2 D Plan post MRM

Dr. J. P. Neema
Professor,
Dept. of Radiation Oncology,
Gujarat Cancer & Research Institute,
Ahmedabad.

Indication of Local RT following MRM

- Primary > 5 cms
- Grave signs present
- Pathological evidence of skin/nipple invasion
- Perineural or lymphatic invasions
- > 20% positive axillary nodes
- Close margins
- Residual disease present

GRAVE SIGNS OF HAAGENSEN

- Tumor > 5 cms
- Skin oedema, fixation, ulceration
- Satellite nodules
- Axillary nodes 2.5 – 3 cms in diameter

RATIONALE

- Reduce the risk of locoregional disease
- Improve overall survival

Post Operative RT

- Fletcher showed the benefits of postoperative LRRT in reducing the nodal recurrence from 20% to <5%, and the chest wall recurrence from 30% to <10%.

- ECOG group also had shown the benefit of adjuvant postoperative RT for reducing the local and regional recurrence.

The NEW ENGLAND JOURNAL of MEDICINE

Volume 337:949-955 October 2, 1997 Number 14

PORT in High-Risk Premenopausal Women with Breast Cancer Who Receive Adjuvant Chemotherapy

Conclusions: The addition of postoperative irradiation to mastectomy and adjuvant chemotherapy reduces locoregional recurrences and prolongs survival in high-risk premenopausal women with breast cancer.

The NEW ENGLAND JOURNAL of MEDICINE

Volume 337:956-962 October 2, 1997 Number 14

Adjuvant Radiotherapy and Chemotherapy in Node-Positive Premenopausal Women with Breast Cancer

Conclusions: Radiotherapy combined with chemotherapy after modified radical mastectomy decreases rates of locoregional and systemic relapse and reduces mortality from breast cancer.

TREATMENT TECHNIQUES

- Chest wall
- Axillary
- Supraclavicular
- Internal mammary field (sometimes)
- Bilateral MRM

