Color atlas of the breast.

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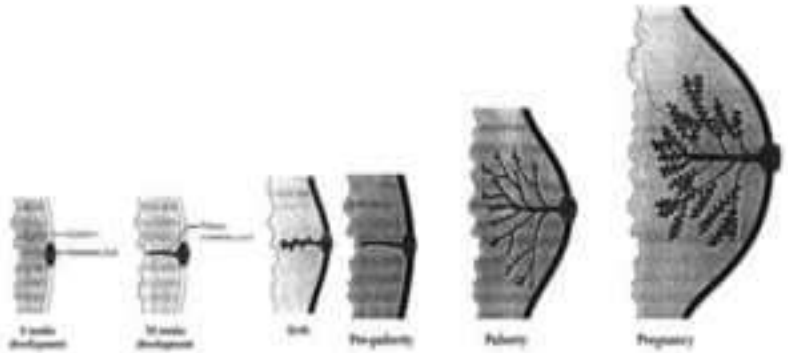
SEE PROFILE

At the fifth or sixth week of fetal developm-ent, two ventral bands of the thickened ectoderm; (mammary ridges-milklines) are evident in the em-bryo.

In the majority of the class Mammalia, paired glands develop along these ridges and extend from the base of the forelimb (future axilla) to the region of the hindlimb (inguinal area).

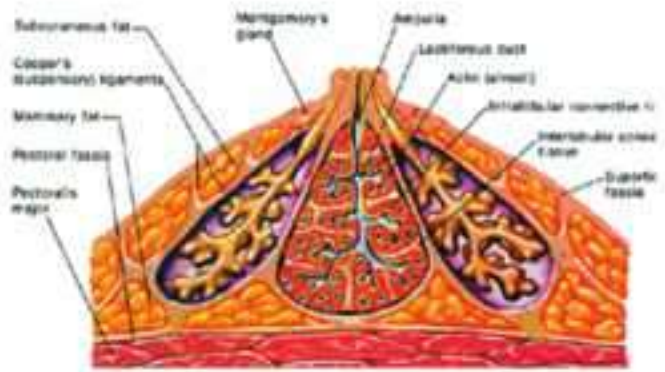
These ridges are not prominent in the human emb-ryo and disappear shortly there after, except for a small portion that may persist in the pec-toral region.

Accessory mammary glands (polymastia) or accessory nipples (polythelia) may occur along the original mammary ridge - milk line if the normal re-gression fails.



Each mammary gland develops as an ingr-owth of ectoderm and initiates a primary bud of tissue in underlying mesenchyme.

Each primary bud initiates the developm-ent of 15 to20 secondary buds or outgrowths.



In the fetus, epithelial cords develop from the secondary buds,extend into the surrounding connective tissues of the chest wall.

Lumina develop in the outgrowths to form lactiferous ducts with prominent branches.

By birth, lactiferous ducts open into shallow epithelial depressions referred to as the mammary pit.

In infancy, the pit becomes elevated & transformed into the nipple as a consequence of proliferation ofmesenchyme.

If there is failure of the pit to elevate above skin level, a congenital malformation, recognized in (2 to 4 %) of patients as inverted nipples, is evident.

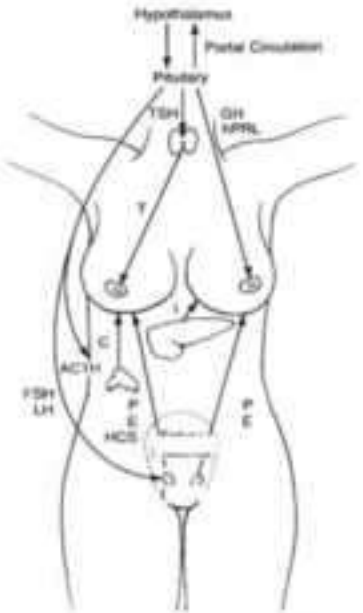
Amastia

Hypoplasia

At birth the breasts appear essentially identical in both sexes and demonstrate only the presence of major lactiferous ducts.

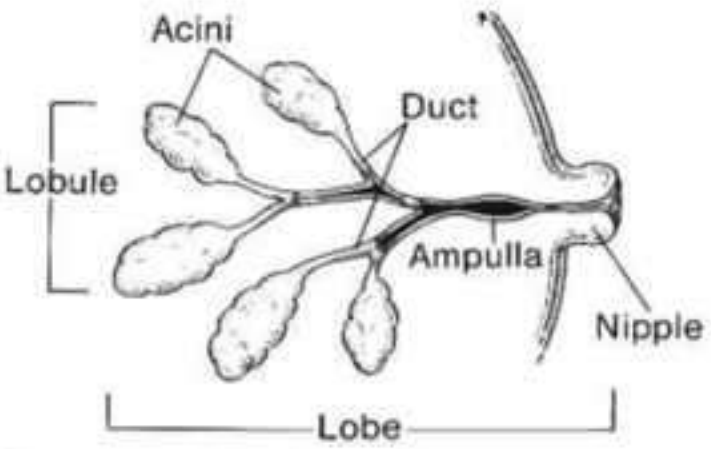
The gland remains undeveloped in the female until puberty.

Thereafter the organ enlarges rapidly in response to estrogen & progesterone secretion by the ovaries.



Hormonal stimulation initiates proliferation of glandular tissue as well as fat and connective tissue elements associated with breastsupport. Glandular tjssues remain incompletely developed until pregnancyoccurs.

With parturition, the intralobular ducts undergo rapid development and form buds that become alveoli.



Duct structure (11)

Key References

* **Bland KI, Romrell LJ: Congenital and acquired disturbances ofbreastdeve lopment and growth,**
* **The Breast: Comprehensive Management of Benign and Malignant Diseases.Philadelphia, WB Saunders, 1991, chap 4.**

Romrell LJ, land KI: Anatomy of the breast: Axilla chest wall,andrelated metastatic sites, in Bland KI, Copeland EM III (eds): TheBreast: Comprehensive Management of Benign and Malignant Diseases. Philadelphia,WB Saunders, 1991, chap 2.

Bland KI: Inflammatory, infections, and metabolic disorders of the mamma, in Bland KI, Copeland EM III (eds): The Breast: ComprehensiveManagement of Benign and Malignant Diseases. Philadelphia,WB Saunders, 1991, chap 5.

ANATOMY

The breast is a modified sweat gland, the protuberant part of the human breast is; generally described as overlying the second to sixth ribs, and extends rom the lateral border of the sternum to the anterior axillary line.

While the axillary tail of the breast is of considerable surgical importance ,it may be palpable,in few it can be seen premenstrually or during lactation, A well-developed axillary tail is some time mistaken for a mass of enlarged lymph nodes or lipoma .

The breast is composed of (15 to 20) lobes ofglandular tissue of the tubulo-alveolar type .

Fibrous connective tissues connect the lobes;adipose tissue is abundantly interposed between the lobules.

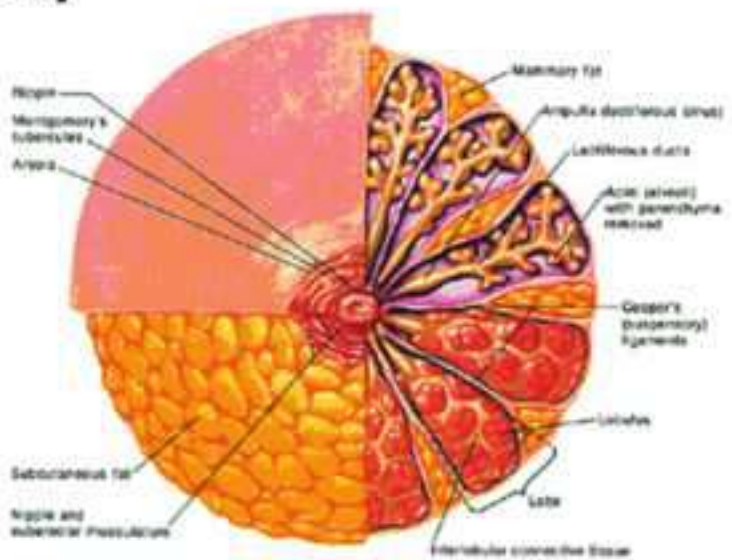
Subcutaneous connective tissues surround the gland and extend as septa between lobes and lobules, providing structural support for glandular elements.

These suspensory ligaments (of Cooper) insert perpendicular to the delicate superficial fascial layers of the dermis and permit mobility of the breast while providing structural support.

At maturity, glandular components of the breast take a protuberant conical form.

The base of the cone is roughly circular, measur-ing 10 to 12cm in diameter and 5 to 7 cm in thickness.

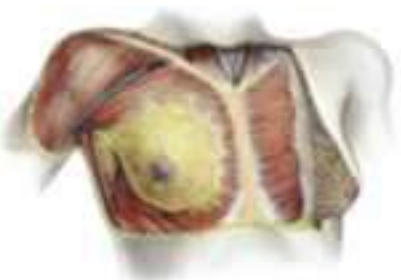
Tremendous variations in size,contour, and density of the breast are evident at maturity.

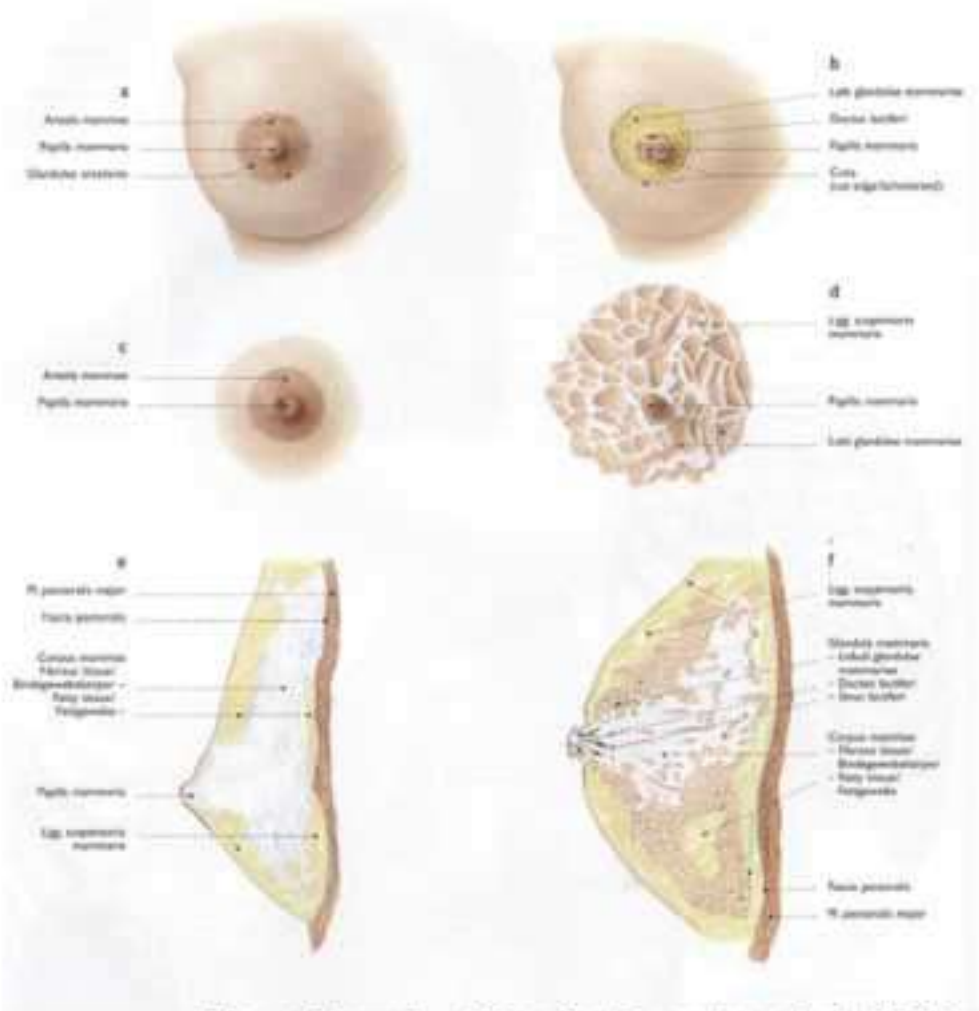


The nulliparous breast has a typical hemispheric configuration with distinct flattening above the nipple.

By contrast with multiparity and the hormonal stimulation that accompany pregnancy and lactation, the organ assumes a larger and more pendulous form & increases in volume and density.

With senescence, the aging breast assumes a flattened, flaccid, & more pendulous configuration with decreased volume.





The epidermis of the nipple and areola is highly pigmented & variably corrugated.

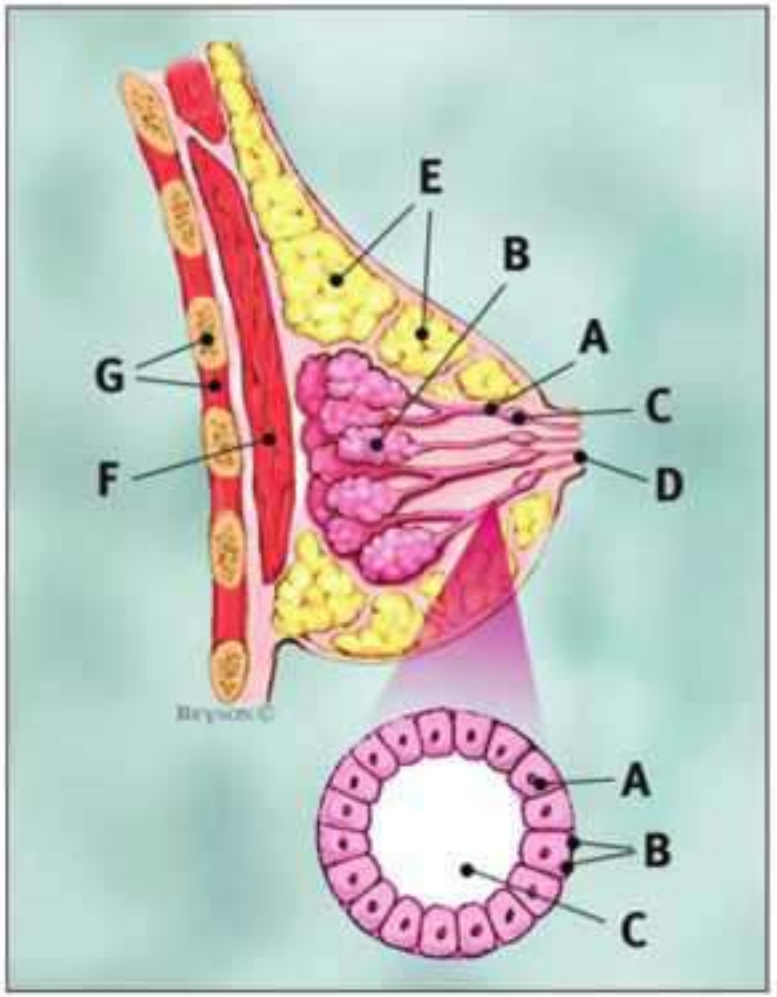
The complex is covered by keratinized stratified squamous epithelium.

During puberty, the skin becomes increasingly pigmented and the nipple assumes an elevated, prominent configuration, in direcion aneriolaterally & supe riorly to be ready for suckling by the baby

The deep or posterior surface rests on portions of the deep investing fascia of the pectoralis major, serratus manterior, & external oblique abdominal muscles and the upper extent of the rectus sheath.

The axillary tail (of Spence) extends superolaterally into the anterior axillary fold.

The upper half of the breast, and particularly the upper outer quadrant, contains a greater volume of glandular tissue than do other sectors.



A. Lactiferous duct .
B. Lobe .
C. Milk sinus of the lactiferous duct.
D. Opening of the lactiferous duct at nipple.
E. Adipose tissue of the breast .
F. Sub-mammary muscles ; pectoralis & seratus anterior.
G. Rib & intercostal muscle.

During pregnancy, the areola enlarges & pigmentation is enhanced.

Smooth muscle bundle fibers arranged radially & circumferentially in the dense connective tissue & longitudinally along the lactiferous ducts extend upward into the nipple

Blood Supply

The gland receives its principal blood supply from:
(1) perforating branches of the internal mammary artery.
(2) lateral branches of the posterior intercostal arteries.
(3) various branches from the axillary artery ,including the highest thoracic, lateral thoracic, and pectoral branches ofthe thoracoacromial artery .

Veins of the breast follow the course of the arteries primary venous drainage is toward the axilla.

The vertebral venous tributaries (Batson's plexus) may pro-vide a secondary route for metastases of breast cancer.

This plexus invests the vertebrae & extends fr m the base of the skull to the sacrum.

Venous channels exist between this plexus & veins associated with thoraci , abdominal, & pelvic organs.

These explain metastases to the vertebrae, skull, pelvic bones, and ce tral nervous system .

Innervation of the Breast

Lateral and anterior cutaneous branches of the second through sixth intercostal nerves provide sensory innervation.

Nerves of the breast are principally derived from the fourth,fifth, and sixth intercostal nerves.

intercostal brachial nerve is the lateral branch of the 2nd intercostal nerve and is commonly visualized during surgical dissection of th axilla.

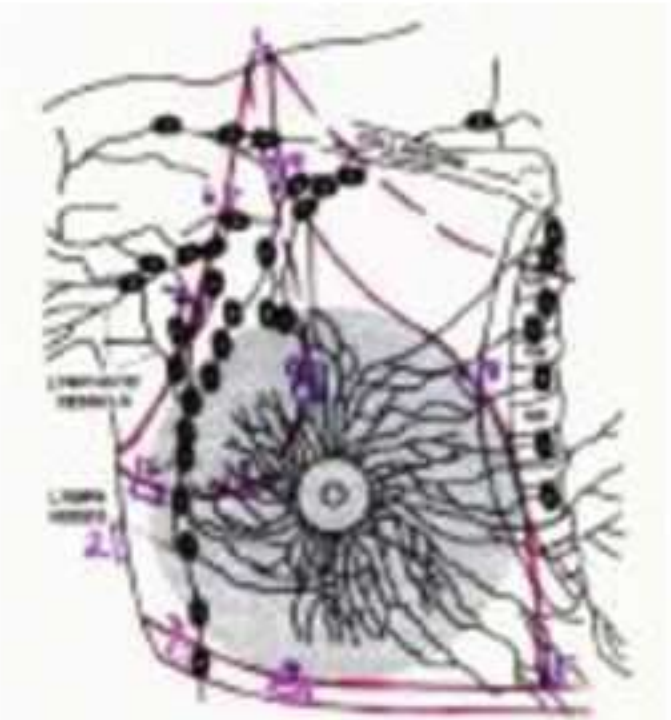
Lymph Flow

Lymphatic vessels that drain the breast occur in three interconnecting groups:
(1) within the gland in interlobular spaces .
(2) within glandular tissue & subareolar plexus.
(3) communicating the minute vessels that parallel the perimysium in deep fascia.

Lymphatic vessels from deeper structures of the thoracic wall drain principally into parast ernal, intercostal, or diaphragmatic nodes.

More than 75 % of lymph from the breast pa ses to the axillary lymph nodes; the remainder flows into parasternal lymphatics.

Although it has been suggested that parasternal nodes eceive lymph principally from the medial aspects of the breast.



Key References

* Monica Morrow and William Gradishar Recent developments: Breast cancer BMJ, Feb 2002; 324: 410 - 414 ;
* P D Sly, A W Read, L I Landau, F J Stanl ey,W H Oddy, P G Holt,G E Kendall, and P R Burton.Association between breast feeding andasthma in 6 year old children ndings of a prospective birth cohort st- udy BMJ, Sep 1999; 319: 815 - 8 9 .
Marina Parton, Mitchell Dowsett, and Ian Smith Studies of apoptosis in brea t cancer . MJ, Jun 2001; 322: 1528 – 153.
* J M Dixon and R E ManselABC of Breas Diseases: Congenital Problems and Aber ation of Normal Breast Development & Involution BMJ, Sep 1994; 309: 797 – 800.

PHYSICAL EXAMINATION

(To study the phenomena of disease without books is to sail an uncharted sea, while to study books without patients is not to go to sea at all)

Sir William Osler

Before commencing to describe the physical examination of the breast, let us remind you of the principle and fundamental principles of clinical surgery ;

Principles ;

* **introduce your self to the patient & tell her what you are going to do during your examination.**
* **Put the patient in a suitable position, which is lying flat then sitting, or semisitting position as alternative to both position.**
* **Ask the patient for suitable exposure (uncovering of her chest), which is here to ex-- pose body above the waist.**

Fudamental principles

* **Comparrison; starting by nondiseased side.**
* **Dont forget the regional lymphatic field here means axillary lymph nodes.**
* **When a lymph node is found to be enlarged ,the primary focus must be sought. In case of axillary lymph node, examine the primary sites ; upper limb, breast ,chest & abdomen anteriorly and posteriorly above the level of the umblicus on the side of the enlarged a-- xillary lymph node.**

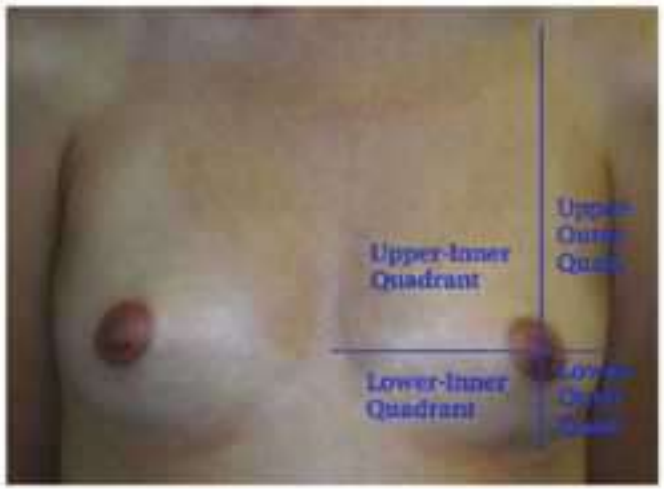
POSITION & EXPOSURE

1. Sitting

2.Lying

Semisitting (Fowler)

INSPECTION



*Do.nt forget to imagine the breast as four quadrant & central area around the areola.

