

Definitions of chest wall/breast, regional nodes and tumor bed

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Table S1. Anatomical boundaries of chest wall/whole breast CTV

| | Chest wall | Whole breast |
|------------------|---|---|
| Cranial | Caudal border of clavicle head | Clinical reference+ second rib junction |
| Caudal | Clinical reference+ loss of CT apparent contralateral breast | Clinical reference+ loss of CT apparent breast |
| Medial | Sternal-rib junction | Sternal-rib junction |
| Lateral | Clinical reference/mid-axillary line typically excludes latissimus dorsi muscle | Clinical reference/mid-axillary line typically excludes latissimus dorsi muscle |
| Anterior | Skin | 5 mm below the skin surface |
| Posterior | Rib-pleural interface | Excludes pectoralis muscles, chest-wall muscles, ribs |

Table S2. Anatomical boundaries of CTV for regional node

| | Cranial | Caudal | Medial | Lateral | Anterior | Posterior |
|----------------------------|--|---|--|---|---|--|
| Medial Supra-clavicular | Caudal to the cricoid cartilage | Junction of Brachioceph. - axillary veins /Caudal edge clavicle head | Medial border of internal carotid vessels | Medial border of clavicle head or 5 mm below the skin surface | Posterior edge of sternocleidomastoid muscle | Posterior surface of internal carotid artery or anterior surface of scalene muscles |
| Lateral Supra-clavicular * | Caudal to the cricoid cartilage | Junction of Brachioceph. - axillary veins. /Caudal edge clavicle head | At the longus coli | Medial border of clavicle head or 5mm below the skin surface | At the trapezius | Posterior surface of internal carotid artery or anterior surface of scalene muscles |
| Axilla level III | Pectoralis minor muscle insert on Coracoid | Axillary vessels cross medial edge of pectoralis minor muscle | lateral border of clavicle, ribs, junction of brachioceph- axillary veins. | Medial border of pectoralis minor muscle | Posterior surface of pectoralis major muscle | Anterior border of ribs or posterior border of subclavian or axillary vessels |
| Axilla level II | Insertion point of pectoralis minor muscle | The caudal border of the pectoralis minor muscle | Medial edge of pectoralis minor muscle | Lateral edge of pectoralis minor muscle | Pectoralis minor muscle | Anterior border of ribs and serratus anterior |
| Axilla level I | below the humeral head | At the point where the pectoralis major inserts on the ribs (around 4th to 5th rib) | Lateral border of pectoralis minor muscle | Cranially up to an imaginary line between the major pectoral and deltoid muscles, and further caudal up to a line | At posterior pectoralis major & minor muscles | An imaginary line anterior to the surface of latissimus dorsi muscle, subscapularis muscle and teres major |

| | | | | | | | |
|------------------------|---|---|--|---|---|--|-------------------------|
| | | | | | between the major pectoral and latissimus dorsi muscles | | muscle |
| Rotter's nodes | Insertion point of pectoralis minor | The caudal border of the pectoralis minor muscle | Medial edge of pectoralis minor muscle | Lateral edge of pectoralis minor muscle | Pectoralis major muscle | | Pectoralis major muscle |
| Internal mammary nodes | Junction of Brachioceph-axillary veins. | Cranial side of the 4rd rib (in selected cases 5th rib) | 7mm from internal mammary vessels | 7mm from internal mammary vessels | Ventral limit of the vascular area | | Pleura |

Notes:

Comprehensive RNI commonly includes supra/infraclavicular nodes and internal mammary nodes. Delineation of medial supraclavicular nodes is necessary for all enrolled patients while contouring of lateral supraclavicular nodes is only indicated for patients with the pN2-3 stage. Infraclavicular lymph nodes include axilla level III, rotter's nodes, and part of axilla level II without dissection in surgery. For patients with pathological positive sentinel lymph nodes and without subsequent axillary dissection, delineation of axillary levels I and II are indicated when the risk of non-sentinel axillary node involvement is high.

Table S3. Tumor bed contours

| | |
|-----|---|
| GTV | Includes seroma and surgical clips |
| CTV | GTV with a margin of 1 cm in all directions and without exceeding CTV of whole breast and midline |
| PTV | GTV with a margin of 0.7 cm in all directions and without exceeding PTV of whole breast |