Chest wall irradiation or radiation to breast flap

- Tangential photon field irradiation
- Single electron field
- Arc therapy

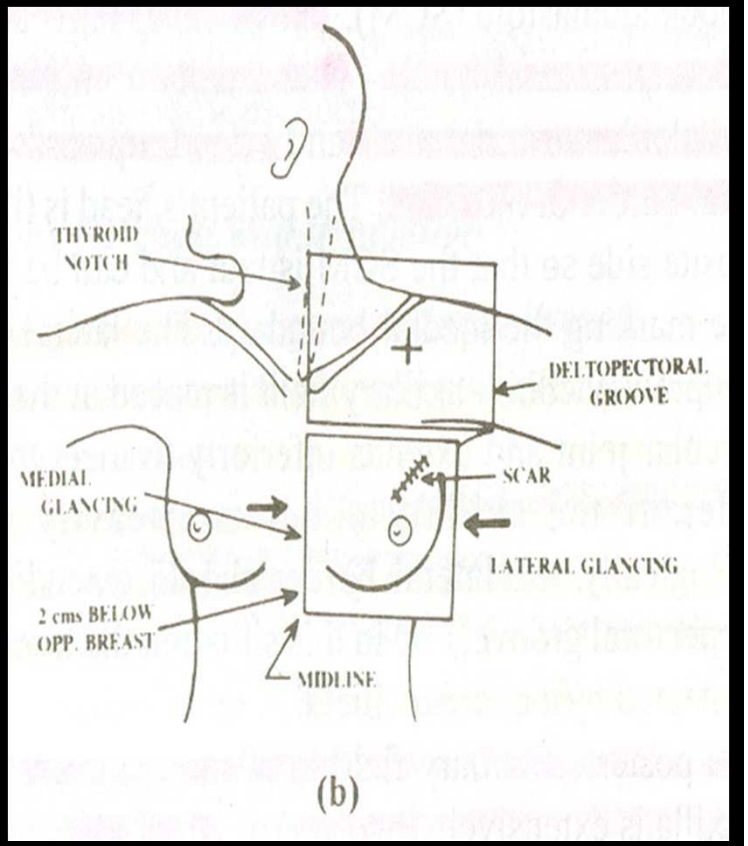
Tangential Photon Field Irradiation

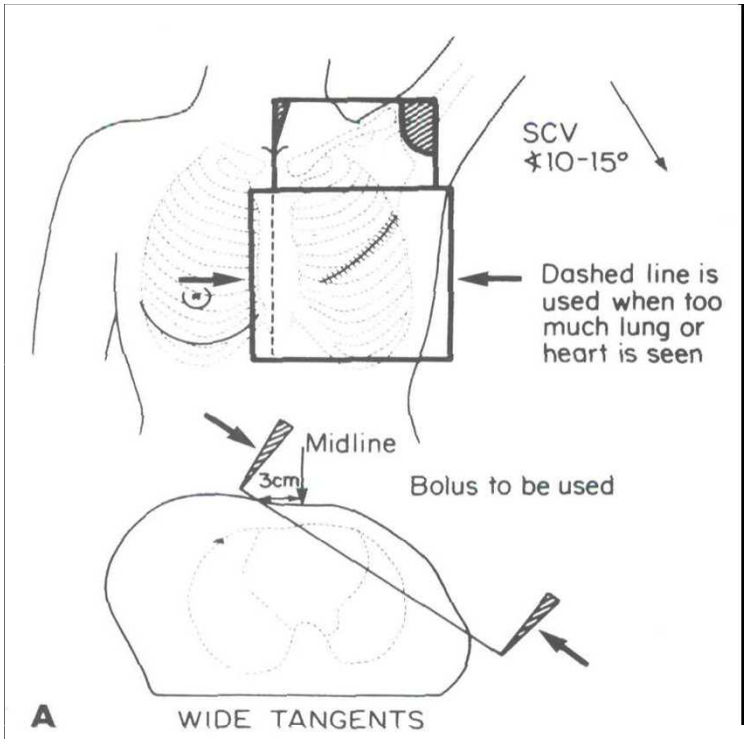
- Patient Position & Immobilisation
- Simulation
- Contour
- Planning
- Verification