* Don’t forget to inspect the non-diseased breast first.

* Don’t forget to compare both breasts

* Don’t forget to inspect the breasts after asking her to raise hands over head.

* Don’t forget to inspect the breasts while the arm are besides.

* Don’t forget to inspect the breasts while the arm are pressing the waists.

CLEFT NIPPLE

Congenital condition in which there is a midline septum which bisected the External opening of the ducts, some time extend to bisects the sinus completely or partially.

When noticed by the patients, this will causes anxiety, but it has no clinical signiicance unless it is partial & may cause stagnation of milk and predisposes for infection of the milk, mastitis & even breast abscess.

PROMINANT MONTGOMRY TUBERCLE

The areola contains sebaceous glands, sweat glands, and accessory areolar glands.

These accessory glands produce small elevations on the surface of the areola (Montgomery tubercles).

GYNECOMASTIA

Gynecomastia implies the presence of a female -type mammary gland in the male.

Most should not be considered a disease, Physiologicgynecomastia occurs in the :

(1) neonatal period.

(2) adolescence.

(3) senescence.

Common to each is an excess of estrogens in r - lation to circulating testosterone.

DIFFUSE HYPERTROPHY

Occurs sporadically in otherwise healthy girls at puberty and, much less often, during the first pregnancy.

The breasts attain normous dimensions & may reach the knees when the patient is sitting

This is due to an alteration in the normal sensitivity of the breast to oestrogenic hormones .

ACCESSORY NIPPLE

Accessory or supernumerary nipples, or polythelia, is a relatively common, minor congenital anomaly that occurs in both sexes with an estimated frequency of 1:100 to 1:500 persons.

Polythelia may be associated with abnormalities of the urinary tract (renal agenesis and carcinoma),abnormalities of the cardiovascular system (conduction disturbance,hypertension, cong nital heart anomalies), & other conditions (pylo ic stenosis, epilepsy, ear abnormalities,).

NIPPLE RETRACTION

This may occur at puberty or later in life. Retraction occuring at puberty, also known as simple nipple inversion, is of unknown aetiology. In about 25% of cases it is bilterl.

It may cause problems with breastfeeding & infection can occur, especially during lactation, owing to retention of secretions.

Recent nipple retraction is consider d an important sign of a pathology which inv lves Cooper' s ligament of the breast like cance .

BREAST PAIN

Breast pain is a common breast problem mostly in younger women who are still having their periods and happens less often in older women.

Although pain is a concern,breast pain is rarely the only symptom of breast cancer.

1. Cyclic mastalgia: About two-thirds of women with breast pain have a problem called cyclic masta gia. This pain typically is worse before the mens rual cycle and usually is relieved at the time he period begins.

The pain may also happen n varying degrees throughout the cycle.

Because of its relationship to the menstrual cycle, it is believed to be caused by hormonal cha ges.

This type of breast pain usually h ppens in younger women, although the condition as been reported in postmenopausal women who take horm one replacement therapy.

2. Noncyclic mastalgia: Breast pain that is not associated with the menstrual cycle is called noncyclic mastalgia.

It occurs less often than the cyclic form.

It typically occurs in women older than 40 years and is not related to the menstrual cycle.

It is some times linked to fibroadenoma or a cyst.

Breast pain or tenderness may a so occur in a teenage boy.

This c lled gyneco astia, is a normal part of development.

M ny possible causes exist for pain or tenderness in one f the breasts or in both breasts.

Most often the pain can be attributed o harmless causes such as puberty or pregnancy.

It can also be a recurrent problem for women with cycl cal pain associated with the menstrual cycle.

Although cancer is a major fear for most ladi s, it is rarely the cause of isolated breast pain.

Some c uses o breast pain are these:

* Fibrocystic breast disease
* Premenstrual syndrome cyclic mastalgia
* Normal hormonal fluctuations
* Onset of pu erty or menopause
* Pregnancy
* Breast feeding (nursing
* Estrogen therapy
* Chest wall tenderness (costochondritis)
* Injury t the breast (trauma, after breast surgery)
* Shing es (pain is only in 1 breast, usually accompanied by a rash)
* Use f certain drugs such as digoxin , methyldopa, spironolac one , oxymetholone , and chlorpromazine
* An i fection in the breast (breast abscess, mastitis)
* Breast cancer

AXILLARY TAIL

The axillary tail (of Spence) extends superolater-ally into the anterior axillary fold. The upper half of the breast, and particularly the upper outer quadrant, contains a greater volume of glandular tissue than do other sectors.

Key References

* J M Dixon and R E Mansel
  ABC of Breast Diseases: Congenital Problems and Aberrations of Normal Breast Development and Involution
  BMJ, Sep 1994; 309: 797 – 800.
* American Joint Committee on Cancer. Manual for staging of cancer, ed 3. Philadelphia, JB Lippincott, 1988:145.
* Gold DA, He mann G, Schwartz IS, et al. Granular cell tumo of the breast. Breast Dis 1989;2:211.
* ABC o breast diss aase.2nd edition,Michel Dixon. 2001, 1-10
* Physical igns in clinical surgery, 9th edition. Allan Clain. 2000,180-199.
* Bailey & love's Short pr ctice of surgery,R.C.G. RUSSELL, 24th edition,8 4-832.
* A guie to physical examination, 3rd ed tion,Barbara Bates 1988,186-199.
* Schwart , priciples of surgery,Schwartz et al., Mcraw ill, 9th edition, 2000, 1111

INFECTIONS

MASTITIS

Mastitis is an infection of the breast tissue associated with pain, swelling and redness of the breast.

Mastitis most commonly affects women who are lactating — breast-feeding or nursing an infant , although in very rare circumstances this condition can occur outside of lactation.

Risk factors ; sore or cracked nipples, bacteria from the skin's surface or baby's mouth enter a milk duct, infecting that duct and leading to mastitis, a previous bout of mastitis while breast-feeding using only one position to breast--feed,

which may not fully drain your breast, wearing a tight-fitting bra, which may restrict milk flow.

Signs of mastitis include red, hot, painful, or inflamed breasts and other flu-like symptoms such as headache, nausea, high temperature (101 degrees Fahrenheit, 38.4 degrees Celsius

or greater), or chills. Women with symptoms of mastitis should see a physician.

Breast-feeding with mastitis is generally not harmful to the baby and may actually help speed up recovery.

Mastitis is typically diagnosed by a physician based on signs such as swollen, red, and painful breasts and flu-like symptoms. some time laboratory culture of the breast milk is necessory to proove the diagnosis ;early diagnosis is essential as if not treated with breast care and

appropriate antibiotics against staph aureous in 24 hours it will complicate & approximately 10% of women with mastitis develop abscess in the infected breast area, related to milk stasis, a collection of pus can develop in the breast.

BREAST ABSCESS

An abscess is a benign closed pocket containing pus (a reamy, thick, pale yellow or yellow-green fluid).

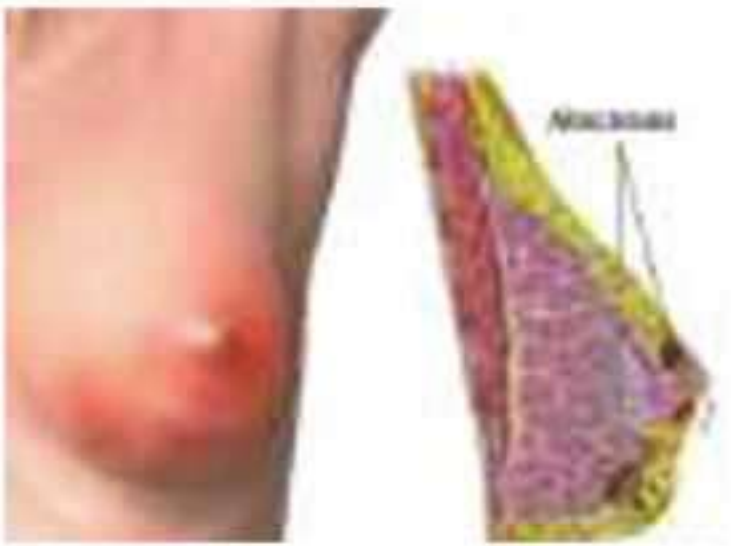
In breast abscess there are all features of inflammation be ide the following features

Indurations
Flac tion
Pointing
and more severe constitutional general features .
W ich are caused usually by Staphylococcus aureous.

Abscesses are usually drained with needles under ultrasound guide.

A particularly large abscess may need surgical drainage, in the form of incision, breaking of loculi, drainage & guaze drain. follow by dressing and antibiotics according to culture and sensitivity.

Some time the abscess like mastitis recures in future pregnancy and lactation



A break or crack in your skin can allow bacteria to invade your breast tissue, causing an infection.

The nipple discharge may contain pus, and the breast can become red, swollen and warm to the touch.

Some time this is a first feature of another complication of mistreated breast abscess ; which called milk fistula .

Milk fistula is a tract between a lactiferous duct & the space of the abscess, there is an opening arround the

ANTIBIOMA

When an abscess diagnosed as mastitis , treated continousely with antibiotics , the constitutional features may vanishe gradually and local features also disappeare

but the pus will remain , be ome steralized viscus fluid and the pyogenic membrane of the abscess brosed, hard.

In this case there is a hard mass in the breast which may mimics clinically cancer mass .

Tr e principles of treatment of the absceaawhich are ;

* If mastitis not resp nd to antibiot cs in 24 hors, means there is suppuration and absc ss formation , which needs review of the diagnosis & dr inage.

Otherwise you help the abscess to bec me anti-b

* Pointing , induration And flactuation mean pus collction.

which needs surgical treatment either aspiration or drainage, other wise it complicate into ;

* pressure necrosis & gangreene of the overling skin.
* Milk fistula.
* Chance of the recurrence of the abscess , even after precise surgical treatment.
* Neglected & large abscesses need larger incision which cause disfiguring of rhe breast. Also it needs counter drainage via a separate incision , which may increase mutilation of the breast.

nipple or areola which discharges dirty milk at the start later it will discharges milk .

In this breast , apart from clear milk fistula at 10 oclock of the breast, there are also tethering of the skin ,nipple retraction .

Nipple retraction in this case is due to fibrosis andshortening of the Coper's ligament which indraw the nipple.

A biggener in surgery may think that this could be a cancer case; due to presence of these features which are also common for carcinoma.

Some time the abscess may be left without treatment unti the pus try to find a way out via less resistance andpoint through the skin or end in pressure necrosis , gangreene & slughing of the overlying skin .

Which may end in loss piece of the skin & disfiguring of the breast , in this lady there were also multiple large right axillary & infraclavicular lymph nodes . One of these lymph nodes in the axilla suppurated and became very large abscess ,end in mutilation of the axilla & the breast as sh-own below

NEONATE MASTITIS

This vari mastitis is associated with other neonatalstaphylococca infections and, in the untreated baby, may result n substantial morbidity and, occasionally, death.

NEONATE BREAST ABSCESS

The patient may have pus expressed from the nipple of a very tender hyperaemic breast. with all features of abscess of the abscess , from local changes of redness, swelling, tenderness , flactuation, induration and some time pointing.

breast mass

All regions of concern in the breasts that were identified by inspection should be recorded and the entire breast mass should be carefully palpated.

Examination of the patient in the supine position is best performed with the benefit of a pillow supporting the ipsilateral hemithorax.

The examiner should gently palpate the breast from the ipsilateral side, making certain to examine all quadrants of the breast from the sternum to the clavicle, laterally to the latissimus dorsi muscle and inferiorly to the upper rectus sheath.

The physician should perform the examination with the palmar aspects of the fingers; a grasping or pinching motion should be avoided.

Noona syndrome

Because of the deformity in the chest wall (thoracic cage) , there is a deformed rib which is sigmoid in shape ; the protrusion of the rib presentes as hard, nonmobile,nontender , of any size mass under the breast the complain of the patient is a hard mass in the breast .

CRACKED NIPPLE

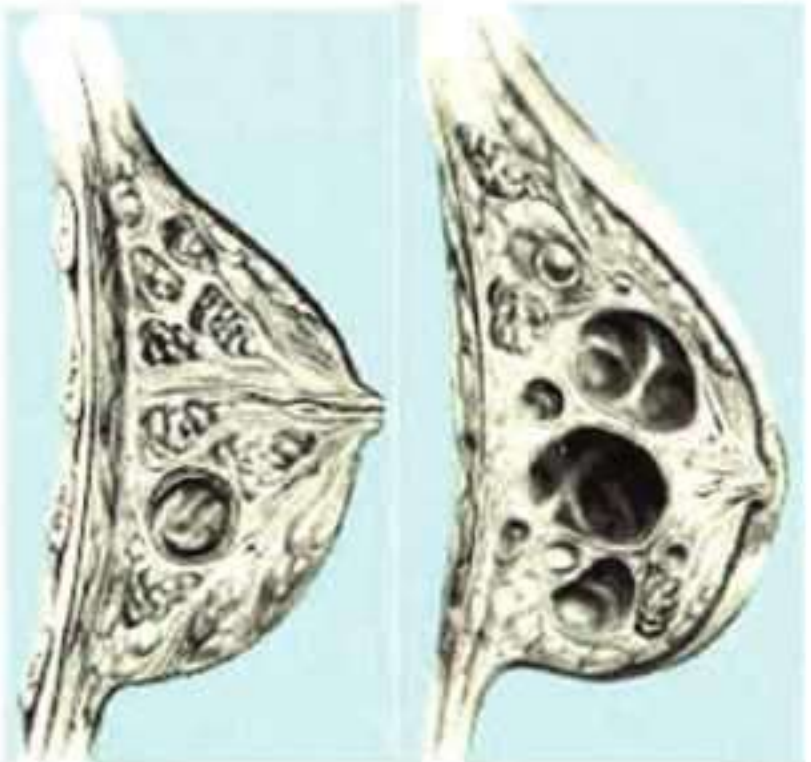
Cracked or fissured nipple is a benign condition, usually seen in lactating ladies, at the starting of lactation days.

It is due to desquamation, abrasion , some time infection of the eoidermis of the nipple, the factors take part in the etiology includes ; dryness of the nipple, dirty nipple, prolonged suckling, infection of the buccal cavity and gum f the baby.

It causes severe pain on brea t fedding, fissure or cracke , with crusting & discharge from the sore

Fibroadenoma

A mass in the UIQ of the left breast, changing the direction of the nipple , without distorsion or retraction of the nipple , no tethering of the overlying skin, which is normal in coloure, with no dilated or visible vesseles in the overlying skin. painful, tender on touch specially in menses which was soft to firm in consitency, freely mobile , even after contracting pectoralis musle, with no axillary lymph nodes, turned to be Fibroadenoma



FIBROCYSTIC ADENOSIS

Clinically there are multiple well defined masses in the one or both breasts, firm in consistency, with smoth surface & It's a common condition affecting more than half of all women.

Signs and symptoms include pain and increased breast lumpiness that may worsen each month as menstruation nears.

After menstruation, the signs and symptoms subside.

Nipple cyst

Simple cyst formed on the tip or edge of the nipple mostly due to obstructed external meatus of the corresponding lactiferous.

MONTGOMERY CYST

This is a cyst developed around the nipple in the areola from obstructed montgomry sebaceoiuys glands, which is a retension cyst , welldefined , attached to the skin of the areola and may comlicate by superadded infection and with all local features of the inflammation .

Key References

* Scott Gottlieb
Women with benign breast disease face higher cancer risk
BMJ, Jul 2005; 331: 179 ;

* C C Chen, A S David, H Nunnerley, M Michell, J L Dawson, H Berry, J Dobbs, and T Fahy.
Adverse life events and breast cancer: case-control study
BMJ, Dec 1995; 311: 1527 – 1530

* Paolo Bruzzi, Luigi Dogliotti, Carlo Naldoni, Lauro Bucchi, Massimo Costantini, Alessandra Cicognani, Mirella Torta, Gian Franco Buzzi, and Alberto Angeli
Cohort study of association of risk of breast cancer with cyst type in women with gross cystic disease of the breast
BMJ, Mar 1997; 314: 925

* Stephen Ebbs, Tom Bates, J M Dixon, C McDonald, Breast cancer risk with cyst type in cystic disease of the breast
BMJ, Aug 1997; 315: 545

* R A Elton, and W R Miller.
Women with breast cysts of type I have increased risk of breast cancer
BMJ, Mar 1997; 314: 12.

* Slavin JL, Billson R, Ostor AG.
Nodular breast lesions during pregnancy & lactation.
Histopathology 1993;22:481

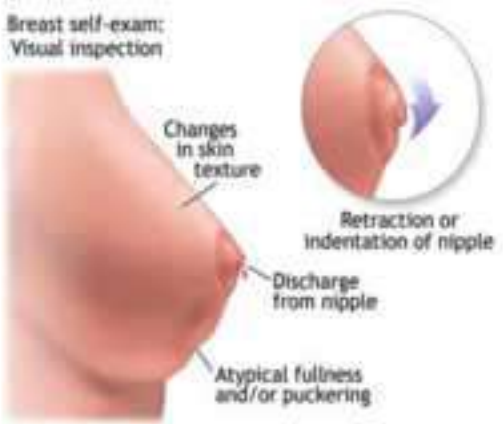
* Gupta RK, McHutchinson AGR, Dowle CS, et al. Fine-needle aspiration cytodiagnosis of breast masses in pregnant and lactating women and its impact on management.
Diagn Cytopathol 1993;9:156.

* Novotny DB, Maygarden SJ, Shermer RW, et al. Fine needle aspiration of benign and malignant breast masses associated with pregnancy.
Acta Cytol 1991;35:676

NIPPLE DISCHARGE

Most women who've breast-fed have experienced unwelcome moments of nipple discharge.

But having a discharge unrelated to breast-feeding is understandably concerning



Any fluids that seep out of the nipple are referred to as nipple discharge, the nipples have many tiny openings through which fluid can pass.

In the case of the nursing mother, this fluid is breast milk. In other cases, it may look like milk but it really isn't.

The fluid can differ with regard to color — from milky white to yellow, green, brown or bloody - and consistency - from thin and watery to thick and sticky.

Nipple discharge can happen in one or both nipples.

It can be spontaneous at any time or happen only on squeezing the nipple or manipulate the breast in some way.

The chances of have unusual nipple discharge increase as one get older and with the number of pregnancies.

Among the many possible causes of nipple discharge are :

*Normal functioning (physiological discharge)

Physiological nipple discharge usually occurs in both breasts and happens only when the breast tissue is manip- ulated in some way, such as by squeezi the nipple to check for discharge.

he dischar e may be clear, yellow, white or dark green. St mulation of the nipple actually increases t e likelihood of discharge, so it's best to l ave the nipples alone and avoid checking them.

This type of discharge often r solves on its own.

*Mammary duct ectasia

Mammary duct ectasia is one of the most common conditions related to abnormal nipple discharge.

It causes one or more of the ducts beneath the nipple to become inflamed and clogged with a thick, sticky substance that's green or black.

Most often, it affects women i their 40s and 50s.

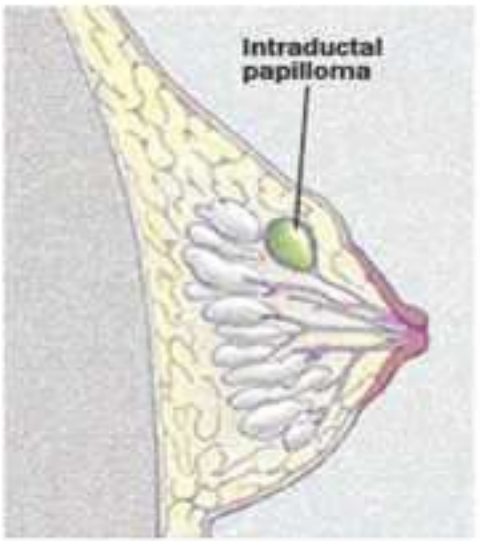
intraductal papilloma

Intraductal papilloma is a small, usually benign growth that projects into a milk duct near the nipple.

It occurs most often in women between the ages of 35 and 55. and there are no known risk factors.

The discharge may be bloody or sticky & usually occurs sponta eously from one duct only, with manipulationof the nipp e. There may be staining or spotting from the dischar e on the shirt or the inside of the bra.

There may also a small lump behind and near the edge of he nipple (areola).



