Accuracy of different methods of localization of Sentinel lymph node biopsy in cancer breast

Thesis
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In general surgery

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INTRODUCTION

Axillary lymph-node dissection is an important staging procedure in the surgical treatment of breast cancer. However, early diagnosis has led to increasing numbers of dissections in which axillary nodes are free of disease.

The concept of sentinel lymph node biopsy in breast cancer surgery relates to the fact that the tumour drains in a logical way through the lymphatic system, from the first to upper levels.

Therefore, the first lymph node met (the sentinel node) will most likely be the first to be affected by metastases, and a negative sentinel node makes it highly unlikely that other nodes are affected. Because axillary node dissection does not improve prognosis of patients with breast cancer (being important only to stage the axilla), sentinel lymph node biopsy might replace complete axillary dissection to stage the axilla in clinically N0 patients.

Sentinel lymph node biopsy would represent a significant advantage as a minimally invasive procedure, considering that, after surgery, about 70% of patients are found to be free from metastatic disease, yet axillary node dissection can lead to significant morbidity.

Furthermore, histological sampling errors can be reduced if a single (sentinel) node is assessed extensively rather than few histological sections in a high number of lymph nodes per patient.

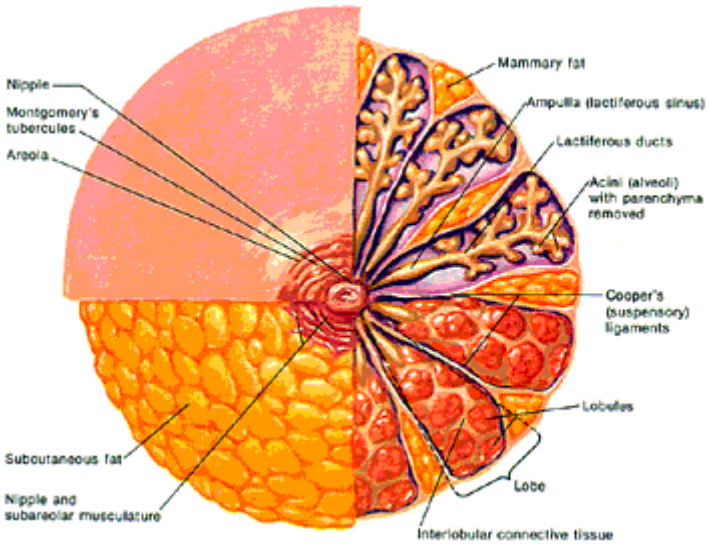
AIM OF WORK

The aim of the work is to evaluate the accuracy of different methods of localization of Sentinel lymph node in cases of early cancer breast through combining the three methods together (Preoperative Lymphoscintigraphy,Intraoperative blue dye and Intraoperative Probe Counting) .

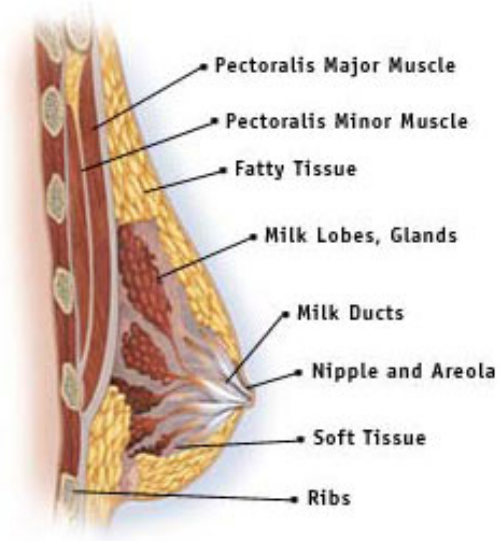
REVIEW OF LITERATURE

ANATOMY

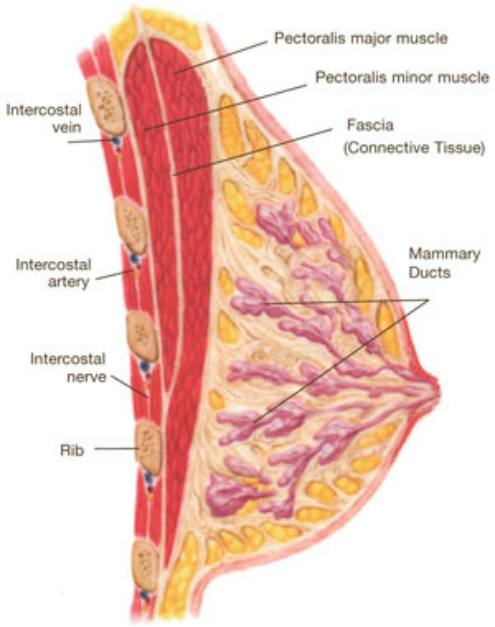
The female mamma or breast extends vertically from the second to the sixth rib, and at the level of the fourth costal cartilage it extends transversely from the side of the sternum to near the mid-axillary line. The superolateral part of the breast is prolonged upwards and laterally towards the axilla, forming the axillary tail.