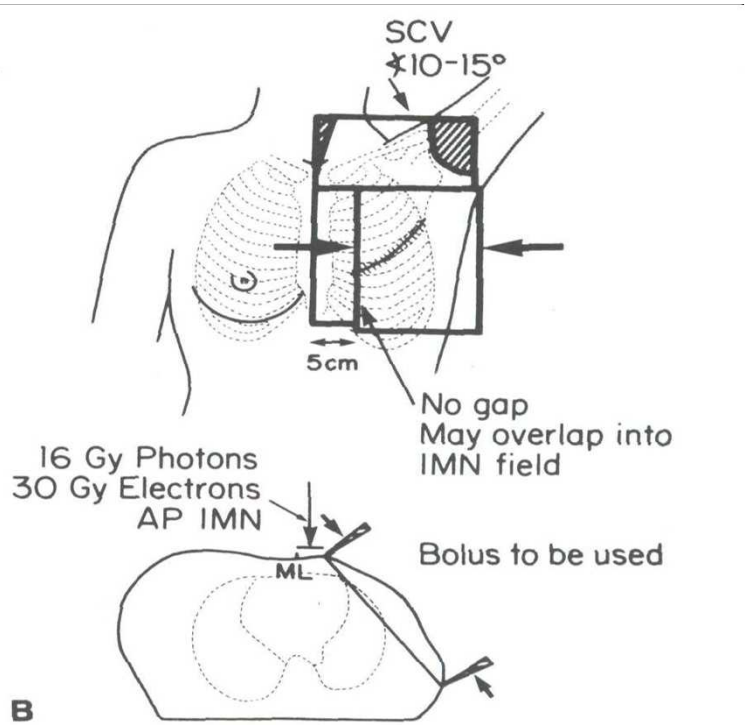
PATIENT POSITION

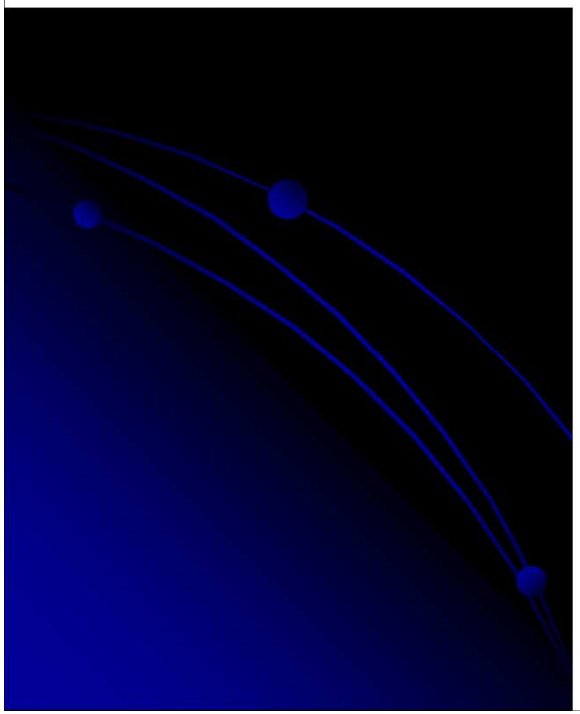
Tangential fields for chest wall RT

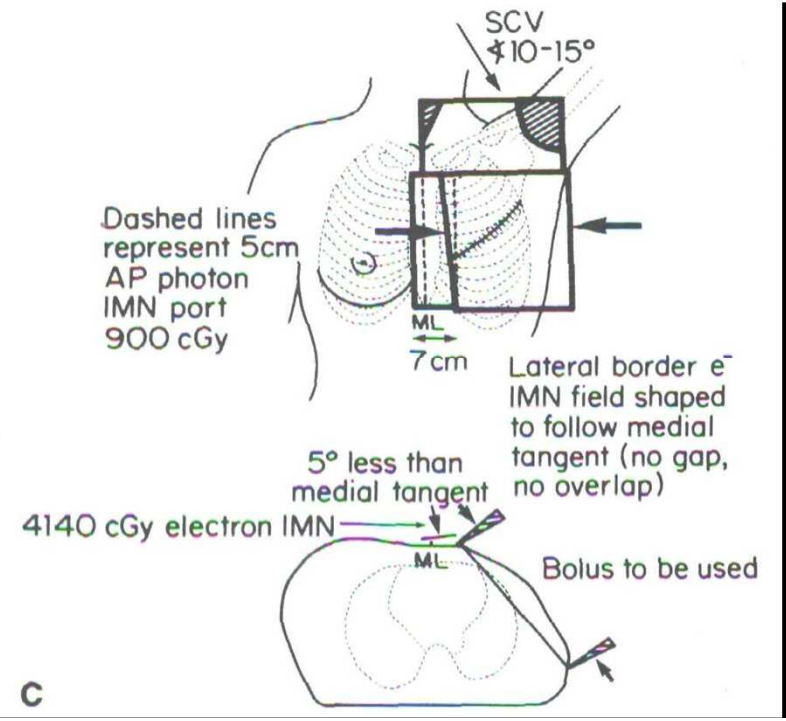
- Upper border is placed at the level of first or second intercostal space
- Lower border is placed 2 cm below the inferior mammary line
- Medial border is placed 1 to 2 cm away from the mid-sternal line to the opposite side.
- Lateral border is marked at the mid axillary line.