GALACTORRHEA

Milk production even though the lady is not pregnant or lactating

The nipple discharge associated with galactorrhea is usually white or clear, but it could be yellow or green. Fluid may leak from one or both breasts.

Ga actorrhea occurs because the body is making too much prolactin

Possible causes include:

* A hormonal imbalance, such as from taking birth contr l pills
* An underactive thyroid gland
* A tumor (prolactinoma) or other disorder of the pitui ary gland
* Chronic breast stimulation, su h as from frequent b east self-exams or sexual activity

AN INJURY

A blunt trauma — for instance, the impact of the steering wheel in a car accident or a hard blow to the chest during a sporting activity — can cause nipple discharge in both breasts.

The nipple discharge results from tissue damaged by the blow and may be clear, yellow or bloody

The discharge often occurs spontaneousl and involves multiple ducts.

FIBROCYST C CHANGES

Fibrocystic breast changes resu t in lumpy, tender breasts and can produce a clear, yellow or light green discharge from the nipples.

Fibrocystic changes are very com on, occurring to varying degrees in about half of ll women.

BREAST CANCER

Nipple discharge rarely is a sign of breast cancer, but it's possible that discharge may indicate cancer is present within a duct (intraductal breast cancer) or outside the duct (invasive breast cancer), specially if the discharge is bloody, spontaneous and occurs in only one breast.

MASTITIS & ABSCESS

Most common in lactating women, a breast abscess can happen when the nipples become irritated or infected from breast-feeding.

The nipple discharge may contain pus

PAGET'S DISEASE

Paget's disease of the breast also is associated with nipple discharge.

Paget's disease of the breast is an uncommon cancer that occurs in only 1 percent to 4 % of all ladies with breast cancer.

Signs and symptoms include itching, burning, redness or scaling of the nipple and areola

Thers may be also have a bloody discharge from the nipple, and the nipple may appear flattened against the breast

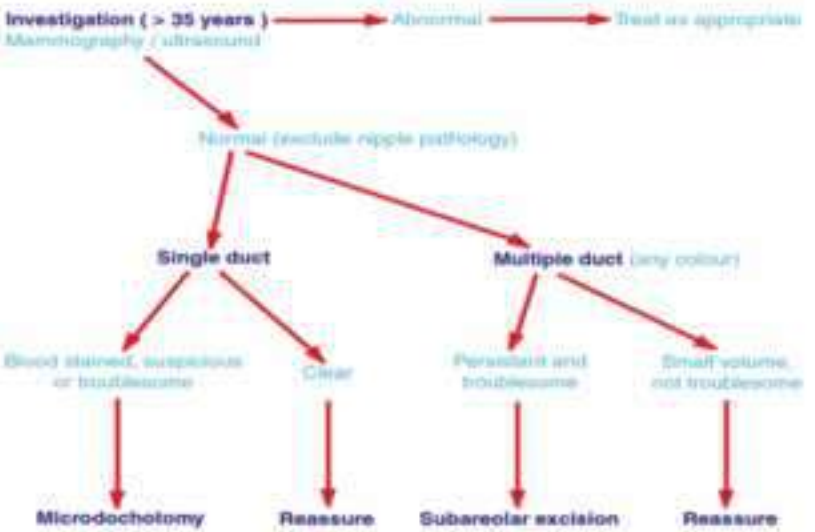
Early Paget's disease

In some neonate there is few drops of milky discharge from the nipple, called witch milk, it is physiological due to passing of mothers sex hormones via placenta affecting babys breast.

Summary of nipple discharge

Type of Discharge	Possible cause
Clear, straw-colored	Early pregnancy
Thin, milky	Pregnancy or breast-feeding
Bloody	Intraductal papilloma Breast cancer
Pus	Breast infection
Milky or clear, possibly yellow or green	Galactorrhea
Clear, yellow or bloody	An injury
Yellow, green, brown or black	Duct ectasia Fibrocystic breast changes

Summary of management of nipple discharge



Breast screening

Breast Cancer Screening	
DEFINITION	The detection of early breast cancer in asymptomatic women
AIM	The reduction of mortality from breast cancer in the screened population

The following are the most basic guidelines for the early detection of breast cancer:

1. **Women aged 20 or older should perform breast self-examination (BSE) every month.**
2. **Between the ages of 20 and 39, women should have a b east examination every 2 years. After age 40, women sho ld have a breast exam every year.**
3. **Women aged 40 should have a mammogram. After that, the frequency of routine screening m mmogr-aphy depends upon both age and physical ndings. Usually yearly mammography will be recomm nded because of the high degree safety and h gh inform-ait n yield of a well-done mammogram.**
4. **If a persistent change ccurs anytime during BSE a physician should examine the breast.**

Examples of significant c anges include:

1. A new lump or swelling in t e breast or underarm.

2. **A skin, nipple, areola, or under-arm (axilla) rash or irritation that persists for 2 weeks.**
3. **Any new dimpling of the skin, nipple, or areola.**
4. **Persistent breast pain.**
5. **Recent Nipple retraction .**
6. **Red discoloration of the skin, nipple, or areola.**
7. **A discharge from the nipple of any kind (other than breast milk after pregnancy).**

Why to do breast screening & mammography?

1. **Breast cancer rates are rising / not falling.**
2. **Screening mammography (when properly perfor-med and interpreted by a well-trained radiologist or surgeon) is so safe.**
3. **Screening mammography is so frequently capab-le of finding cancers 1 centimeter in diameter or less. (When properly performed and interpreted by a well-trained radiologist or surgeon.)**
4. **Breast cancer is curable when caught early.**
5. **Breast cancer treatments and breast reconstruc-tion are so safe and effective .**

SELF EXAMINATION OF THE BREAST

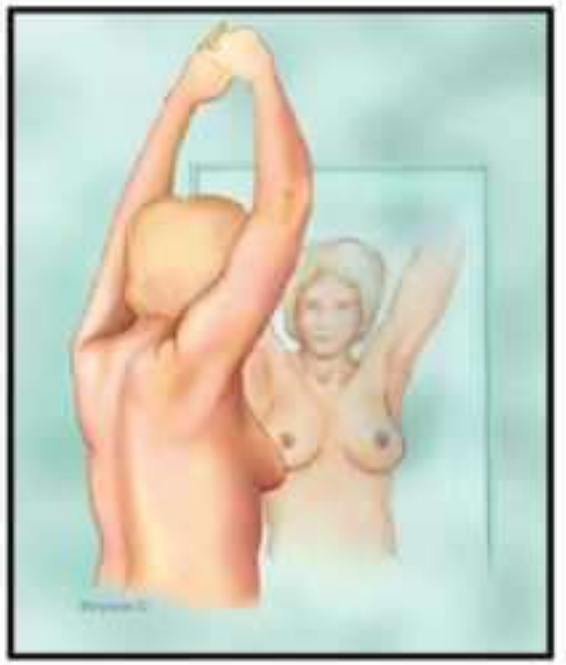
Step 1

Begin by looking at your breasts in the mirror with your shoulders straight and your arms on your hips.
Here's what you should look for:
- **Breasts that are their usual size, shape, and color.**
- **Breasts that are evenly shaped without visible distortion or swelling.**

If you see any of the following changes, bring them to your doc or's attention:
- **Dimpling, puckering, or bulg ng of the skin.**
- **A nipple that has changed position or become inverted (pushed inward instead of sticking out).**
- **Redness, soreness, rash, or sw lling.**

Breast Self Exam - Step 2 and 3

Raise your arms and look for the same changes.
While you're at the mirror, gently squeeze each nipple between your finger and thumb and check for nipple discharge (this could be a milky or yellow fluid or blood).



Breast Self Exam - Step 4

Feel your breasts while lying down, using your right hand to feel your left breast & then your left hand to feel your right breast. Use a firm, smooth touch with the first few fingers of your hand, keeping the fingers flat & together. Cover the entire breast from top to bottom, side to side—from your collarbone to the top of your abdomen, & from your armpit to your cleavage.

Breast Self Exam - Step 5

Finally, feel your breasts while you are standing or sitting. Many ladies find that the easiest way to feel their breasts is when their skin is wet& slippery, so they like to do this step in the shower.
Cover your entire breast,using the same hand movements described in Step 4.

ULTRASONOGRAPHY OF BREAST

Ultrasonography has no ionizing radiation, it is highly reproducible, and it has high patient acceptability.

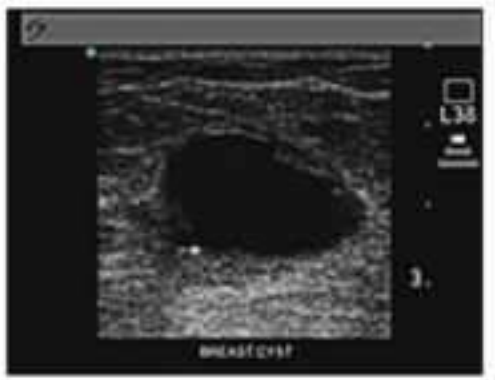
The importance of ultrasonography lies in the resolution of equivocal mammography, the diagnosis of cystic disease, and the demonstration of solid abnormalities with specific echogenic features.

The resolution of ultrasound is inferior to mammography, and lesions 1 cm in diameter, unless cystic, will no be detected. In the presence of a normal physical examinat on and mammogram, ultrasonographically demonstrated abnormalities are, in the majority of cases, not significant.

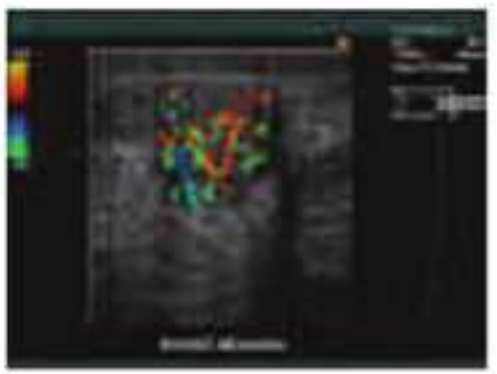
Ultrasonography is also useful for guiding the aspiration of cysts to provide cytologic specimens.

Ultrasound Breast Biopsy

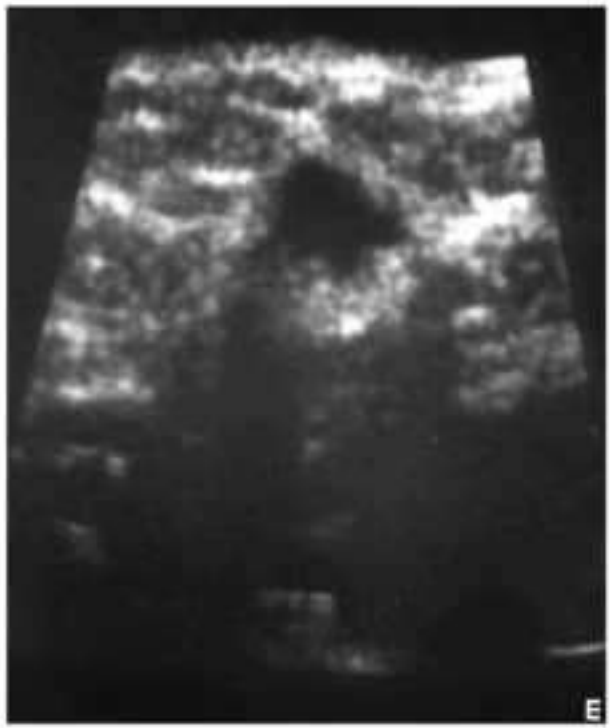
Cysts, on ultrasound examination, are always well circumscribed, with smooth margins, and have an echo-free center irrespective of the sensitivity setting



Ultrasound is useful also in diagnosis of the infections of the breast. specially in diagnosis of breast abscess ,its differentiation from mastitis



Breast abscess



An irregular hypoechoic mass that proved to be a fibroadenoma.

Although fibroadenomas are statistically by far the most common circumscribed hypoechoic masses, the histology of a given lesion cannot be determined by ultrasound.

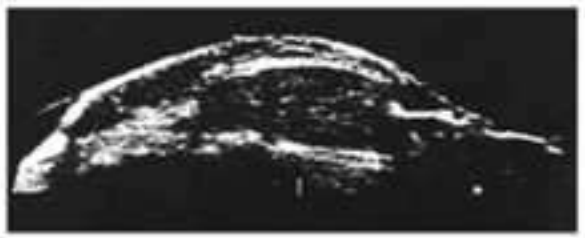
Lipomas are difficult to distinguish from the surrounding normal lobules of fat in the breast.

The specular reflection of their capsule is the most prominent feature.

Their echo texture is similar to that of subcutaneous fat, and they are hypoechoic.

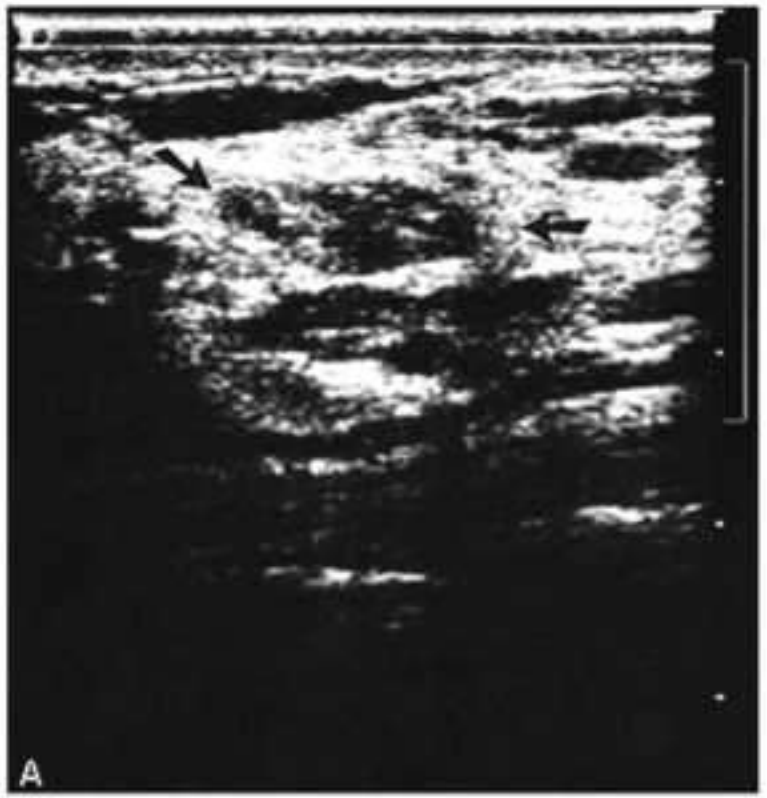
Sound is attenuated and scattered similar to normal subcutaneous and intramammary fat.

The lipoma, however, like the oil cyst, is so characteristic by mammography that there is no reason to even evaluate it by ultrasoun



The hypoechogenicity of this large lipoma is indistinguishable from the subcutaneous fat. The features of a lipoma on mammography are so characteristic that there is no reason to evaluate these masses using ultrasound.

Oil cysts from fat necrosis have variable appearances on ultrasound.

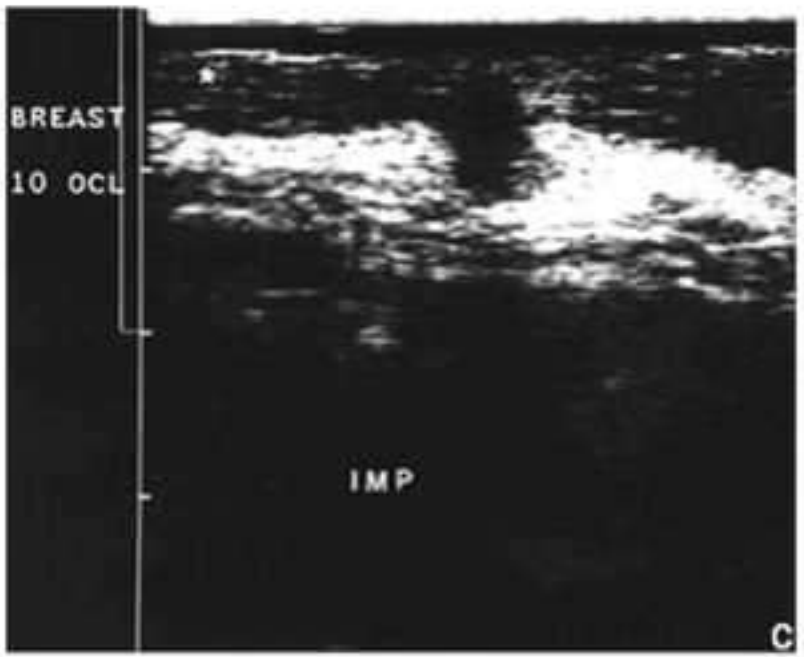


Cancer is virtually always hypoechoic on ultrasound. Normal breast tissue can be hypoechoic and indistinguishable from cancer by ultrasound. Scanning the breast will find numerous areas that raise concern but are not cancers. The arrows point to two areas of hypoechoic tissue in a woman with normal mammography and clinical breast examination. Either one could be cancer, but both are normal breast tissue.

Lesions with ill-defined margins are more likely to be malignant.more than 50 percent had irregular margins .

Malignancy should be suspected, especially when the anterior margin of the lesion is some what triangular

Breast cancers are usually irregular in shape with irregular margins. This invasive ductal carcinoma was palpable in a 42-year-old woman with positive axillary lymph nodes.



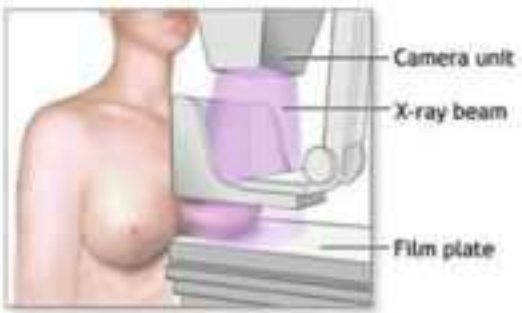
An elongated, lobulated mass that proved to be invasive ductal carcinoma.

A round, hypoechoic, enhancing mass that is lung cancer, metastatic to the breast.

MAMMOGRAPHY

Mammography: A mammogram is an x-ray of th breast.

Diagnostic mammography is used to find the cause of new symptoms and signs .



In mammography, each breast is compressed horizontally, then obliquely and an x-ray is taken of each position

Sc eening mammography is used to look for breastdisease in women who are asymptomatic.

Modern mammograph equipment subjects the breasts to l w levels of radiation (usually less than 0.1 rad per x-ray session).

This amount of ra iation doesn't increase the risk for br ast cancer or any breast disease.

During screening mam ography, a minimum of two X-rays are obtained f each breast (for a total of fou

At an exposure of 0.1 rads per screening mammogram session, an average woman having screening mammograms every year from a 40 to age 90 is e posed to 5 rads of radiation (a very small and safe amount).

Therefore a woman is more likely to get s in cancer from excessive solar ra m the sun).

Microcalcifications app ar as small white spots on the mammogram a d may occur singly (insignifica t) or in

clusters/ groups (more significant clinicallye).

Most microcalcifications are produced by benig breast conditions rather than a malignant condition.

But when new microcalc fications are found on mammography, a biopsy is indicated because mammogram alone cannot prove hat an abnormal gn or malignant).

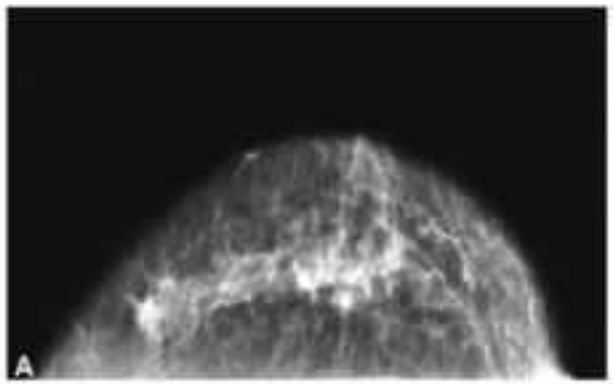
The National Cancer Institut recommends that women begin receiving screen ng mammograms every one to two years at 40 years of ag and every year once they reach 50 years of age.

Since the number of breast cancer iagnoses ri en women reach t eir 40s, annual screening mam,mography can help etect breast cancers at an earlystage, when tr atment is most likely to be successful.

The demonstration of large nodes by mammography is nonspecific and can be due to nonmalignant causes or other malignancies, such as lymphoma.