Picture (1): Anatomy of breast (Holt JT., 1996)



Picture (2): Anatomy of the breast (Bristol Meyers., 1979)



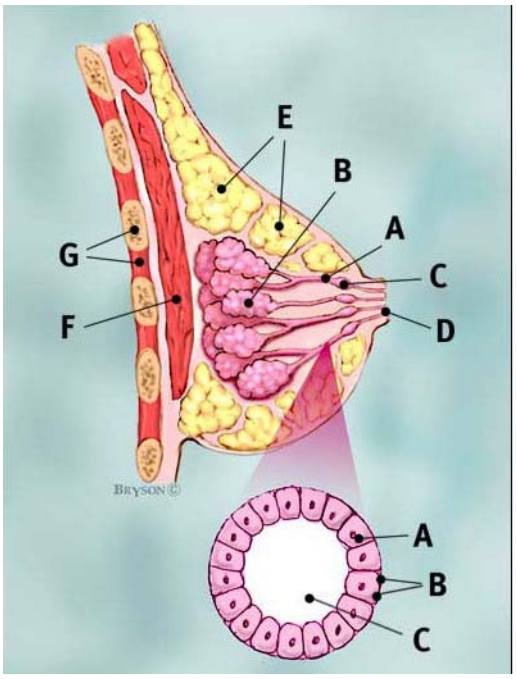
Picture (3): Anatomy of the breast (Bristol Meyers., 1979)

The deep aspect of the breast is slightly concave and is related to the pectoralis major, serratus anterior, obliquus externus abdominis and the aponeurosis of the latter muscle as it forms the anterior wall of the sheath of the rectus abdominis. The breast is, however, separated from these muscles by the deep fascia, and between the breast and the deep fascia there is a zone of loose areolar tissue the submammary space, which allows the breast some degree of movement on the deep fascia covering pectoralis major.

Structure of the breast:

The mammary gland consists of: (a) glandular tissue, (b) fibrous tissue, connecting its lobes, (c) adipose tissue in the intervals between the lobes. The subcutaneous tissue encloses the gland but doesn't form a distinct capsule and send numerous septa into it to support its various lobules (Picture 4).

From the part of the fascia which covers the gland fibrous processes pass forwards to the skin and the papilla; these are better developed over the upper part of the breast and constitute the suspensor ligaments of Cooper.



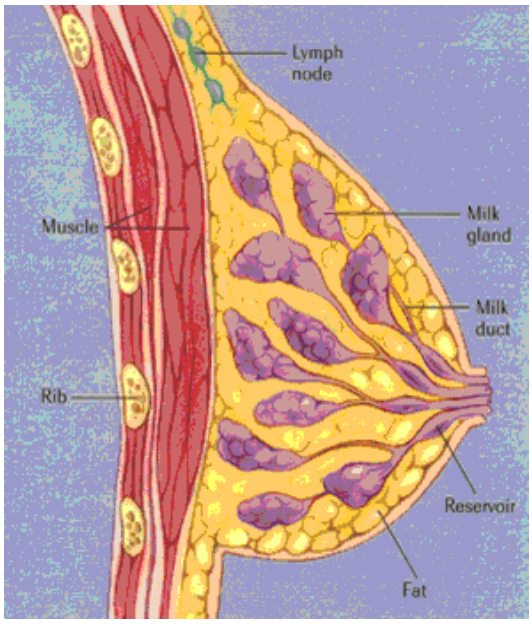
Picture (4): Anatomy of breast (Netter F, 1999)

The normal gland tissue consists of fifteen to twenty lobes, and these are composed of lobules, connected together by areolar tissue, blood vessels and ducts. The smallest lobules, when fully developed, consist of a cluster of rounded alveoli which open into the smallest branches of the lactiferous ducts; these branches unite to form larger ducts which end in the terminal or lactiferous ducts, each of which drains a lobe of the gland. The lactiferous ducts hence also vary from fifteen to twenty in number; they converge towards the areola, beneath which they form dilatations, or lactiferous sinuses, which serve as reservoirs for milk ***(Parks et al., 1959)*** (Picture 5).

The epidermis of nipple and areola is highly pigmented and variably corrugated and is lined by keratinized stratified squamous

epithelium, the areola contains sebaceous glands and accessory areolar glands producing small elements on the surface of the areola (Montgomery tubercles) ***(Christobel et al., 2000).***

The mammary gland varies in its structure with age and during pregnancy and lactation. At birth it consists almost entirely of lactiferous ducts, no alveoli being present. This condition persists until puberty, only very slight branching of the ducts taking place, and the slight enlargement of the breast is due to deposition of fat and growth of the fibrous tissue stroma.



Picture (5): Structure of the breast (Netter F, 1999)

After puberty under the stimulating influence of ovarian oestrogenic hormones, the ducts develop branches and their ends form small, solid, spheroidal masses of granular polyhedral cells, which are potential alveoli. True secreting alveoli only appear during pregnancy, when the ducts branch markedly and their terminal parts display a lumen which increases in size as milk is secreted into them. This growth is due to the rising output of oestrogen and progesterone from the placenta.