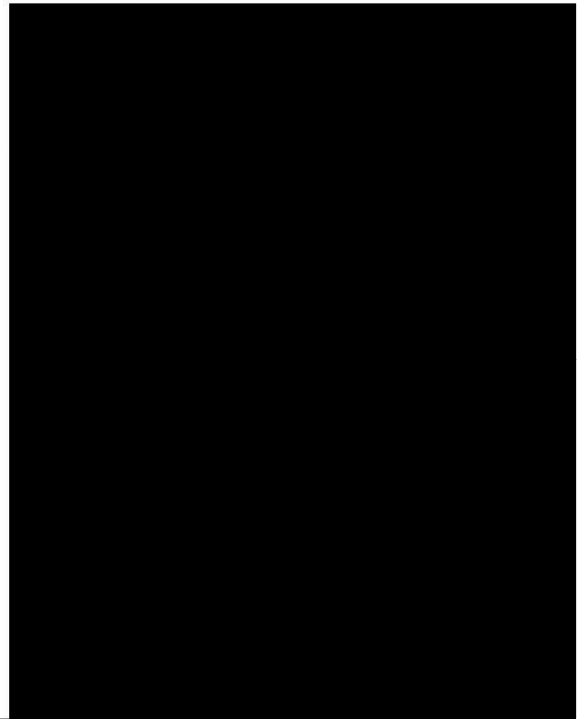



SCV
∢10-15°
Dashed line is used when too much lung or heart is seen
Midline
3cm
Bolus to be used
A
WIDE TANGENTS


SCV
∢10-15°
5cm
No gap
May overlap into IMN field
16 Gy Photons
30 Gy Electrons
AP IMN
ML
Bolus to be used
B




SCV
∢10-15°
Dashed lines represent 5cm AP photon IMN port 900 cGy
ML
7cm
Lateral border e⁻ IMN field shaped to follow medial tangent (no gap, no overlap)
5° less than medial tangent
4140 cGy electron IMN
ML
Bolus to be used
C



- Single Electron Field
- Arc therapy or Rotation

Axillary and supraclavicular field

- Inferior border of the field is placed at the upper border of the tangential field.
- Upper border is placed at the neck so that it includes The supraclavicular fossa.
- Marking starts at the level of suprasternal notch- 1 cm Medial to the SCM muscle and extends upwards along the medial border of the SCM. The patient’s head is tilted to the opposite side so that the SCM is taut and can be felt easily while marking.

- Lateral border is placed at the acromioclavicular joint (junction of medial two third and lateral one third of Clavicle) and extend inferiorly to meet the inferior border.

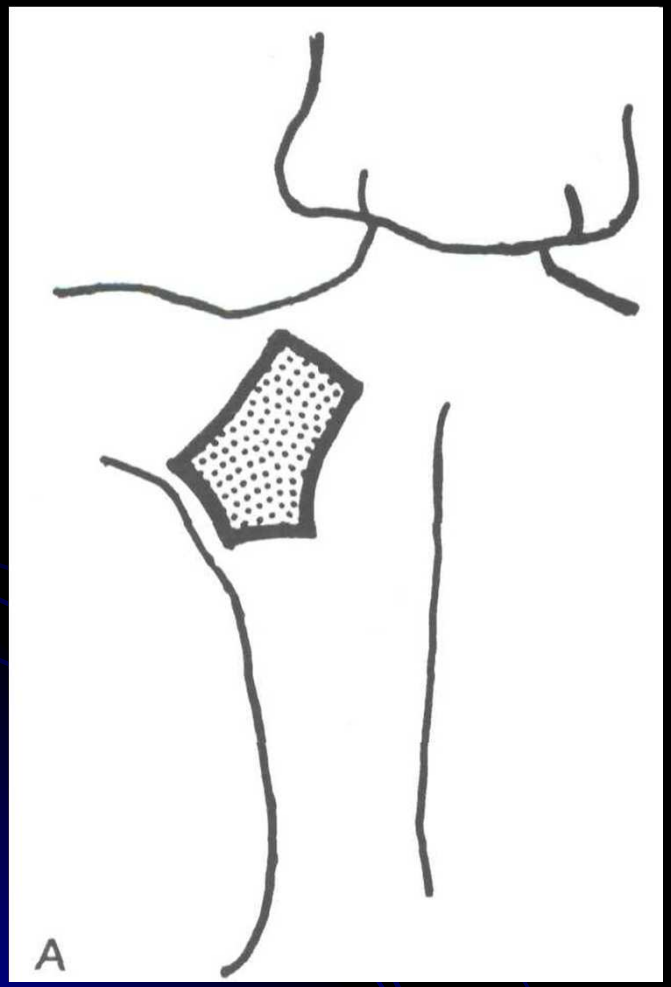
- If the axillary nodes are heavily involved histologically, the lateral border should extend up to the deltoppectoral groove, and in this situation the humeral head is protected by a circular shield.