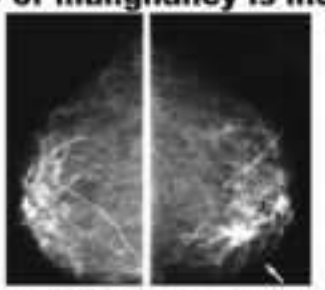
When nodes involved with breast cancer are visible by mammography, it is a late nonspecific sign of malignancy. In our experience, it is rare to see enlarged axillary nodes on mammography due to a primary breast lesion

Increasing x-ray attenuation of an area of asymmetry over time should also raise concern



Asymmetric tissue density increasing over time may indicate the insidious development of a breast cancer. Asymmetric tissue density on this craniocaudal projection

Cancer is generally not intermingled with fat, and the attenuation of the tumor increases toward its center. When this pattern is associated with distortion of the breast architecture, the probability of malignancy is increased



Invasive cancer is frequently more dense than an equal volume of fibroglandular tissue. The invasive cancer in the right breast (arrow), as seen on this craniocaudal projection, is more dense than the surrounding fibroglandular breast tissue

Mammography can detected approximately 85% of breast cancers. If a physician detects a breast lump with physical examination but the mammography does not reveal any abnormality, needs other additional breast imaging

Breast cancer may not be visible on a screening mammogram if:

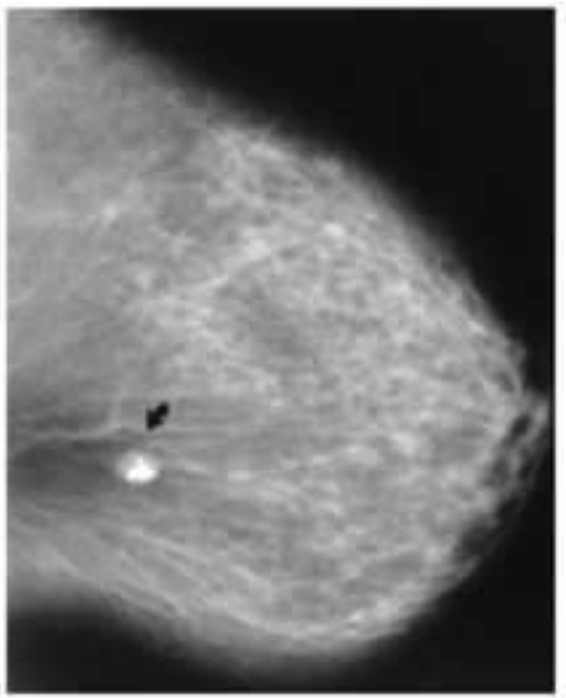
* The cancer is very small
* The canc r is in an area that is not easily imaged with ammography (such as in the axilla.
* The canc r is obscured by other shadows

While mammography an occasionally miss breast cancers, it can also de ect cancer several years before a lump can be felt.

linical studies in the .S., Sweden, and the Netherlands have suggested that deaths from breast cancer could be cut by between % and % if ma - mographic screening were performed a nually on all women.

EXAMPLES

FIBROADENOMA



This calcifying mass is consistent with a benign, involuting fibroadenoma and requires no further investigation.

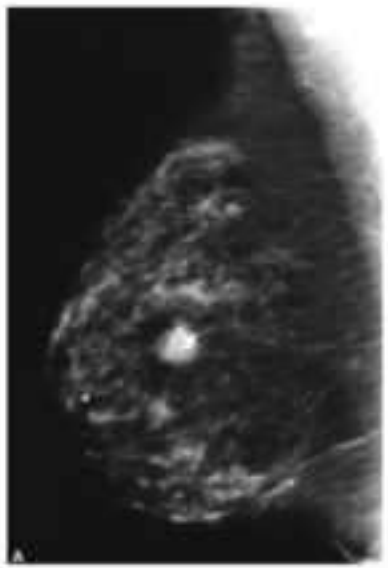
The characteristically dense large calcifications of a benign involuting fibroadenoma, when seen within a lobulated mass, are diagnostic .

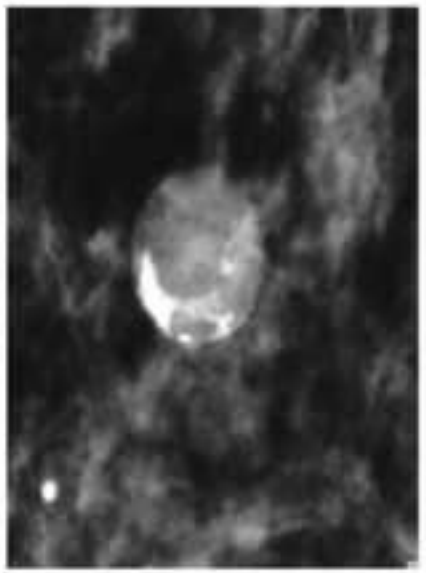
When these calcifications begin they may be very small, irregular, worrisome in appearance, and indistinguishable from malignant deposits. In such cases, biopsy may be indicated. However, in later

CYSTS

Cysts appear to calcify in patches with a very thin layer of deposit, while fat necrosis tends to form a thicker rim.

If a question persists, confirmation by aspiration is probably needed because the calcifications in the wall of a cyst can reduce the effectiveness of ultrasound in differentiating cyst from solid





Calcifications that define the periphery of a sphere, producing an eggshell appearance or a thicker rim, are usually seen in cysts & fat necrosis.

The oil cyst can b distinguished from a flu d-filled cyst of the lo ule when the mass withi the calcified rim is relati ely radiolucent

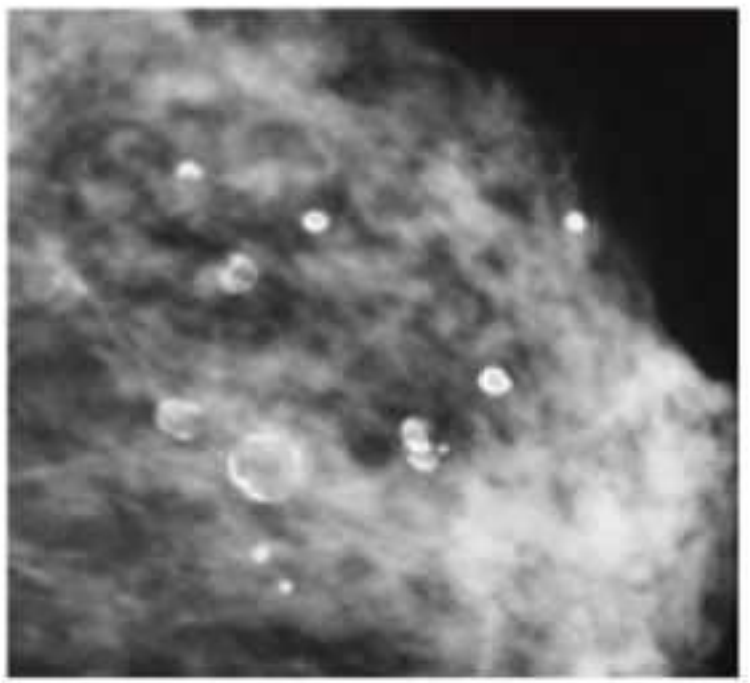
Similar deposits can occur within cyst walls, but in this setting the calcified lesion is relatively radiodense because a cyst is water in its attenuation characteristics.

Calcified cyst walls are usually fairly fine depos ts

MILK CALCIUM

Calcifications can form benign concretions in the lobular acini.

These deposits likely account for the very small (<1 mm), smooth, round deposits that are sometimes found tightly packed together



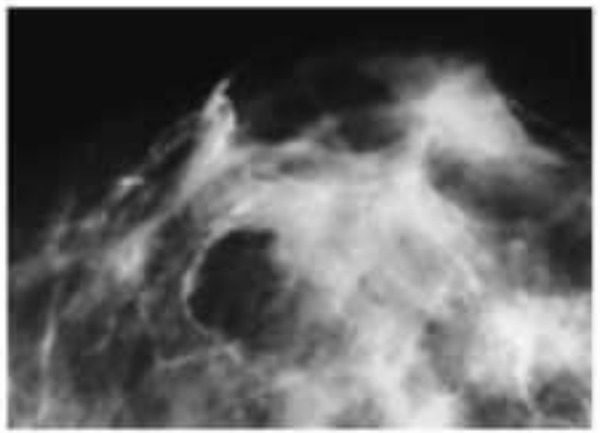
These acinar calcifications can on occasion be heterogeneous and difficult to differentiate from cancer.

Cancer can grow back into the acini, but when calcifications form in these tumors they are usually in the necrotic portions of the tumor and form irregular particles.

Some forms of calcium that occur in cysti cally dilated lobules are characteristically du to benign pr cesses.

VASCULAR CALCIFICATIONS

Vascular calcifications have the distinctive appearance ofcalcified arteries anywhere in the body. These intimal depo project as parallel deposits in the arterial wall and are rar-ely confused with significant calcifications.



The associated smooth, tubular, serpentine vessel is almost always distinguishable, especially on magnification views.

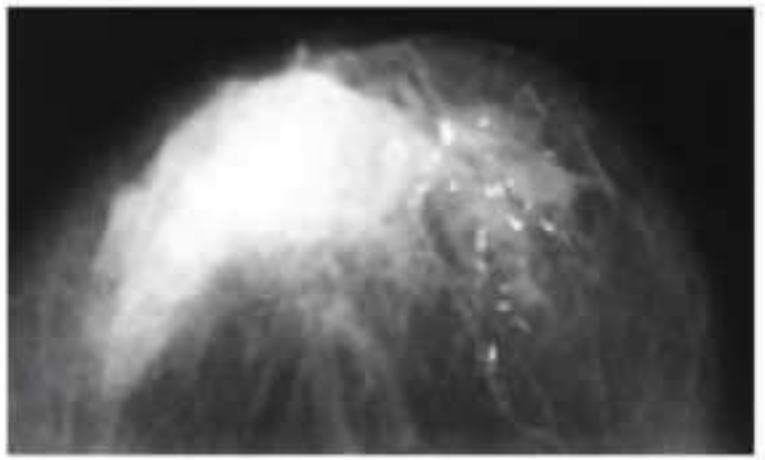
On occasion early vascular deposits can result in calcification vis ble in only one sid wall.

These noncoalescent deposits may be ifficult to distinguish from intraductal calcifications. Direct magnification mammography usually reveals the cha acteristic parallel deposits. Very small vessels may be more difficult, but these usually form very smooth, ti ht curves), which a by cancer. Arterial calcifications are virtually always related to advanced age. They are rarely seen in wom n in their 20 s or 30s. In our experience young women who have a terial calcifications frequently have diabetes, altho-ugh Sickles and Galvin found otherwise10.

PLASMA CELL MASTITIS

Rod-shaped calcifications that are >0.5 mm in diameter are due to benign processes.

Sometimes they are associated with a palpable thickening of the breast that has been called plasma cell mastitis because it is accompanied by an infiltrate contain-ing plasma cells.



Usually these benign calcifications of secretory disease are not associated with any symptoms but are found on routine mammography .

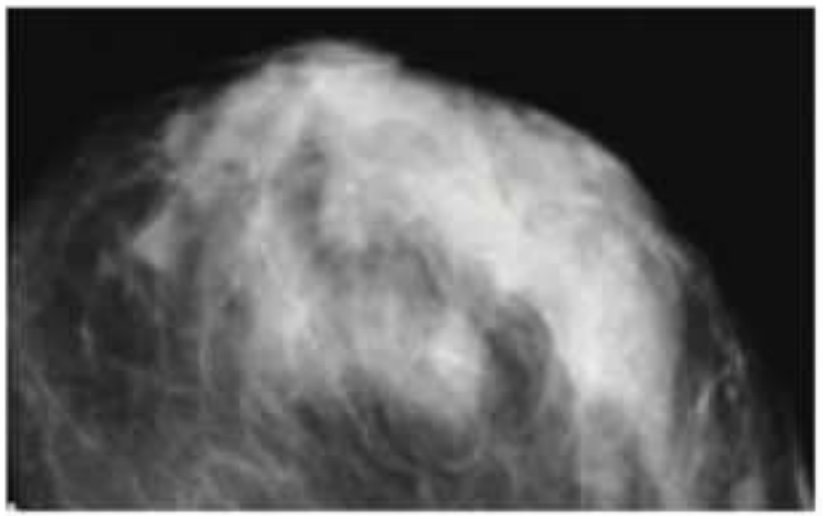
Solid (rod-shaped) calcifications form within the duct, but because the benign process does not narrow the lumen and may in fact distend it, these calcifications are generally larger than the deposits in the irregularly narrowed lumen of intraducttal malignancy.

Tubular (lucent-centered) rods that are o iented along duct lines rarely branch and that are >0.5 mm thick are virtually always a form of benign secretory deposit within the no mal or dilated ducts or the periductal stroma.

The are often, although not always, bilateral. If no sub illimeter fine, branching, punctate, and pointed calcifications are found to suggest coincidental canc r, then no further evaluation is necessary.

FIBROADENOSIS

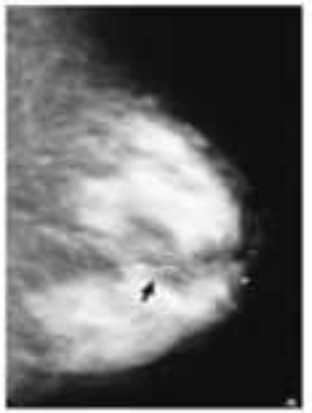
When calcifications are scattered diffusely throughout the breast and especially when they are bilateral, they almost invariably represent a benign process .



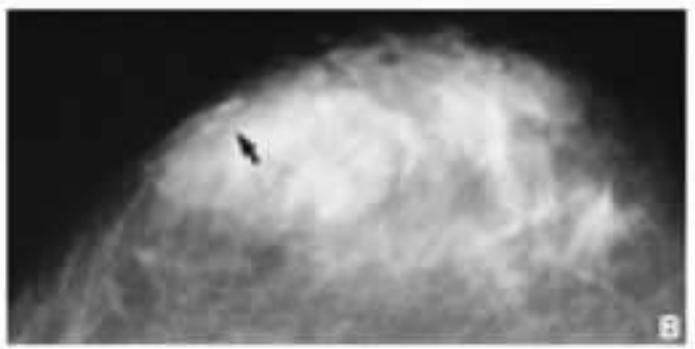
The individual radiographically visibl particles are amorphous with ill-defined marg ns. Their general shape is round. The etiology of these calcificati ns is not
me are due to adenosis, while others are merely deposit in cysts.
They are difficult to distinguish mam ographically, but both are benign processes

FOREIGN BODY REACTION and CALCIFIED SUTURE MATERIAL

Foreign bodies in the breast can elicit calcium deposition.
Some forms of suture material seem to produce parallel tubular-appearing calcifications



The etiology of these may be evident when they form a radiating pattern fro a central area in the imm diate vicinity of previ us surgery or when they for in a relatively straight line along a suture plane



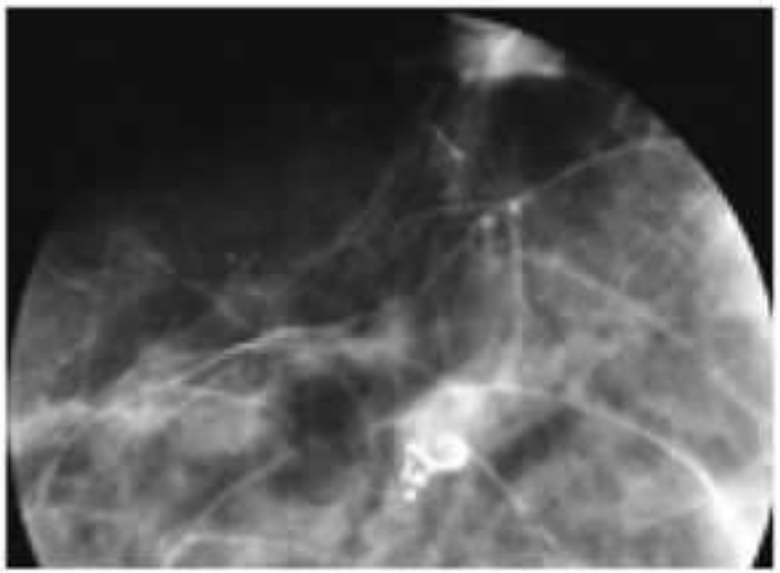
Calcified suture material i most co mon following radiat on therapy but can be seen in women who have had xtensive breast surgery, su h as reduction mammoplasty. It is lik ly due to slow healing in wh ch there is time for calc to form on organic suture material before it is resorbed

INTRADUCTAL PAPILLOMAS

It is relatively uncommon for an intraductal papilloma to be visible by mammography.

Usually they often present with a nipple discharge (serous or sanguineous) and are not visible on the mammogram because they conform to the duct lumen.

On occasion a papilloma calcifies.



It has been suggested that this is a result of infarction, but this has not been determined.

Calcified papillomas they appear to produce shell-like deposits.

They are not as round as the calcifications that are associated with cysts and appear more irregular but with lucent central areas .

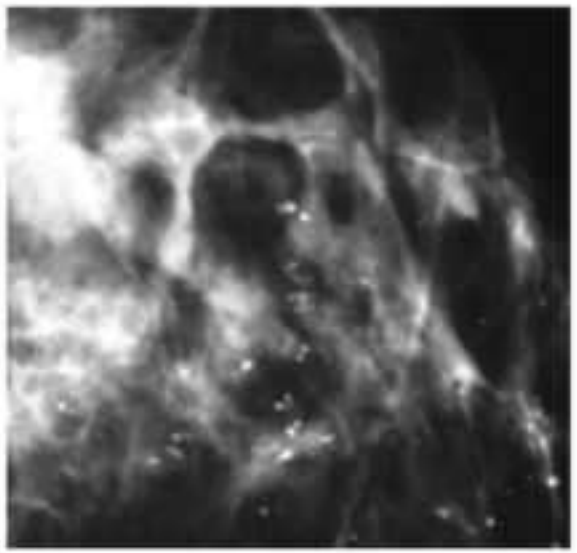
A clue to the diagnosis is that they appear to be oriented in a linear fashion along a ductal course and delineate a sausage-like structure.

Some papillomas present as a circumscribed mass with
very fine punctate calcifications

FAT NECROSIS

Round, hollow spheres of calcium with lucen centers are always benign.

These occur in the skin , in areas of fat necrosis



Fat necrosis of the breast is a benign condition that can mimic breast carcinoma.

The cause was originally considered to be blunt trauma to the breast.

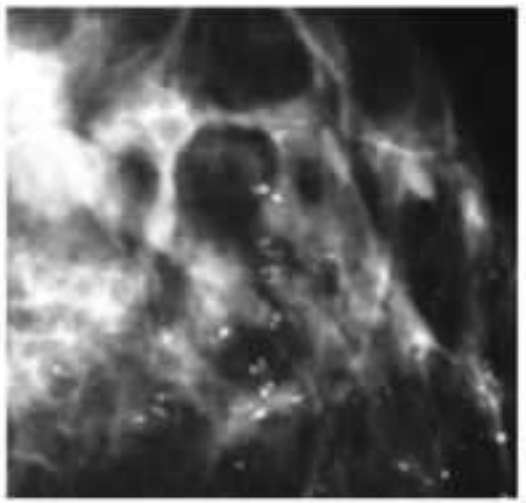
The predominant clinical findings in patients with fat necrosis are single or multiple firm, round, or irregular masses, which can be associated with overlying skin tethering or thickening. Masses are usually painless and immobile, raising the specter of carcinoma.

Although fat necrosis can occur any where in the breast, a central location in the subareolar area is most common.

ARTIFACTS and SKIN CONTAMINANTS

Artifacts and skin contaminants can be misinterpreted as intramammary processes.

Skin powders and ointments, as well as antiperspirants, can be radiographically opaque and simulate microcalcifications (plain deodorant is not radiopaque).



If their etiology is not clear, the skin should be cleansed and the image repeat d.

If what appear to be microcalcifica ions are visible on only a single projection, an artifact should be considered. Scra ches on a screen , dust betw screen he film, or scratches on the film may simulate c lcifications. Because light from the screen is locked at the level of the film or the mulsion is directly damaged, these artif cts are usually sharply defined.

Very tiny (alcifications) that are too sharply defined s ould suggest the possibility.

SCARS

The radial scar is a fairly common benign lesion characterized by often dramatic spiculation that is very similar to that produced by cancer. Because it is confused by som-e with postsurgical change. They are, in fact, different lesions.

The radial scar is idiopathic and unrelated to known trauma.

It represents a scar ring process, but its et ology remains unknown.

This lesion is commonly found by the pathologis reviewing breast tissue at the microscopic l vel.

As an increas ng number of women are creened, more of the lar er radial scars are being found by mammography.

Their appearance is indistinguishable from malignancy.

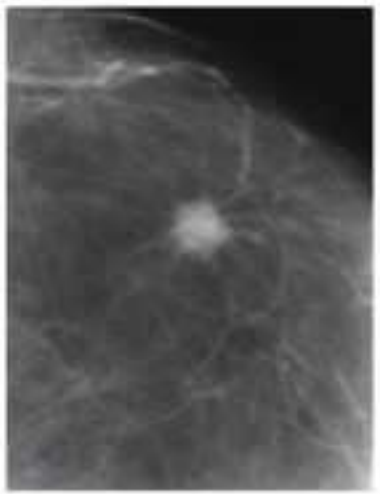
They frequentl have long spicules that re conspicuous because th y trap fat, yet they oft n lack a significant centr l mass .

So one must be very alert in interpretati on of mammograms with calcificatin in patients ndewent operation or radiat n.

