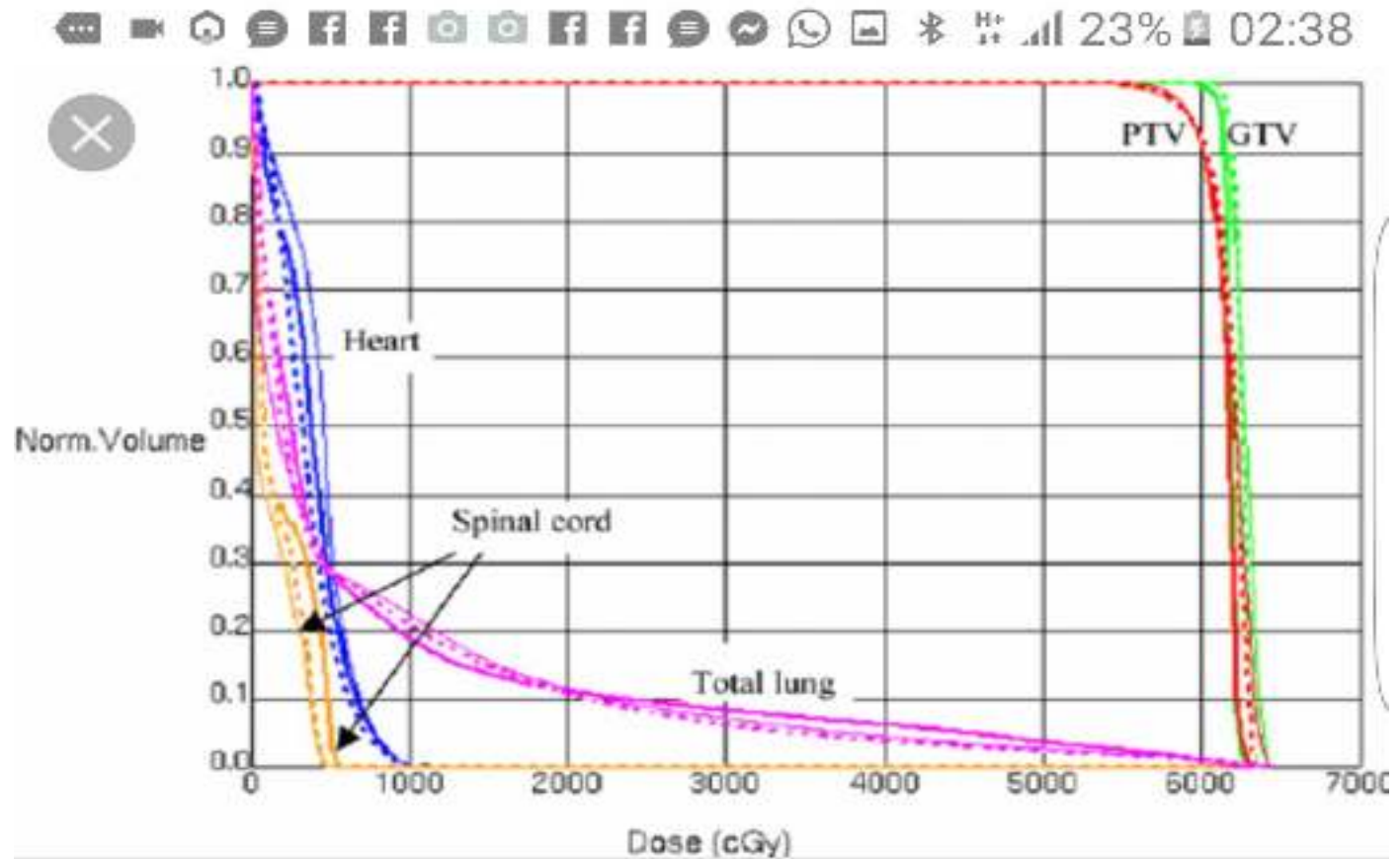


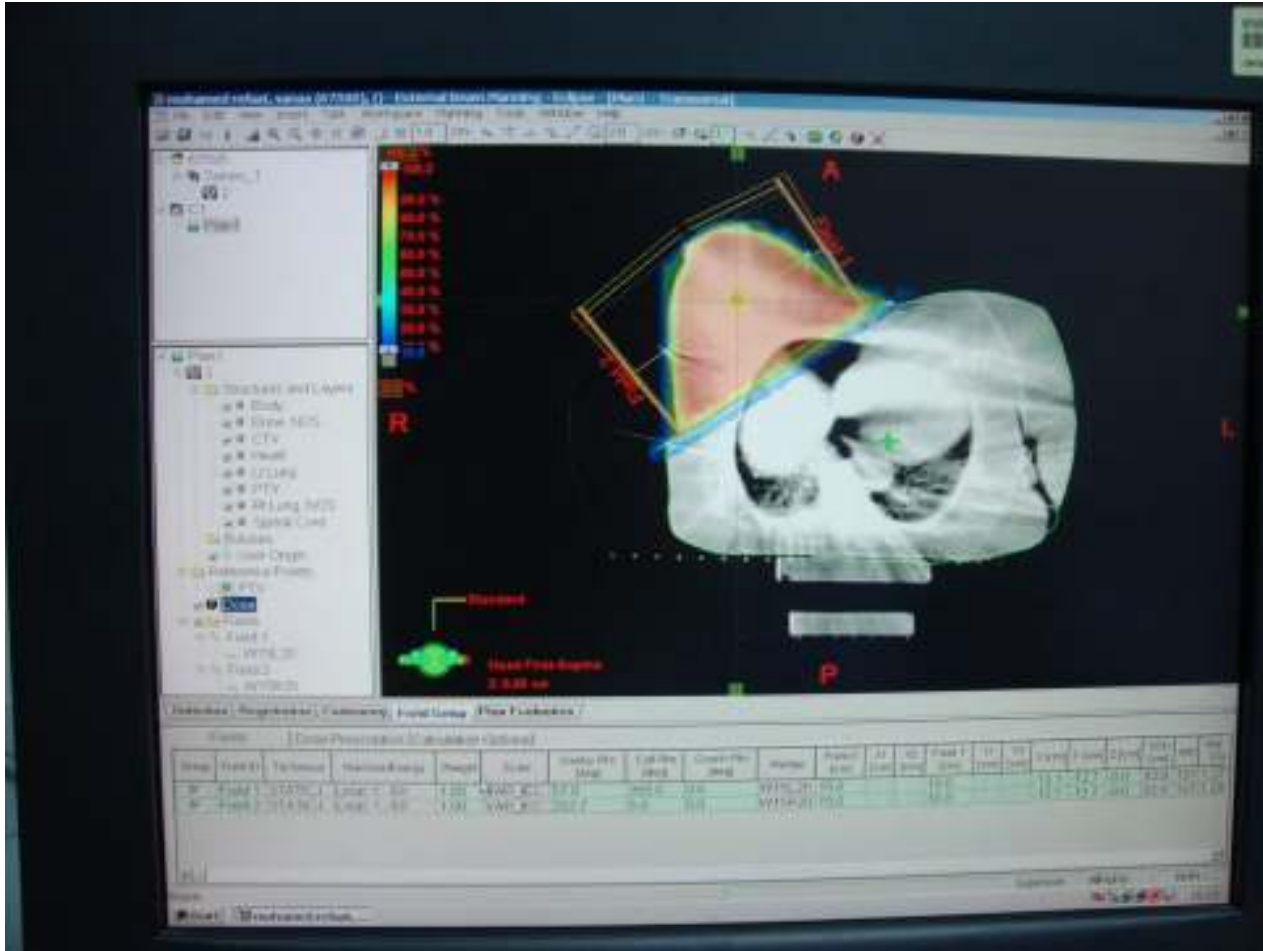


Contouring



Dose Volum Histogram