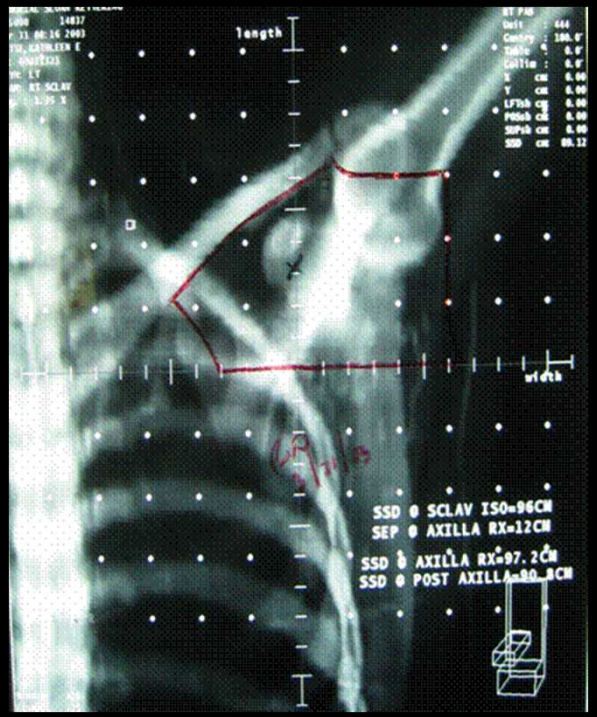
Posterior axillary field

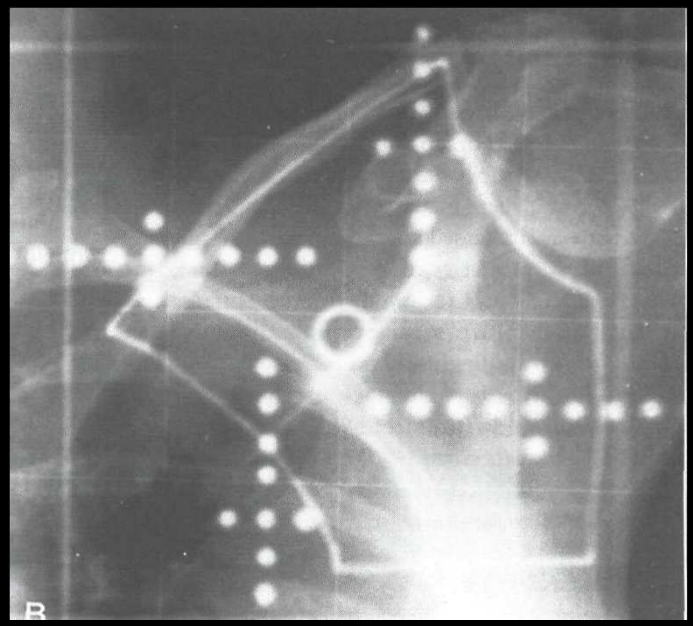
- If the axilla is extensively involved or in a fatty patient where the anterior field is unable to deliver adequate dosage to the axillary nodes.
- given as a boost towards the end of the treatment for the last 10-15 Gy.
- Position: patient is placed prone and head is turned to the contralateral side. The forearm is rotated downwards and the shoulder tip should touch the table top.