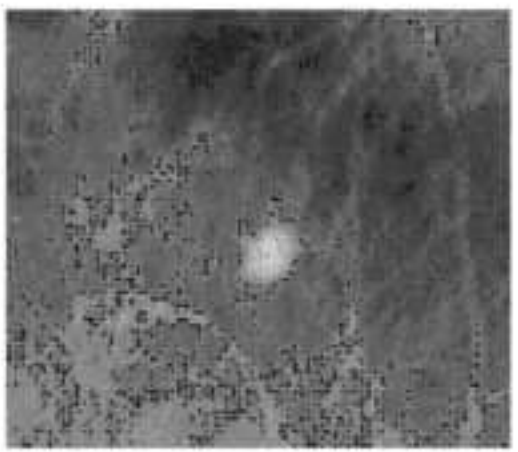
That is why it is impo tant to write full history on request of mammograph .

MALIGNANT FEATURS

A dense, irregular mass with a spiculated margin that is not related to prior surgery is the only combination of features that is virtually diagnostic of malignancy



The spicules may extend more than several centimeters from the main tumor mass or appear as a fine brush border.

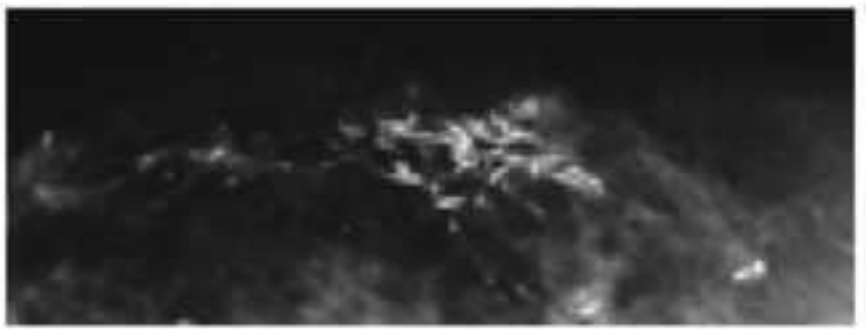


COMEDONCROSIS

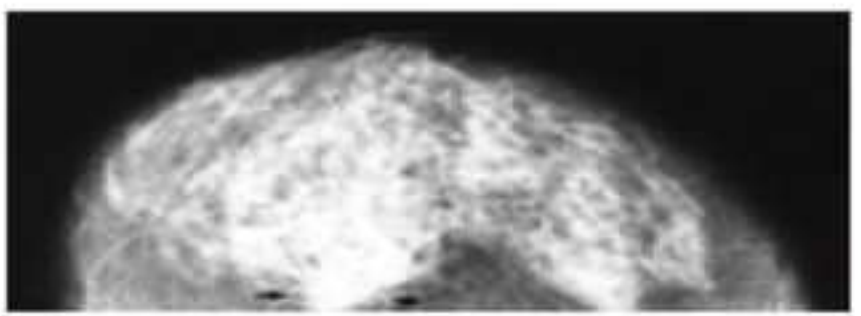
Although the vast majority of calcifications are associated with benign processes, there are some patterns that are almost always due to cancer.

The pattern usually associated with comedonecrosis (central necrosis of cancer filling a duct) in intraductal cancer is virtually diagnostic.

Fine, linear, irregular branching calcifications are practically always due to malignancy



The spiculations represent fibrosis that is probably related to the generalized desmoplastic response that many cancers elicit in the surrounding tissue. On occasion, only fibrosis is seen on microscopic examination of these extensions, but careful evaluation usually reveals tumor cells intimately bound and probably stimulating the fibrotic process.

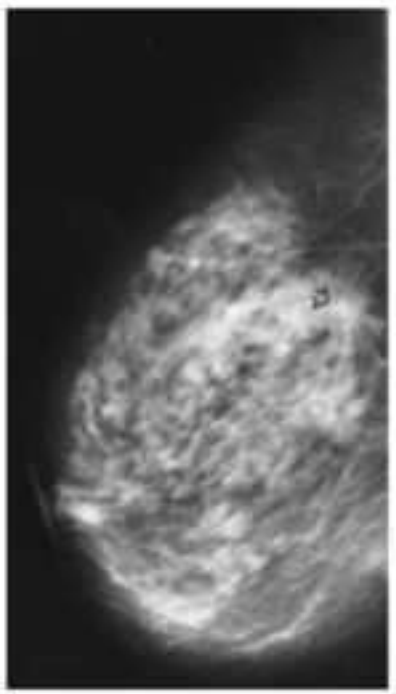


Breast cancer does not always produce a mammographically visible mass, but it frequently disrupts the normal tissues in which it develops.

This distortion of the architecture may be the only visible evidence of the malignant process.

This is an important but often very subtle manifestation of breast cancer.

In general, the flow of structures within the reast is uniform and directed toward the nipple along duct lines.



On occasion, a malignant process will produce a cicatrization of tissue pulling in the surrounding elem - nts toward a point that is eccentri from the nipple

Malignant processes can cause a retraction of the nipple from the cicatrization process.

If the pull is eccentric, the nipple may deviate in the direction of the cancer.

In some situations the nipple may actually invert.

When nipple inversion is caus d by an underlying cancer, it generally occurs o er a relatively short period of time. Most nipple re raction o inversion, however, is the result of benign proc sses and will have been present for many years.

The exact cause in these cases is rarely kno n, but the process generally takes pla e over a long period.

As a secondary sig of mali pple etr-action is generally associated with large can ers that are evident on the mammogram, and it is arely the most significant indication of malignancy on a mammogram

Key References

* Guo Y, Cheng HD, Huang J, et al.
  Breast ultrasound image enhancement using fuzzy logic.
  Ultrasound Med Biol 2006; 32(2): 237-247
* Anne Helene Olsen, Sisse H Njor, Ilse Vejborg, Walter Schwartz, Peter Dalgaard, Maj-Britt Jensen, Ulla Brix Tange, Mogens Blichert-Toft, Fritz Rank, Henning Mouridsen, and Elsebeth Lynge
  Breast cancer mortality in Copenhagen after introduction of mammography screening: cohort study
  BMJ, Jan 2005; 330: 220
* Lucien E M Duijm, Gerard L Guit, Jan H C L Hendriks, Joost O M Zaat, and Willem P T M Mali
  Value of breast imaging in women with painful breasts: observational follow up study
  BMJ, Nov 1998; 317: 1492 – 1495
* Rhodes DJ, O'Connor MK, Phillips SW, et al.
  Molecular breast imaging: a new technique using technetium Tc 99m scintimammography to detect small tumors of the breast
  Mayo Clin Proc 2005; 80(1): 24-30
* Per-Henrik Zahl and Jan Mæhlen
  Model of outcomes of screening mammography: Spontaneous regression of breast cancer may not be uncommon
  BMJ, Aug 2005; 331: 350
* E Lidbrink, J Elfving, J Frisell, and E Jonsson
  Neglected aspects of false positive findings of mammography in breast cancer screening: analysis of false positive cases from the Stockholm trial
  BMJ, Feb 1996; 312: 273 – 276

* H Gilbert Welch, Lisa M Schwartz, and Steven Woloshin
  Ramifications of screening for breast cancer: 1 in 4 cancers detected by mammography are pseudocancers
  BMJ, Mar 2006; 332: 727
* Nicholas J Wald, Philip Murphy, Philippa Major, Carol Parkes, Joy Townsend, and Chris Frost
  UKCCCR multicentre randomised controlled trial of one and two view mammography in breast cancer screening
  BMJ, Nov 1995; 311: 1189 – 1193
* Anneke Lucassen, Eila Watson, and Diana Eccles
  Evidence based case report: Advice about mammography for a young woman with a family history of breast cancer
  BMJ, Apr 2001; 322: 1040 - 1042
* J.M.Dixon,O.Ravi Sekar.Specimen
  Orientated radiography helps define excision margins of malignant lesions detected by breast screening .
  Br.j.Surg.1993.Vol.80.August.1001-1002
* C Dawson BSc FRCS, H Reece-Smith MS FRCS
  Breast disease & the general surgeon.
  Referal of patients with breast problems.
  Annals of the Royal College of surgeons of England 1993 vol. 75 79-86.
* Christobel Saunders, Vardhini Vijay.
  Setting up a breast cancer family history clinic.
  Ann R Coll Surg Engl 1999 81 393-398.
* JCU Roberts BM, RM Rainsbury MS FRCS.
  A new clinical sign during Fine Needle Aspiration of breast lumps.
  Ann. R. Coll. Surg. Engl. 1994 74 136-138.

BIOPSY

((Don't send any lady home with a mass in the breast))

The biopsy technique for a palpable lesion often is influenced by the physical characteristics, the size, and the location of the suspicious lesion, the type of anesthesia desired by the patient, and the therapy pl nned if a malignancy is confirmed. An incisional biopsy of a la ge breast mass can be performed under local anes hesia if the patient presents with bony metastasis.

This technique provides histologic confirmation of the malignancy and adequate tissue for hormonal receptor analysis before initiation of radiation or chemotherapy.

Fine-needle aspiration of a sm ll, suspicious p lpable lesion is appropriate in an outpatient s tting for the patient with clinical stage I breast ancer.

Regardless of the method, it isessent al that the biopsy specimen be handled expeditious y and appropriately o render a valid specimen for histol gic and hormone receptor nalyses.

* The incisional technique is in icated for patients with large (4 cm or larger) pri ary lesions for whom preoperative chemotherapy and/or radiation therapy is desirable.

* xcisional biopsy implies removal of the entire lesion and gen rally a margin of normal breast parenchyma surrounding the su picious lesion.

The surgeon should avoid transe tion or disruption of the lesion for fear of tumor mplantation. When the volume of tissue excised is sm ll (<1 cm3) permanent histologic sections should be planned, as it may be difficult pathologically to differentiate an invasive ca cinoma from severe atypia or in situ isease on frozen-section pecimens.

Both incisional and excisional biopsies can be closed in layers with absorbable sutures.

Excisional biopsy of breast mass

Incisions should be cosmetically designed, since approximately 70 percent of the biopsies confirm benign (proliferative and nonproliferative) disease. Lines of tension in the skin of the breast (Langer's lines) are generally concentric with the nipple. Incisions that parallel these linesgenerally result in thin, cosmetically acceptable scars.

It is important to keep incisions within the boundaries of potential incisions for future mastectomy or wide local excision hat may be required for definitive treatment

The most cosmetically acceptable scars result from circumareolar (curvilinear) inc sions. Centrally located subareolar lesions are b st approached in his manner.

Ultrasound Guided Breast Biopsy

Ultrasound-guided breast biopsy is a highly accurate way to evaluate suspicious masses within the breast that are visible on ultrasound, w hether or not they can be felt on breast self-examination or clinical examination.

The procedure prevents the need to remove tissue surgically and also eliminates the radiation exposure that comes from using x-rays to locate a \ mass.

After placing an ultrasoun probe over the site of the breast lump and using l cal anesthesia, the radiologist guides a biopsy needl directly into the m ss.

Tissue specimens are then taken using either an automatic spring-loaded or vacuum-assisted device (VAD).

When ultrasound is chosen to guide a breast biopsy, one of the biopsy instruments used is a VAD. Nodules of tissue less than about an inch in size can be totally removed using this equipment.

These systems use vacuum pr ssure to pull tissue into a needle and remov it without having to withdraw the probe after each sampling —as is necess ry when the core needle method is used. Biopsie are obtained in an orderly manner by rota ing the needle, ensuring that the entire region of interest will be sampled.

Ultrasound-guided breast biopsy reliably provides tiss e samples that can show whether a breast lump is benign or malignant. When using the (VAD it may b possible to remove the entire lesion.

Ultrasound-guided biopsy is somewhat less expensive than the x-ray-guided (stereotactic) ethod.

When the VAD is used f r ultrasound-guided b east biopsy, large pieces of tissue are removed and there is a risk of bleeding and formation of a h matoma, a collection of blood at the biopsy s te.

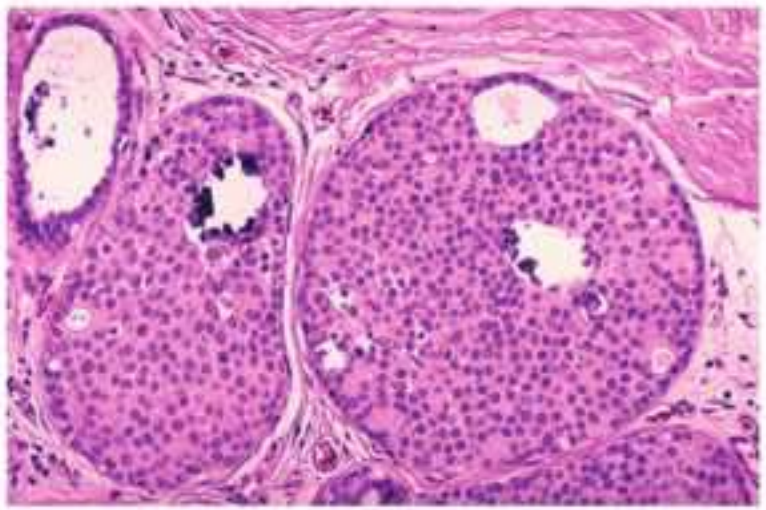
The risk, however, appears to be less than 1 percent of patients .

n occasional patient h s significant discomfort, which can be readily cont olled by non-prescription pain medication.

If the diagnosis remains uncertain a ter a techni-cally successful procedure, surgic l biopsy will be necessary. The ultrasound-guided meth d cannot be used unless the mass can be see on an ultrasound exam

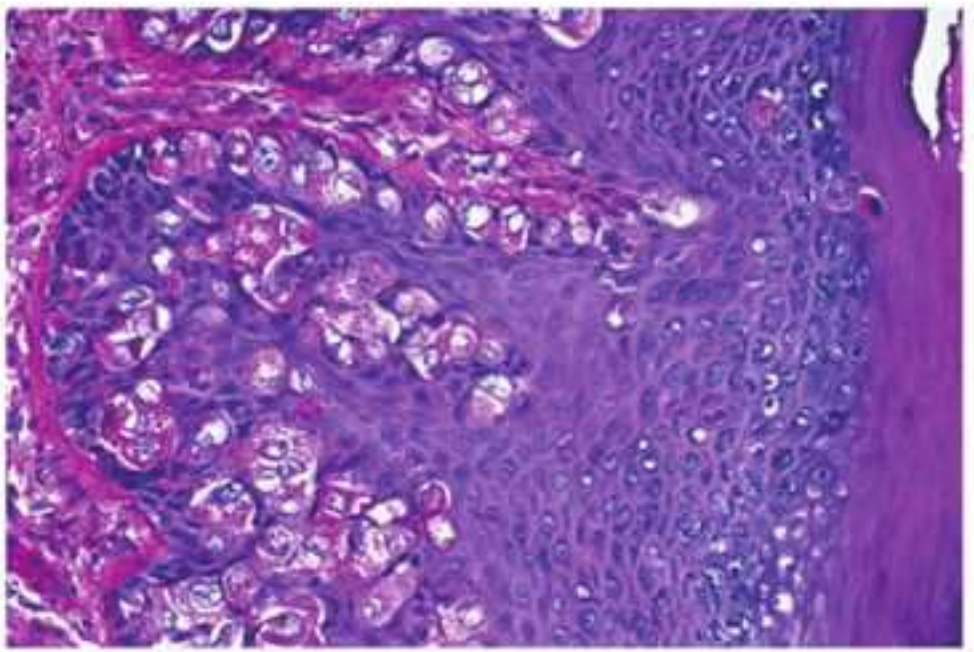
Calcifications within a cancerous nodule are not s own as clearly by this approach as when x-rays a e used.

intraductal carcinoma



This high power microscopic view demonstrates intraductal carcinoma. Neoplastic cells are still within the ductules & have not\ broken through into the stroma. Note that the two large lobules in the center contain micro-calcifications. Such microcalcifications can appear on mammography

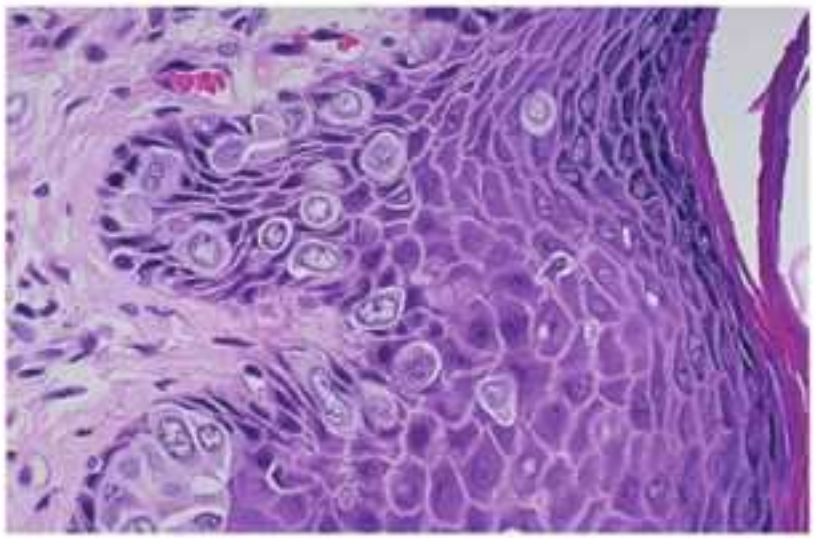
Paget's disease of the breast



A PAS stain demonstrates mucin within the Paget's cells of Paget's disease of the breast. This is evidence for their origin from an underlying ductal carcinoma.

By immunoperoxidase staining, they will also be keratin positive and epithelial membrane antigen positive

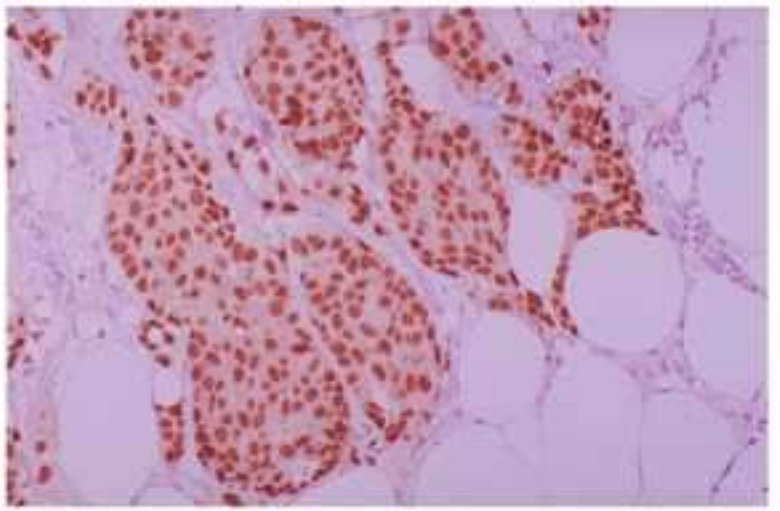
Paget's cells of the breast



At high magnification, the large Paget's cells of Paget's disease of breast have abundant clear cytoplasm and appear in the epidermis either singly or in clusters.

The nuclei of the Paget's cells are atypical and though not seen here, often have prominent nucleoli

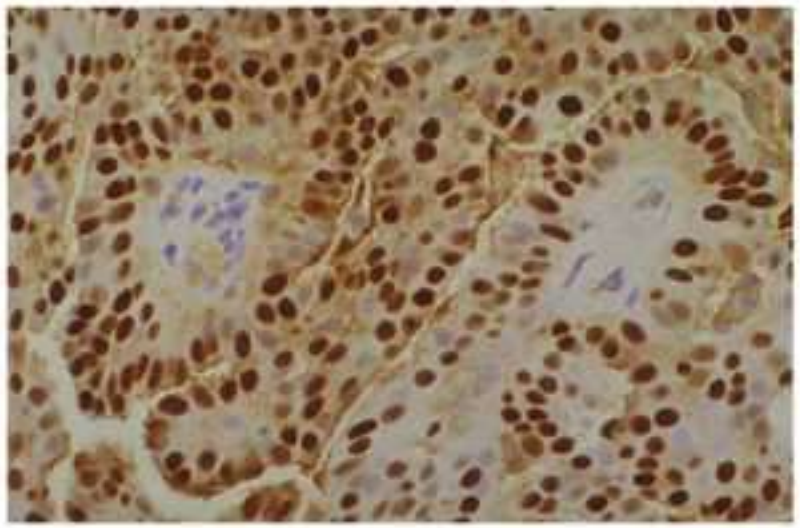
carcinoma ; highly positive for estrogen receptors



The cells of this breast carcinoma are highly positive for estrogen receptor with this immunoperoxidase stain.