Treatment position and techniques



A



E

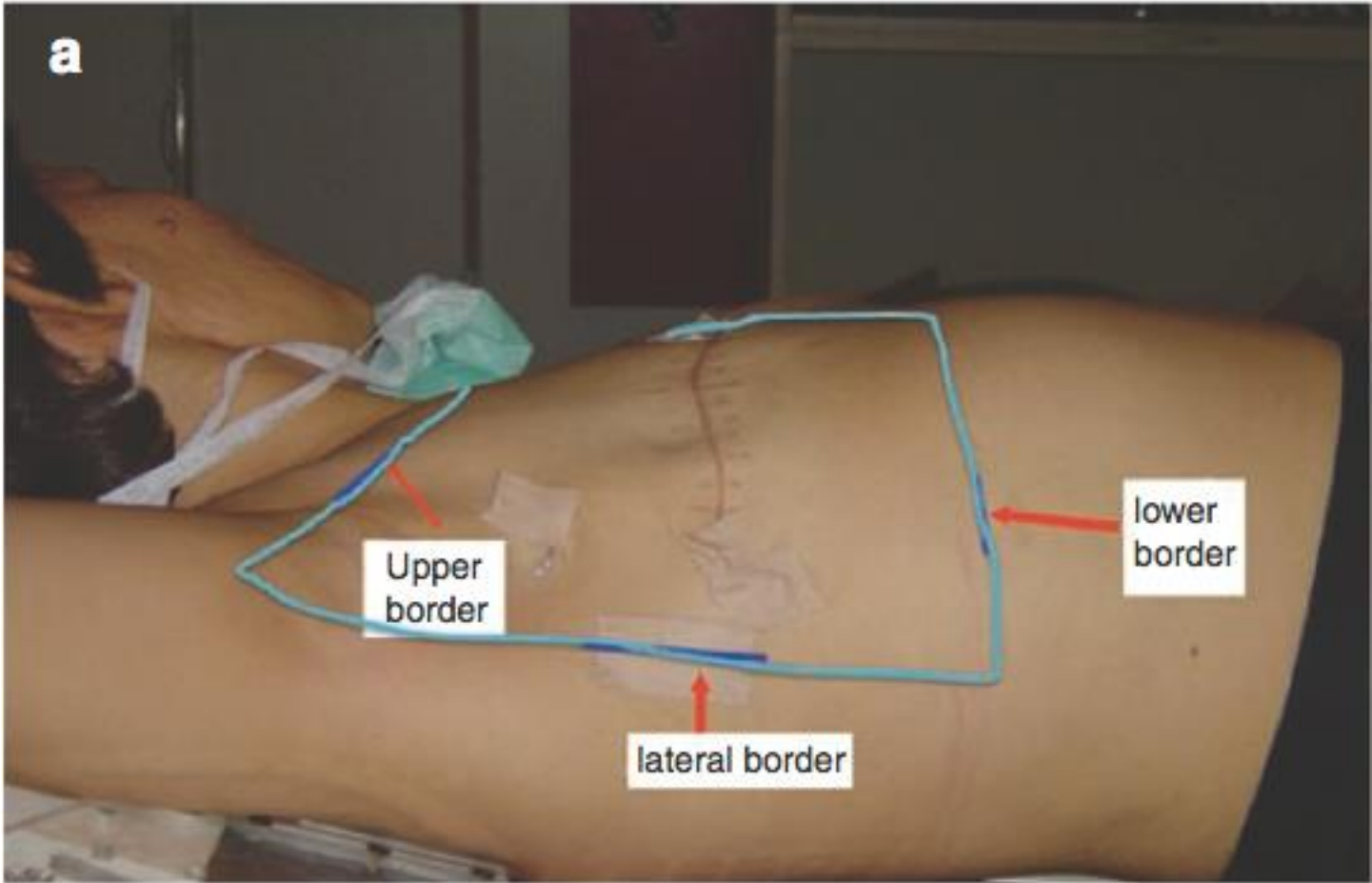


C

Breast cup fixation







Acute skin reaction



Late skin reaction



Skin radio necrosis





- ▶ Breast cancer in pregnancy
- ▶ Male breast cancer
- ▶ Metastatic breast cancer



Thank you