- The medial superior border follows the spine of scapula.
- The lateral superior border bisect the head of humerus
- The lower lateral border is medial to the border of Latissimus dorsi.
- The inferior border matches the inferior border of anterior field.
- The straight medial border is drown to allow 1.5-2 cm lung tissue to be shown on the simulator film

Posterior Axillary Field







Portal for the IMC nodes

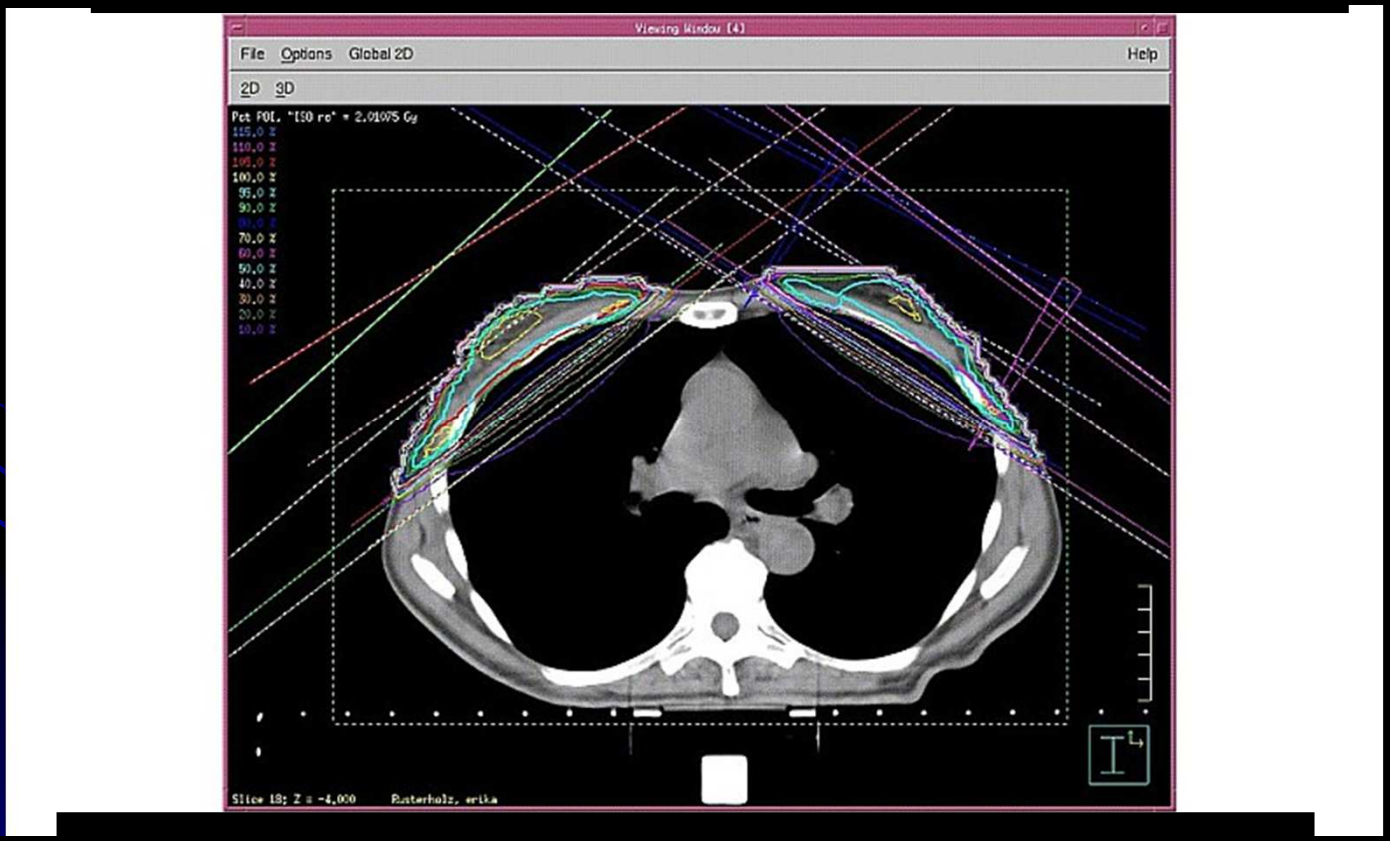
- Lower border lies just above the level of xiphoid process, or if the upper 3 IMnodes are to be included this border is at the 5th intercostal space level.
- Medial border of IMC is 2cm across the midline to the contralateral side and the lateral border is marked 3-4cm away from the midline towards the ipsilateral side.
- This portal is a rectangular field and the lateral border forms the junction between the IMC field and the medial tangential field for the chestwall.