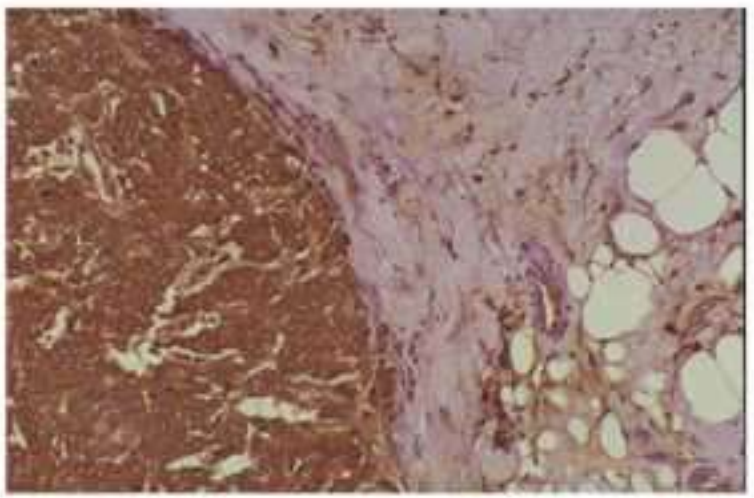
Estrogen receptor positivity correlates with a better prognosis because such positive neoplastic cells are better differentiated and more amenable to hormonal manipulation.

progesterone receptor (PR) positivity in a breast carcinoma



This is progesterone receptor (PR) positivity in a breast carcinoma. The usefulness of this determination is not as well established as for estrogen receptors. Carcinomas that are PR positive, but not ER positive, may have a worse prognosis

positive immunoperoxidase staining for cathepsin D

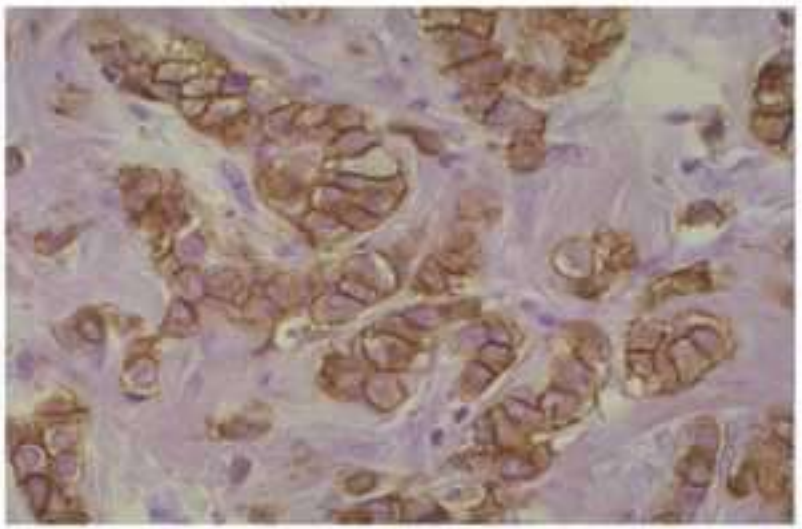


This is positive immunoperoxidase staining for cathepsin D (an acidic lysosomal protease) in a breast carcinoma.

Note the cytoplasmic staining of the neoplastic cells on the left, as well as staining in the stroma to the right.

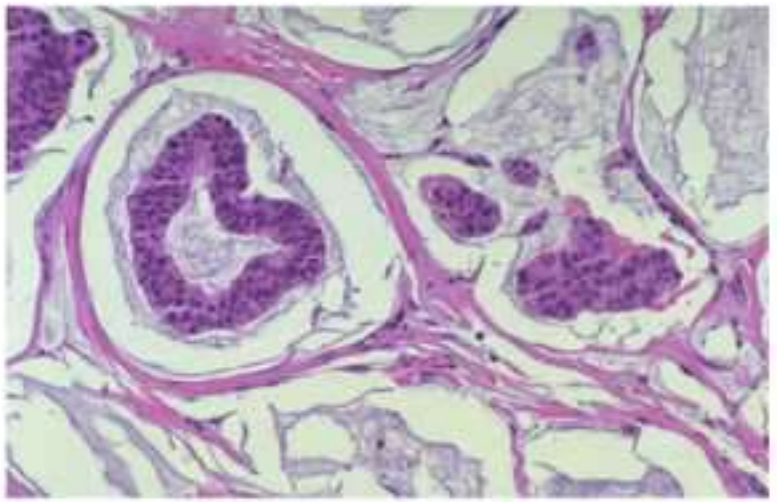
There is a correlation between cathepsin D positivity & presence of metastases (particular y lymph nodes). Cathepsin D staining is more likely in non-ductal c rcinomas.

positive immunoperoxidase staining for C-erb B-2 (HER2-neu)



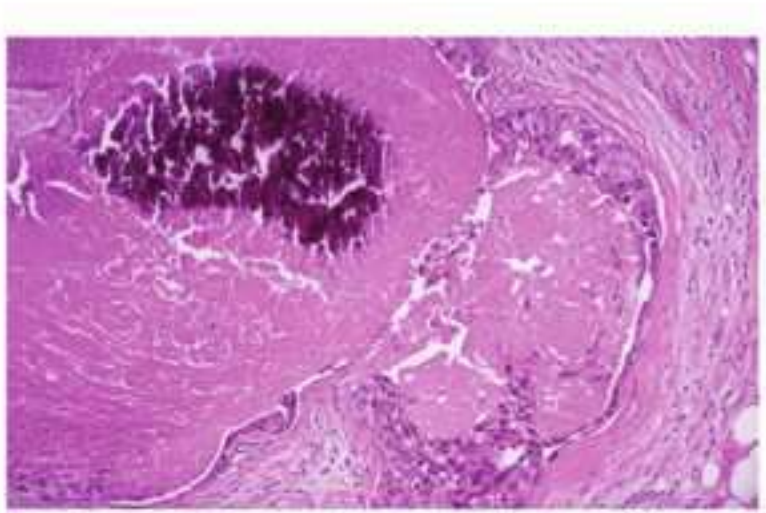
This is positive immunoperoxidase staining for C-erb B-2 (HER2-neu) in a breast carcinoma. Note the membranous staining of the neoplastic cells. There is a correlation between HER2 positivity and high nuclear grade and aneuploidy

colloid, or mucinous, carcinoma.



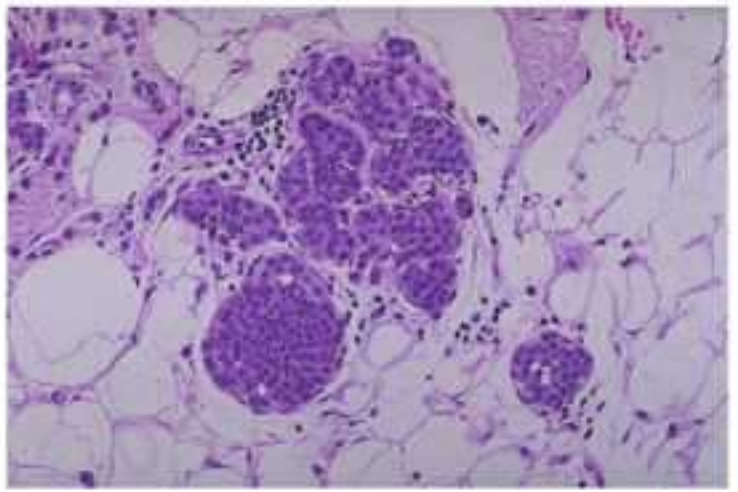
colloid, or mucinous, carcinoma. Note the abundant bluish mucin. The carcinoma cells appear to be floatin in the mucin

comedocarcinoma pattern of intraductal carcinoma,



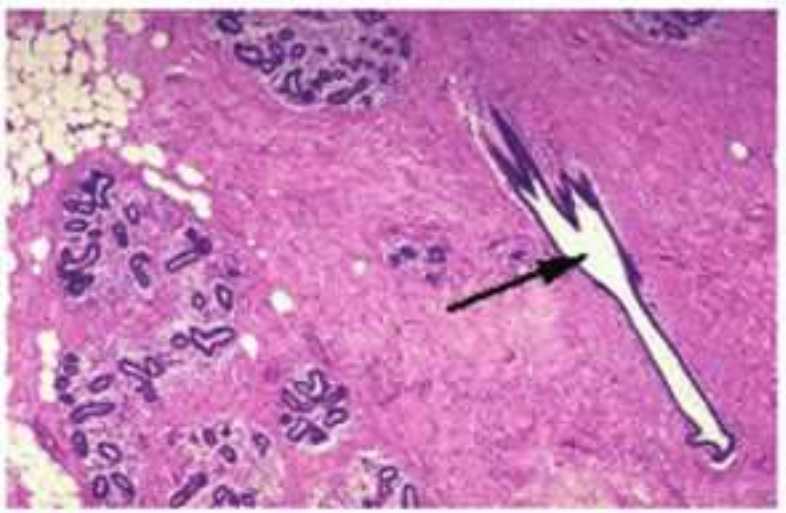
Comedocarcinoma pattern of intraductal carcinoma which is characterized by the presence of rapidly proliferating, high-grade malignant cell

Lobar carcinoma in situLCIS

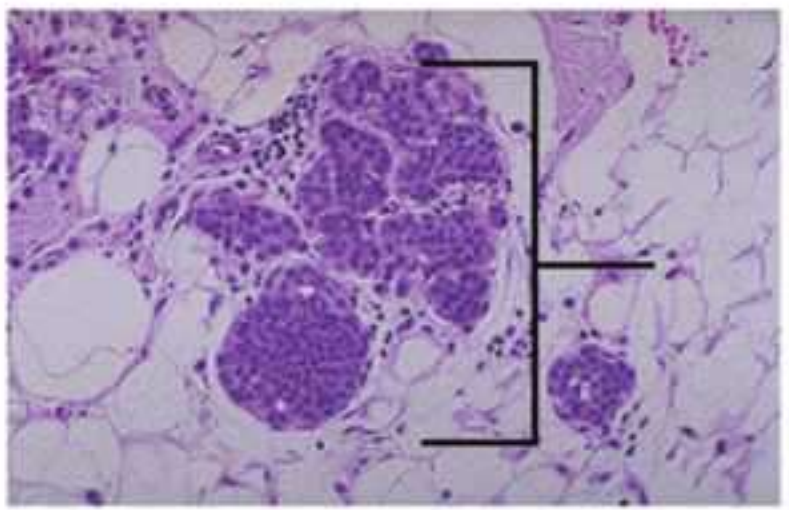


Lobar carcinoma in situLCIS consists of a neoplastic proliferation of cells in the terminal breast ducts and acini

Normal breast tissue



Lobar carcinoma

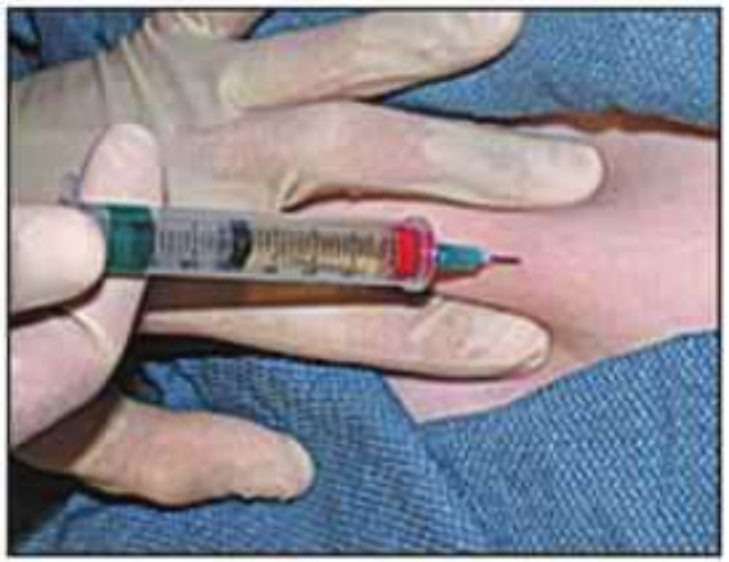


Key References

* Camplejohn RS, Ash CM, Gillett CE, et al. The prognostic significance of DNA flow cytometry in breast cancer: results from 881 patients treated in a single centre.
Br J Cancer. 1995;71:140-145.
* Cannon-Albright LA, Skolnick MH. The genetics of familial breast cancer.
Semin Oncol. 1996;23:1-5.
* Elston CW, Ellis IO. Pathological prognostic faxtors in breast cancer. I. The value of histological grade in breast cancer: experience from a large study with long-term follow-up.
Histopathology. 1991;19:403-410.
* Fisher B, Costantino J, Redmond C, et al. Lumpectomy compared with lumpectomy and radiation therapy for the treatment of intraductal breast cancer.
N Engl J Med. 1993;328:1581-1586.
* Frierson HF Jr. Grade and flow cytometric analysis of ploidy for infiltrating ductal carcinomas.
Hum Pathol. 1993;24:24-29.
* Hedley DW. DNS Cytometry Consensus Conference. DNA flow cytometry and breast cancer.
Breast Cancer Res Treat. 1993;28:51-53.
* Henson DE, Ries LA, Carriaga MT. Conditional survival of 56,268 patients with breast cancer.
Cancer. 1995;76:237-242.
* Hitchcock A, Hunt CM, Locker A, et al. A one year audit of fine needle aspiration cytology for the pre-operative diagnosis of breast disease.
Cytopathology. 1991;2:167-176.
* King SE, Schottenfeld D. The "epidemic" of breast cancer in the U.S.--determining the factors.
Oncology.1996;10:453-462, 464, 470-472.

* Lee-Feldstein A, Anton-Culver H, Feldstein PJ. Treatment differences and other prognostic factors realted to breast cancer survival.
JAMA. 1994;271:1163-1168.
* Leitch AM. Controversies in breast cancer screening.
Cancer. 1995;76(10 Suppl):2064-2069.
* Peto J, Easton DF, Matthews FE, Ford D, Swerdlow AJ. Cancer mortality in relatives of women with breast cancer.
Int J Cancer. 1996;65:275-283.
* Pichon MF, Broet P, Magdelenat H, et al. Prognostic value of steroid receptors after long-term follow-up of 2257 operable breast cancers.
Br J Cancer. 1996;73:1545-1551.
* Robbins P, Pinder S, deKlerk N, et al. Histological grading of breast carcinomas: a study of interobserver variation.
Hum Pathol. 1995;26:873-879.
* Steinberg JL, Trudeau ME, Ryder DE, et al. Combined fine-needle aspiration, physical examination and mammography in the diagnosis of palpable breast masses: teir relation to outcome for women with primary breast cancer.
Can J Surg. 1996;39:302-311.

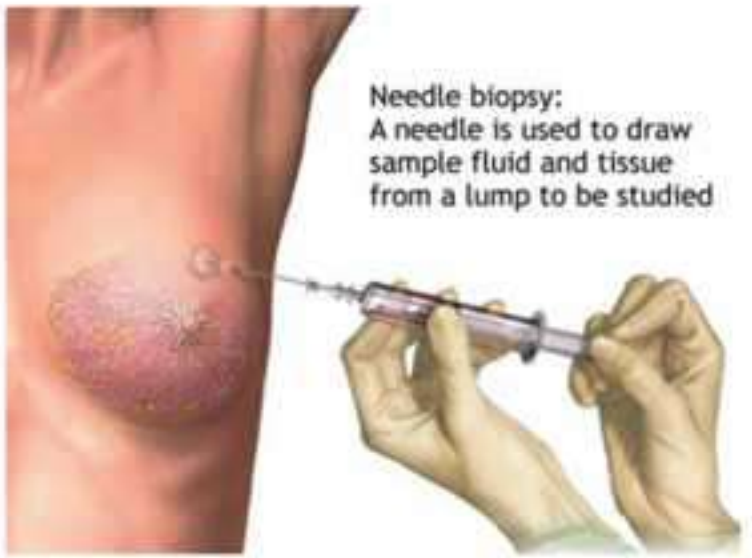
FINE NEDDLE ASPIRATION CYTOLOGY



In recent years, as the philosophy regarding the treatment for carcinoma of the breast is changing, a correct diagnosis by FNAC is essential, since it can be very meaningful in the management decisions .

(1) When FNAC diagnosis made on clear cut cytological evidence of malignancy , they are about 95% reliable.

(2) Some cytolog st advise multiple aspirates for secure and dequate cellular material. So (3-10) passes are advi able for avoiding sampling errors, specially in pleomorphic lesions



(3) Some current studies advise FNAC as the initial diagnostic procedure in the evaluation of breast masses.

Reccurence in Regional lymph nodes

The first manifestation of nodal recurrence is usually an asymptomatic mass in the axilla or in the supraclavicular fossa.

Some solitary sternal metastases may result from direct extension of involved internal mammary lymph nodes.

Nodal treatment failures may occur more than 5 years after primary treatment.

Only a minor ty of patients present with symptoms referable to egional treatment failur (eg, arm edema, neurologic impairment, or pain) n addition to lymphadenopathy.

Significant ain or other istressing symptoms during the patients' lifetimes ccures in 32% of patients with regional treatment failure .
Sixteen percen of patients with isolated axillary treatment failu e and 25% of patients wi h other nodal disease sites who did not have such symptoms on presentation developed them despite tr atment.

Prognosis after nodal tumor recurrence may be re ated to the site involved.

With isolated axillary failure 61% of the patie ts may live without disease for 45 months, comparing with 38% for patients w th other involved nodal sites.

Long-term su vival rates after disease recurrence in the supra lavicular lym h nodes after mastectomy are similar to those of p tients with isolated chest wall ecurrence in most series but some suggest a worse prognosis.

KEY REFERENCES;

* Recht A, Pierce SM, Abner A, et al. Regionalnodal failure after conservative surgery & radiotherapy for early-stage breast carcinoma. J Clin Oncol 1991;9:988.

* Fentim n IA, Lavelle MA, Caplan D, et al. The sig ificance of supraclavicular fossa node recurrence after radical mastectomy. Cancer 1986;57:908.

* Kiricuta IC, Will er J, Kölbl O, et al. The prognostic significance of he supraclavicular lymph node metastases in reast cancer patients. nt J Radiat Onc l Biol Phys 1993;28:387.

* Jackso SM. Carcinoma of the breast: the significance of supraclavicular lymph node metastases. Clin R diol 1966;17:107.

* Bonnerot V, Dao T, Campana F, et al. Evaluation o MR imaging for detecting recurrent tumor thin irradiated brachial plexus. (Abstract) Radiology 1993 189:151.

* Gateley CA, Mansel RE, Owen , et al. Treatment of the axilla in operable br ast cancer. (Abstract) Br Surg 1991;78:750.

* Fowble B, Solin LJ, Sc ultz DJ, et al. Frequency, sites of relapse, and outcome of regio- l node failures following conservative surgery & radiation for early breast cancer. Int J Radiat Oncol Biol Phys 1989;17:703.

* Dunphy FR, Spitzer G, Rossiter Fornoff JE, et al.Factors predicting long-term survival for metasta ic breast cancer patients treated with high- ose chemotherapy and bone marrow support. ncer 1994;73:21 7.

REDUCTION MAMMOPLASTY
Breast Lift

Treatment of macromastia involves a physician-directed weight-loss program for obese patients.

Reduction mammoplasty may be offered to the patient with macromastia after a thorough discussion of the risks andbenefits of surgery.

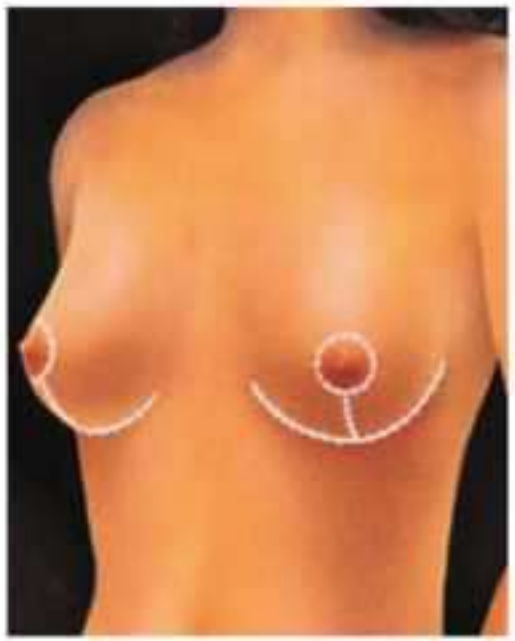
Most reduction techniques involve long scars that canbe difficult to conceal completely.

Lactation and nipple sensibility can beaffec ed by the procedure.

Other complications nclude hematoma, fat necrosis, nipple necrosis, & h pertrophic scar formation.

There are awide umber of reduction techniques employed y surgeons to reduce the size of the breast & reposi ion the nipple-areola complex.

The nipple and areola are carried on a dermal pedicle that may be basedsuperiorly, inferiorly, or medially



The central pedicle techniquemaintains the nipple areola complex at the apex of the breast mound .

Breast tissue is excised with relatively more removed from the inferior and lateral poles of the breast.

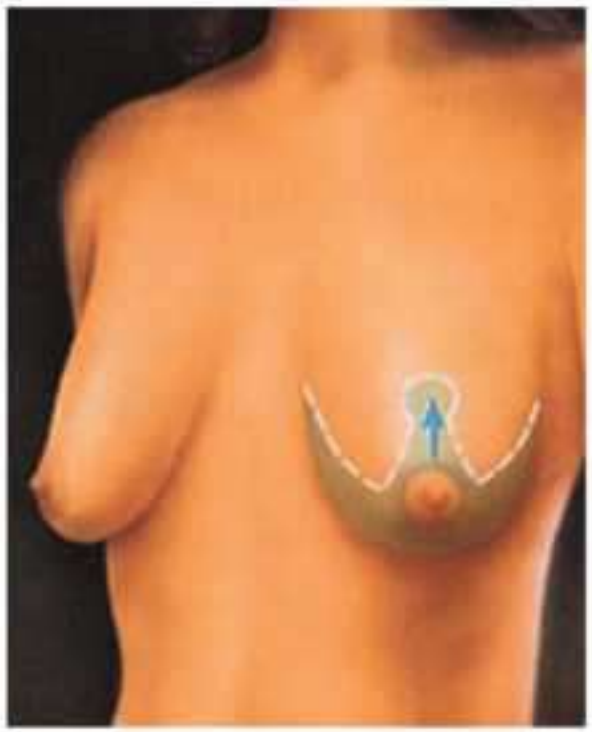
Excess breast skin is also excised and skin redraped around the new breast mound and nipple-ar olacomplex.

The blood supply to the breast is from br nches of the internal mammary arteries, intercostal e-rforators, lateral thoracic artery, and branches of

the thoracoacromial trunk.

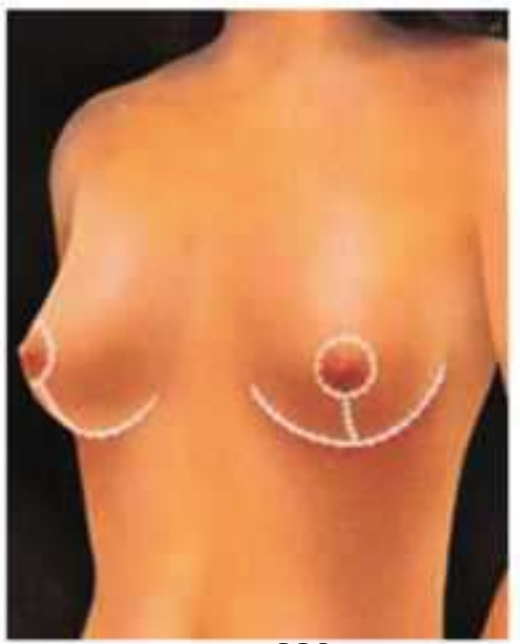
Any technique of breast reduction selected must preserve the blood supply to the breast parenchyma & nipple.

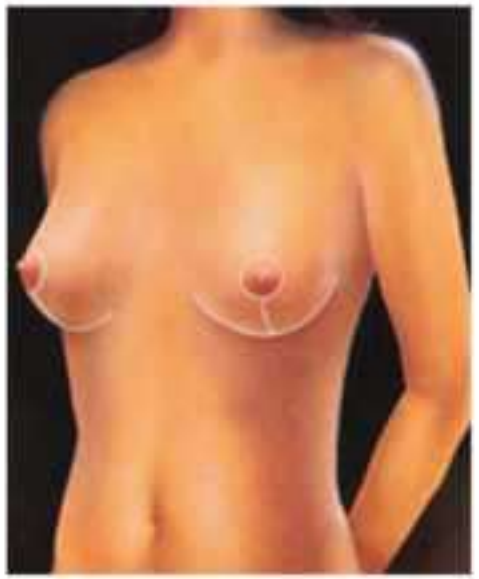
The central breast pedicle has the theoretical advantage of preserving all these arterial contributions



The patient with extremely large breasts will necessarily have a long pedicle from the chest wall to the nipple-areola complex.
This makes the blood supply to the nipple more tenuous & thus carries a higher risk of nipple necrosis.

In these patients it is safest to move the nipple as a free nipple graft.

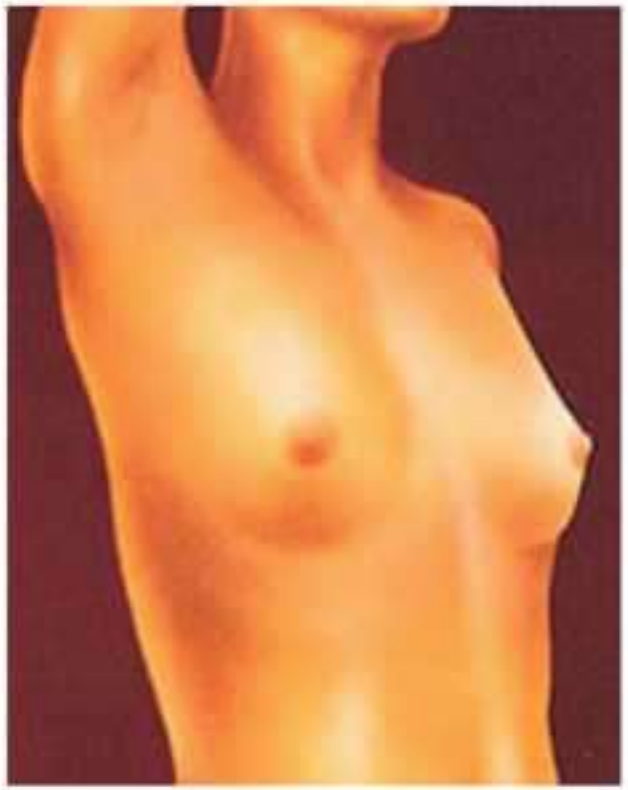




LOCAL EXAMPLE

Augmentation Mammoplasty
Silicone Implants

The debate about silicone implants is likely to continue until adequate scientific information can either prove or disprove an association between silicone and various systemic disorders



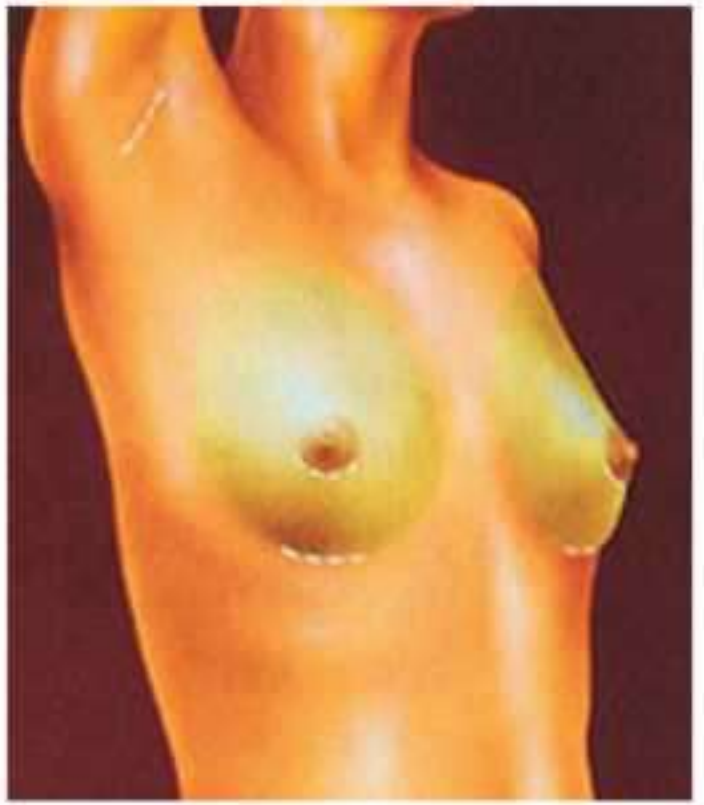
Many questions remain unanswered

`Wit the recognition that the multitude of women who have implants are simply concerned but that others feel strongly that their implant

medical problems, the answers to thes questions must be pursued. Given the highly controversial nd emotionally charged opinions surrounding this debate, clinicians should approach t ese patients by realizing that the objective ests

.that are needed are not yet available

Appropriate recommendations for therapy logically follows thorough clinical evaluation of these patients .



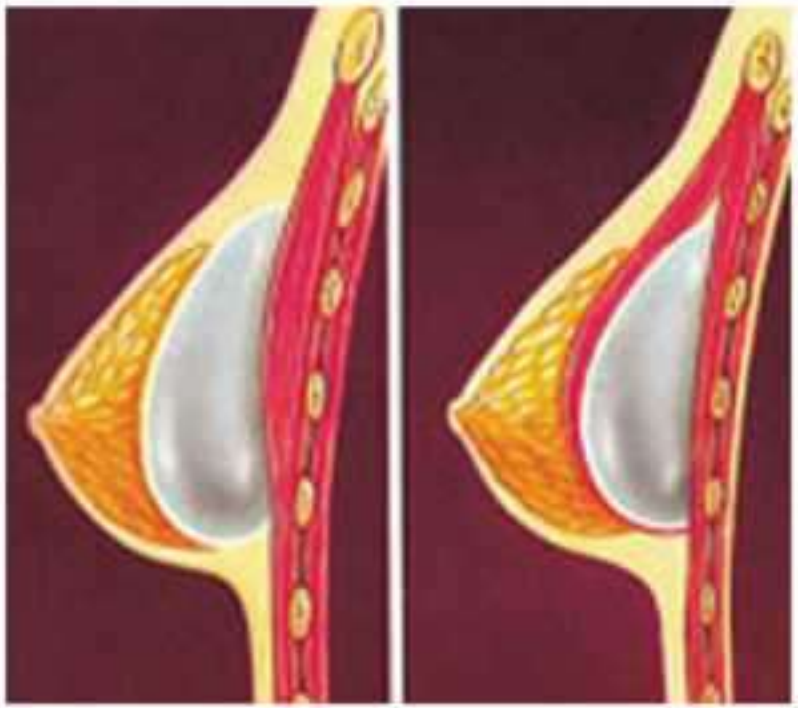
Silicone, once touted as the most biologically inert substance known to humans, has become the center of wides pread debate. Laboratory and clinical data accumulated during the past 20 to 30 years suggest that silicone and its related chemical compounds cause a local inflammatory .response, which can be severe

But the question remains of whether silicone an

Over the years silicone breast implants have evolved, and there have been substantial changes in their design and chemical composition.

The basic structure, however, remains the same and consists of a silicone elastomer shell filled with silicone gel.

The outer shell is, for themost part, a cross-linked polymer compounded with fumed silica SiO2).



The gel consists of approximately 10 silic-one oil and 90% polymerized gel.

Silicone breast implants contain a number of chem cal impurities (produced during the man-ufacturin process), including crystalline silica & other organic and inorganic com ounds.

As mentioned earlier, silica is used in the production of the elastomer shells, and numerous studies have shown that microscopic pieces of the shell can break off and become engulfed by macr-ophages, exposing body tissues to fumed silica.

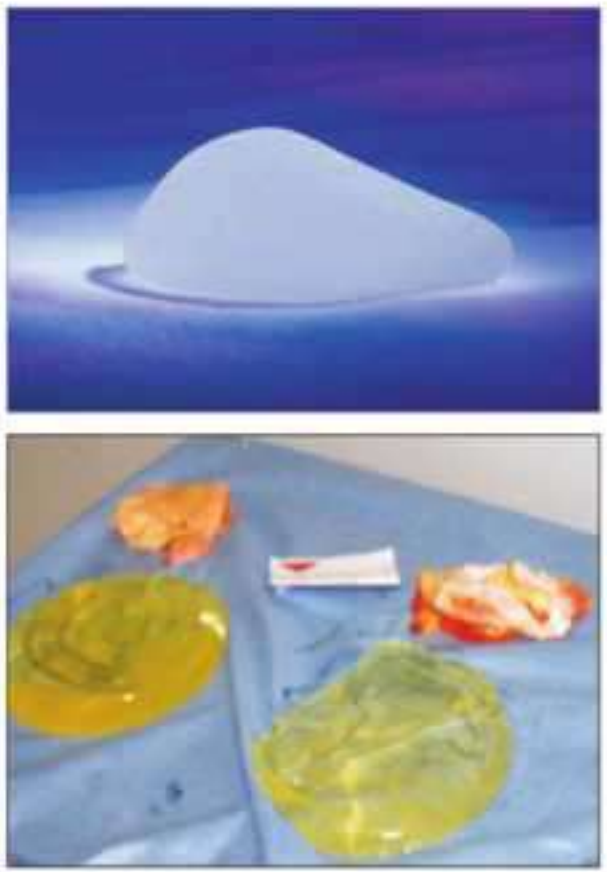
In addition, some authors have suggested that silicone gel may be converted to silica in sur-rounding tissues.

These findings may be important, because diseases occurring after exposure to silica, such as silicosis, represent a possible link between this form of silicone and immune diseas

Rupture of modern silicone implants occurs in about 4% to 6% of women with no symptoms. In contrast, another study reported that 90% .

of implants show evidence of severe leakage or rupture after 10 years.

In any event, the two accepted mechanisms by which silicone can escape from within the implant are overt breakage or rupture, and gel bleed, which occurs by seepage of silicone gel through the semipermeable outer membrane, the end result being free silicone particles in the surroundi g tissues.



Ruptured Silicone implant

EXAMPLE

Key References

* Fisher J. The silicone controversy when will science prevail
N Engl J Med 1992;326:1696.

* Peters W, Keystone E, Smith D -Factors affecting the rupture of silicone .gel breast implants
Ann Plast Surg 1994;32:449.

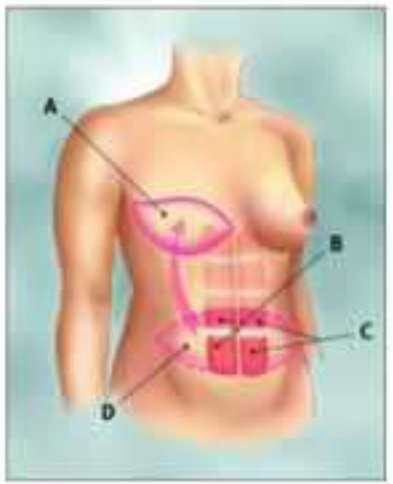
* Peters W. The mechanical propertie of .breast prostheses
Ann Pl st Surg 1981;6:179.

* de Ca ara JS, Kammer BA. Rupture and .aging of silicone gel breast implants
Pla t Reconstr Surg 1993 91:829.

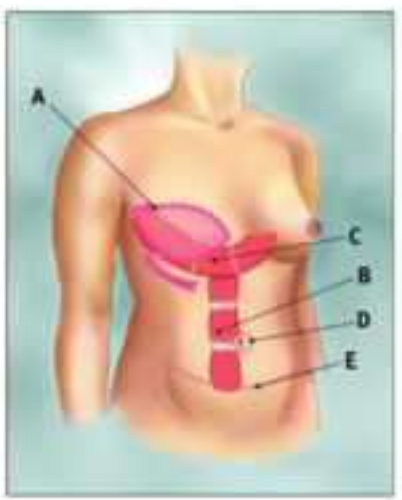
* Wells A, Daniels S, G nasekaran S, et al. Local increase in hyaluronic acid a d interleukin-2 in the capsul s surrounding silicone brea t implants. Ann Plast Surg 1994 33:1.

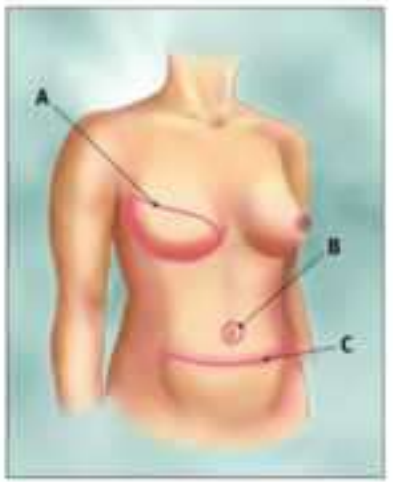
* Erguvan Dogan B, Yang WT.
Direct injection of paraffin into the breast: mammographic, sonographic, and MRI features of early complications.
AJR Am J Roentgenol. 2006 Mar;186(3):888.94
* Brinton LA, Lubin JH, Murray MC, Colton T, Hoover RN
Mortality rates among augmentation mammoplasty patients: an update.
Epidemiology. 2006 Mar;17(2):162.9.
* Parsa FD, Parsa AA, Hsu A
Subfascial periareolar augmentation mammaplasty.
Plast Reconstr Surg. 2006 Feb;117(2):681,2
* Romundstad L, Breivik H, Roald H, Skolleborg K, Haugen T, Narum J, Stubhaug A.
Methylprednisolone reduces pain, emesis, and fatigue after breast augmentation surgery: a single dose, randomized, parallel group study with methylprednisolone 125 mg, parecoxib 40 mg, and placebo.
Anesth Analg. 2006 Feb;102(2):418.25.
* Okwueze MI, Spear ME, Zwyghuizen AM, Braun SA, Ajmal N, Nanney LB, Hagan KF, Wolfort SF, Shack RB.
Effect of augmentation mammaplasty on breast sensation.
Plast Reconstr Surg. 2006 Jan;117(1):73.83
* Adams WP Jr, Rios JL, Smith SJ
Enhancing patient outcomes in aesthetic and reconstructive breast surgery using triple antibiotic breast irrigation: six year prospective clinical study.
Plast Reconstr Surg. 2006 Jan;117(1):30.6.
* Henriksen TF, Fryzek JP, Holmich LR, McLaughlin JK, Krag C, Karlsen R, Kjoller K, Olsen JH, Friis S
Reconstructive breast implantation after mastectomy for breast cancer: clinical outcomes in a nationwide prospective cohort study.
Arch Surg. 2005 Dec;140(12):1152.9

RECONSTRUCTION OF THE BREAST AFTER MASTECTOMY

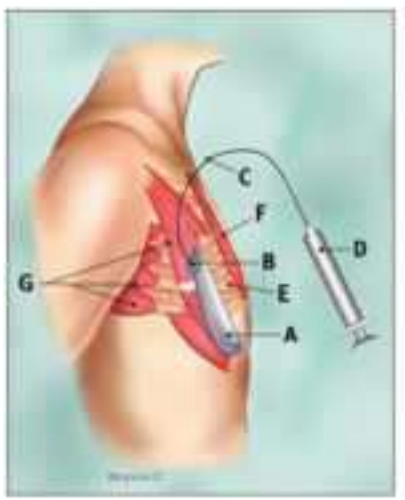


Usually Ipsilateral rectus abdominus muscle used for reconstruction of the site of the excised breast.



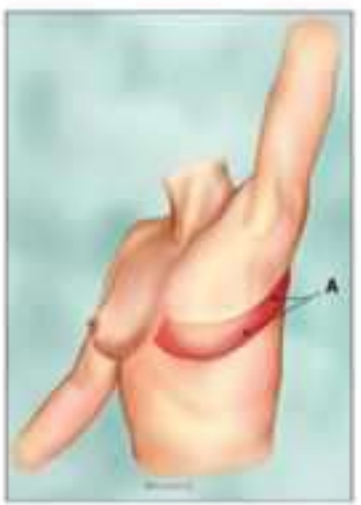


On need a Silicon Prothesis could be put over the transposisioned rectus to give near normal breast countor.



Latimus Dorsi muscle used in place of rectus muscle for reconstruction of the breast.

Silicon prothesis could be placed above it for better breast looking.



Following pictures are the end result of the breast reconstruction, prosthetic nipple and areola also could be used to give better form.

After nice,precise and successful reconstruction of the breast ; there is possibility of recurrence of the cancer.

This recurrence may need reexcision of the remaining breast tissue and overlying skin.

When Silicon implant used in the reconstruction , it will interfere with the procedure of the mammography and will affects the results of mammography in 2 ways;

1. **Silicon is not 100% transparent ,like water, i has 1/19th of the transparency of the water, o small recurrences and microcalcifications will not appear in the mammograms.**
2. **Silicon implants may produces an artifact , which may mimics or misinterpreted as sighs of recurrent cancer.**

either way it cause confusion andrevis on of the mammography , even unnecessory surger es.

So to avoid thes misleading points , specially in the high risk groups for recurrence , it is better to use external breast prosthesis over the skin .

Which is weared as a breast holder ang give the lady good form of the chest, some satisfaction and stronger insight.

Different types of breast & breasts prosthesis

Key References;

* Noone RB, Frazier TG, Noone GC, et al. Recurrence of breast carcinoma following immediate reconstruction: a 13-year review. Plast Reconstr Surg 1994;93:96.

* Berger K, Bostwick J. A woman's decision: breast care, treatment, and reconstruction, ed 2. St Louis, Quality Medical, 1994.

* Bostwick J. Breast reconstruction after mastectomy: an update. In: Wise L, Jo nson H Jr, eds. Breast cancer: controversies in management. New York, Futura, 1994:259.

* Park AJ, Black KRJ, Watson A. Sili one gel breast implants, breast cancer and onnective tissue disorders. Br J Surg 1993;80:109 .

* Schusterman MA, Kroll SS, Inc dence of autoimmune disease in patients afte breast reconstruction with silicone el implants versus autogenous tissue: a preli inary report. Ann Plast Surg 1993;31:1.

* Trabulsy PP, Anthony JP, Mathes SJ. Changing tren s in postmastectomy breast reconstruction: a 13-year experience. Plast Recons r Surg 1994;93:1418.

* SANDHYA PRUTHI, MDDetec ion and Evaluation of a Palpable Breast Mass Mayo Clin Proc, June 2001, Vol 76 .644.

* Reece GP, et al.Surgical removal of a p imary tumor in patients with metastatic can er. N Engl J Med.December 6, 2001, Vol. 345, No. 23.415.

* Munhoz AM, Montag E, Arruda EG, Aldrighi C, Gemperli R, Aldrighi JM, Ferreira MC. Critical analysis of reduction mammaplasty techniques in combination with conservative breast surgery for early breast cancer treatment. Plast Reconstr Surg. 2006 Apr;117(4):1091 103

* Bellioni M, delli Santi G, Loreti A, La Pinta M.* Shortening deepithelialization time in reduction mammaplasty: the braces technique. last Reconstr Surg. 2006 Mar;117(3):1065 6.