- When IMC field is placed along with the supraclavicular-axillary field, a common area abuts both the portals .This is shielded while treating the IMC, and is left open during the supraclavicular field irradiation.

Dose schedule

- Breast flap & nodal Irradition
- 50Gy/25# in 5 weeks. (Energy 6MV)
- Use of bolus

Challenge for a Radiation Oncologist – Simultaneous B/L Cancer Breast



PORT Complications:

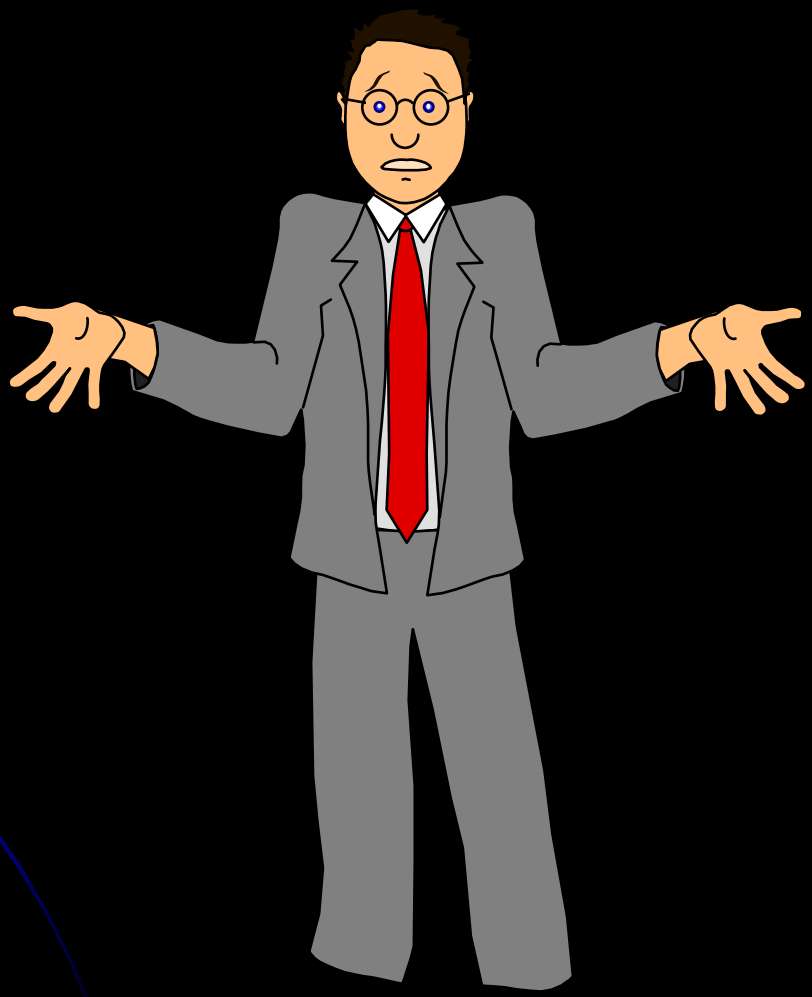
- **Acute:** general malaise, nausea and skin desquamation.
- **Late:** lung, heart, skin and soft tissues.
  - Sub-optimal RT techniques in the past resulted in excess cardiac deaths.
  - Modern radiation techniques reduced heart dose which decreased cardiac deaths and improvement of OS.

Take Home Message

- ASCO Guidelines for PMRT
  - Patients with 4 or more positive nodes
  - Patients with T3 or Stage III Disease
  - Insufficient data to PMRT:
    - Patients with 1 to 3 positive nodes
    - All patients treated with neoadjuvant therapy and mastectomy
    - Other tumor characteristics
      - HER2, ER, vascular and lymphatic invasion, etc

Recht, et al., J Clin Oncol19(5):1539, 2001

Any Questions????



Thank you