* Hage JJ, Karim RB Risk of breast cance among reduction mamm- aplasty patients and the s rategies used by plastic surgeons to detect uch cancer. Plast Reconstr Surg. 2006 Mar;117(3):727,35

* Lahiri A, Duff CG, Brown TL, Griffit s RW. Anthropometric measurements and their value in predicting complications following r duction mammaplasty and abdominoplasty. Ann last Surg. 2006 Mar;56(3):248 50.

* Gunde lioglu O, Altundag O, Altundag K, Bilen BT, Borman H Lactation, galactorrhea, a d timing of reduction mammaplasty. Plast Reconstr Surg. 2006 Feb;117(2):701

* Spector JA, Kleinerman R, Culliford AT 4th, Karp NS. The vertical reduction mammaplasty: a prospective analysis of patient outcomes. Plast Reconstr Surg. 2006 Feb;117(2):374,81

* O'Blenes CA, Delbridge CL, Miller J, Pantelis A, Morris SF Prospective s udy of outcomes after reduction mammaplasty: long term follow up. Plast Reconstr Surg. 2006 Fe ;117(2):351 8.

* Hefter W, Elvenes OP Role of the size of the pedicle in reduction ammaplasty. Scand J Plast Reconstr urg Hand Surg. 2006; 40(1):13 8.

ADJUVANT THERAPY

Breast cancer is a saystemic disease from start, as since the 27th division or douplication time there is successful implanted micrometastasis in different tissues of the body.

So treatment must be systemic from the start, Surgery as difinite or palliative will help in removal or debulking of the cancer locoregionally, but the disease needs other modality of treatment which called adjuvant treatment or therapy.

Treatment for early-stage breast cancer will include surgery , radiation treatments to destroyany remaining cancer cells.

In either case chemotherapy or hormone medication, such as
tamoxifen, to decrease the chance of the cancer recurrence might be recommended

* early cancer Stage I ; Surgery and chemo- or/ & hormonal therapy.
* early cancer stage II,III,IV ; Surgery and axillay lymph node dissection with locoregional radiotherapy and chemo- or/ & hormonal therapy.
* Locally advanced cancer & inflammatory cancer ; preoperative palliative
chemotherapy ,Surgery and posoperative radio-, chemo-, or/ anh hormonal therapy.

CHEMOTHERAPY

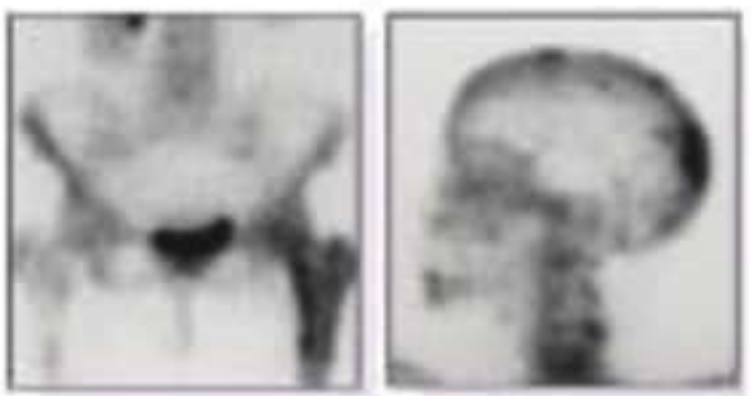
Management of the cancer patient is a multidisciplinary effort requiring collaboration among surgical oncologists, radiation oncologists, medical oncologists, reconstructive surgeons, & other oncologist specialists.

Evidence suggests that combinations of surgery, radiation therapy, chemotherapy, hormone therapy, & immunotherapy significantly improve cur rates above those achieved with any single thera eutic modality.

Multimodal therapy, for ex mple, is standard for most breast and coloncance patients

The pfimal combinafion and sequence of treafments s determined by the pafients physical, emofional, psychological, and rehabilita ive needs.

The pafients general condifon and the presence of any coexisfing disease must be considered.



Bone scan showing metastase in skull & pelvis

Chemotherapy can eliminate cancer cells at sites great distances from the original cancer.

As a result, chemotherapy is considered a systemic treatment.

More than half of all people diagnosed with cancer receive chemotherapy. For millions of people, chemotherapy helps treat their cancer effectively, enabling them to enjoy full, productive live .

A chemotherapy regimen Chemotherapy s designed to kill cancer cells. Chemotherapy can be administered throu h a vein, injected into a body cavity, or delivered rally in the form of a pill, depending on which d ug is used.

Chemotherapy works by destroying cancer c lls; unfortunately, it cannot tell the differenc between a cancer cell and some healthy cells.

So chemotherapy eliminates not only the fast-growing cancer cells bu also other fast-growing cells in your body, inc uding, hair and blood cells.

Some cancer cells grow slowly while others grow rapidly.

As a result, different ypes of chemotherapy drugs target the growth patte ns of specific types o cancer cells.

Each drug has a different wa of working and is effective at a specific time i the life cycle of the cell it targets.

Balance potential benefit against the risks of treatment.

Some risks o cancer treatments may include

* time away fro family and friends
* uncomfortable side effects

* or long-term complications.
* Cancer treatment may be inconvenient
* Cancer treatment may be prolonged
*Cancer treatment may be unavailable close to home.

Studies show that for certain types of cancer, chemotherapy produces the best long-term results when patients receive the full dose n time, every time.

Chemotherap Cycles

Chemotherapy is typicall given in cycles, with rest periods between the c cles.

A cycle can last 1 or more d ys.

A cycle is typically given every 1 2, 3, or 4 weeks.

Each course of chemotherapy is different, but generally consists of four to six cycl s.

It may take a relatively short period of ti e to receive some chemotherapy drugs, while othe s may take hours.

It all depe ds on the treatment regimen.

Chemothe apy drugs are given as pills or injections

Chemotherapy is usually given over thre to six months in ne-, two- or three-week cycles..

Depending on he kind of drugs, chemotherapy may be done at home, in doctor's office, in an outpatient clinic or at a hospita .

Researchers are investigating th effectiveness of condensing the treatment sched le, a method calle dose-dense therapy. In this situation, treatments ar given every two weeks instead of every three we ks.
This practice might improve survival n women whose breast cancer has spread to the lymph nodes.

there are some commonly used chemotherapy drugs and drug combinations in the treatment of breast cancer

* Cyclophosphamide (Cytoxan, Neosar) interferes with the growth of cancer cells by blocking he co ying of DNA.
Common side effects include
Nau ea
Vomiting
Diarrhea
Loss of appet te
Hair loss
Lowered blood counts
Mouth ores
Amenorrhea.

* Docetaxel (Taxotere) is f om the group of drugs called taxanes. Taxanes d srupt cell di sion by interfering with cellular division.
Common side e fects include
Nausea
Vomiting
Diarrh a
Loss of appetite
Hair thinning or loss
Lowered blood counts
Rash
Numbne s in h nds or feet
Nail changes.

* Doxorubicin (Adriamycin PFS, Adriamycin RDF) belongs to the general group of medicines known as anthracyclines.

Common side effects include
- Nausea
- Vomiting
- Loss of appetite
- Hair loss
- Lowered blood counts
- Darkening of nail beds & skin reases on hands.

* Epirubicin (Ellence) also elongs to he general roup of medicines kn wn as anthrac - clines.

Common side effects include
- Naus a
- Vomiting
- Diarrhea
- Hair loss
- Lowered blood counts
- Sores in mouth
- Amenorrhea
- Fatigue.

* Fluorouracil (Adrucil), also called 5 U, is an antimetabolite that interferes with the growth of cancer cells by blocking enzymes nec - ssary for DNA synthesis

Common side effect include
- Nausea
- omiting
- Diarrhea
- Hair thinning
- Lowered blood counts
- Mouth sores
- Skin darkening
- Brittle nails
- Photosensitivity.

* Methotr xate (Folex, Mexate) als belongs to th group of medicine known as antimeta o- lites.
It works by l cking an foliate reductase, which is required by ce ls to live.

Common side effects include
- Nausea
- Vo iting
- Diarrhea
- L ss of appetite
- Mouth sores
- Increased risk of unburn and skin change in areas treated with radiation.

* Paclita el (Onxol, Taxol), like ocetaxel, also comes from the gro p of drugs called axanes.

Common side e fects include
- Nausea
- Vomiting
- Mild diar hea
- Hair loss
- Lowered blood counts
- Muscle aches
- Numbness or tingl ng in fingers or to s
- Mild mouth inflam a ion
- Fatigue

Combination therapy

Giving two or more chemotherapy drugs at once may decrease the chance of the cancer recurrence and help women live longer.

Drug combinations often are abbreviated using the first letter of each drug.

Combinations used frequently in adjuvant reatment of breast cancer are:

AC — oxorubicin (A is for Adriamycin, a brand na e) and cyclophosphamide.

AC + paclitaxel — doxorubicin (Adriamycin), cyclop osphamide and paclitaxel.

CAF — cyclophosphamide, doxorubicin Adriamycin) and fluorouracil

CEF — cyc ophosphamide, epirubicin and fluorouracil

CMF — cyclophosphamide, metho rex- ate and fluorouracil

TAC — docet xel (Taxotere), doxorubicin (Adria ycin) and cyclophosphamide

TC — paclitaxel (Taxol) and cyclophosp hamide

A newly defined adjuvant therapy option for ladies with HER-2- eu breast cancer is chemoth- rapy combined with trastuzumab (Herceptin) — a d ug that's used in the treatment of advanced (metastatic) breast cancer.

Researchers in 2 large clinical trials found that women with HER-2-neu breast cancer who used this combination of chemotherapy & targe ted therapy significantly decreased their risk of breast cancer recurrence when compared with women who underwent chemotherapy alone.

Herceptin (chemical name: trastuzumab) is a very effective treatment against HER2-positive breast cancer in women with stage II, III, and IV disease.

It is given intravenously into t e bloodstream once every one to three weeks. Her eptin is called a targeted therapy because i targets breast cancers that make too uch of the HER2/neu gene or HER2 protein. These ca cers are called HER2-positive.

Herceptin is also called an immune treatme t because it is antibody that blocks the HER2 r ceptors in cancer cells, helps stop the gro th of HER2-positive cancer cells.

About one out of every four breast cancers is ER2-positive. HER2-positive breast cancers tend o be more aggressive than HER2-negative breast cancers.

Herceptin is only given to women ith HER2-positive breast cancer.

It ca :

- shrink down metastases.
- help s rink down a medium- to large-sized canc r in the breast before surgery (Immunologial debul ing).
- reduce the risk of cancer recurrence.

Many studies found that women taking Herceptin very three weeks hada 46% reduction in recur ence compared to women who did not get any Herceptin.

HORMONAL THERAPY

Hormonal (anti-estrogen) therapy works against hormone-receptor-positive breast cancer.

Hormonal therapy is a very effective treatm- ent aga breast cancer that is hormone-receptor-

Sometimes called "antiestrogen therapy," hormon l therapy blocks the ability of the hormone estrogen o turn on and stimulate the growth of breast cance cells.

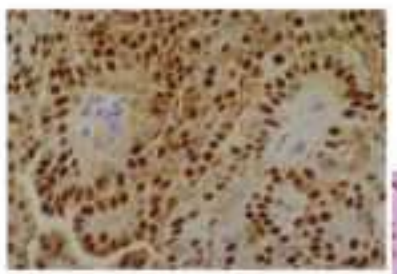
For years, tamoxifen was the horm nal medic- ine of choice for all women with hormon -receptor -positi reast cancer.

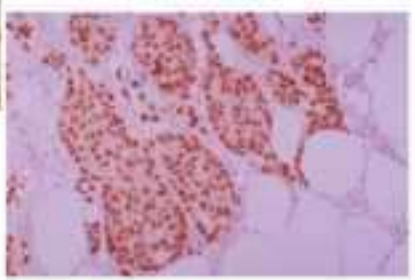
But in 2005, the results of sever l major worldwide clinical trials showed that ar matase inhibitors (Arimidex [chemical name: anastroz le],

Aromasin [chemical name: exemestane], and Femara [chemical name: letrozole]) worked bet er than tamoxifen in post-menopausal women with ho e-receptive-positive breast cancer.

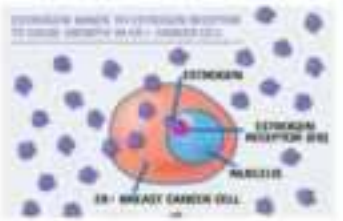
Aro atase inhibitors are now considered the standard of care for postmenopausal women with hormone-recept r-positive breast cancer.

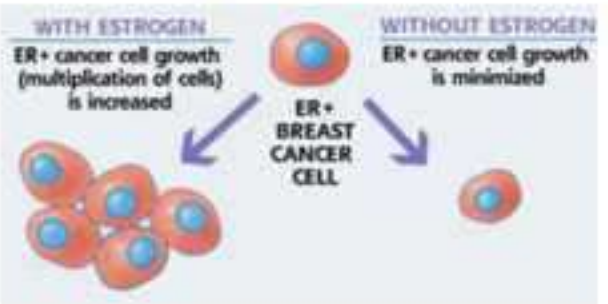
Tamoxifen remain the hormonal treatment of choice for premenopaus l women.

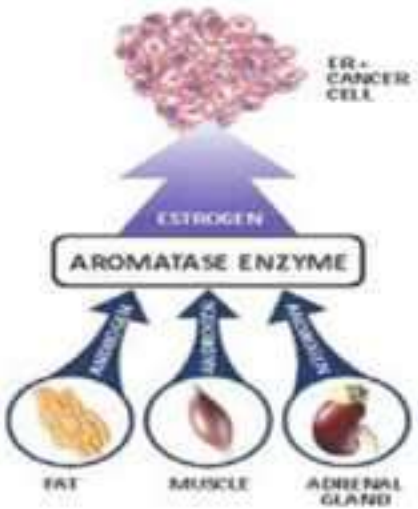




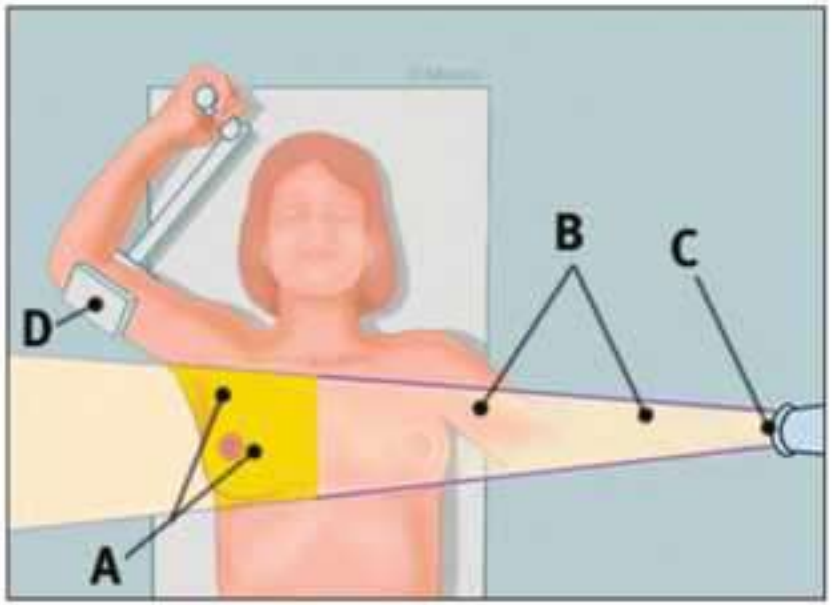
Positive hormone receptors







RADIOTHERAPY



The patient in position for radiation treatment, from the front. Middle radiation beam is shown.
A Bright yellow: breast being treated
B Light yellow: beam in air, not touching her
C Opening of the linear accelerator
D Arm holder supports her right arm

Light is a form of energy that we can see.

Radiation behaves much like light, but has much more energy, and is invisibleto the human eye.

In radiation therapy, high-energy beams of radiation are focused on the breast from which cancer was removed.

Overtime, this focused radiation damages cells that are in the path of its beam—normal cells as w ll as cancer cells.

Cancer cells are very b sy growing and making new cells two activities tha are very vulnerable to radiation damage.

And because cancer cells are less well organized than healthy cells, they are less able to repair the damage and recover.

So cancer cells are more easily destroyed by radiation, while healthy, normal cells repair themselves andsurvive.

There are two ways to give radiation therapy:

xternal beam radiation

External beam radi tion is the standard type of radia ion.

The customary schedule for rad ation treatments is every weekday for five to six weeks.

So etimes a supplemental dose, called a "boost," i recommended at the end.

he boost usually consists of another five ra iation treatments.

Each radiation t eatment is painless and kes just a few minutes.

In many treatment centers, the patient an set up an appointment for the same time each ay so that the treatment becomes pa t of daily routine.

Radiation side effects

Radiation is a cumulative process, a d its side effects ten o become more of an issue as time pa sses.

Mild to moderate fatigue is the most comm n complaint. It's a good idea to plan for this possibility so that the patient c n rest whenever she feel the need.

Other side effects include skin irritation, such as itchiness, redness, shininess, soreness, peeling, blistering, swelling, and decreased or increased sensation.

They go away sometime after treatment ends.

In rare circumstances you might experience more serious problems such as swelling in the arm, tender ribs or inflamed lung tissue.

The risk of injury to the heart from the radiation is much less common now than in the past due to improved techniques that spare the heart tissue.

A small long-term risk of secondary cance s from radiation exposure does exist.

Some changes to the breast may be permane t after radiation. These include changes in skin olor, feelings of heaviness in the breast, ch nges in the texture of the breast and even siz changes.

The radiation oncologist can maximize the amount of radiation delivered to the breast area and minimize radiation received by other parts of the body, to pretect the skin and other viscera from unwanted damage.

Cobalt 60 ,external radiation

linear accelerator , external radiation

Internal radiation

Internal radiation therapy, known as partial breast irradiation or brachytherapy, requires minor surgery to implant thin tubes into the breast through which radioactive material is delivered solely to the tumor site not to the entire breast.

Partial breast irradiation can be done at the time of your breast surgery or in a separate outpatient procedure.

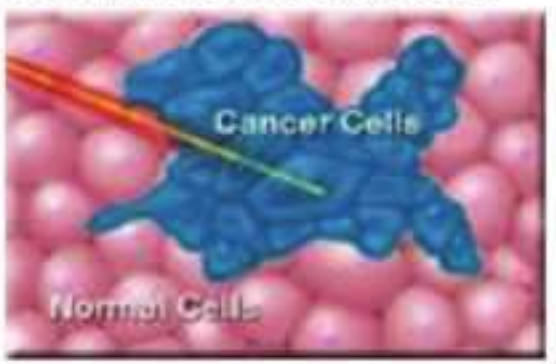
After the tubes are implanted, generally she receives treatment twice a day for approximately a week.

During the treatments a radioactive source -generally seeds or pellets - is placed in the tubes for a short period of time.

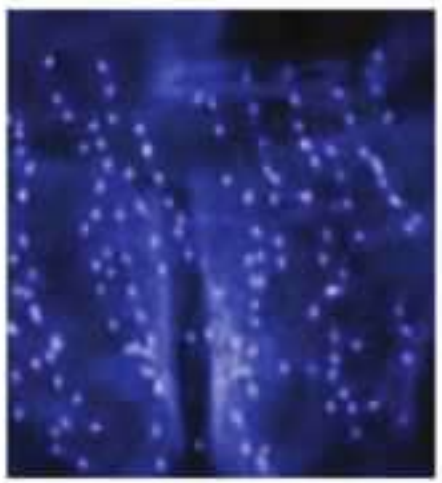
Occasionally the radioactive material is left in place for several days in a row, and the treatment is done on an inpatient basis. After the radiation treatments are complete, the tubes are removed from the breast in a relatively painless procedure.

Partial breast irradiation is experimental and much less common than standard radiation.

Further study is being conducted to determine if partial breast irradiation alone can be as effective as standard radiation therapy.



X- ray Generator



Radiogram showing
Pieces of inserted metal

Key References

* Al-Hajj A, O'Regan R.
  Selection of Optimal Adjuvant Endocrine Therapy for Early-stage Breast Cancer.
  Curr Treat Options Oncol 2006; 7(2): 153-165
* Ben-David MA, Kleer CG, Paramagul C, et al.
  Is lobular carcinoma in situ as a component of breast carcinoma a risk factor for local failure after breast-conser ing therapy? Results of a matched pair a alysis.
  Cancer 2006; 106(1): 28-34
* O shaughnessy K, Fine N.
  Issues Related to Ch ice of Breast Reconstruction in Early-s age Breast Cancer.
  Curr Treat Options Oncol 2 06; 7(2): 129-139
* Mary C Gainford, Geor e Dranitsaris,
  Recent developments in isphosphonates for patients with meta tatic breast cancer
  BMJ, Apr 2005; 330: 769 – 773
* Scott S. Reuben, MD, Grace Makari-Jud on,
  Evaluation of Efficacy of the Perioperati e Administration of Venlafaxine XR in the Prevention f Postmastectomy Pain Syndrome
  Jou nal of Pain and Symptom Management 1 3Vol. 27 No. 2 February 2004
* Deborah Josefson
  High dose chemotherapy for breast cancer queried
  BMJ, Aug 1998; 317 490
* Jacqui Wise
  Radiotherapy plus ch motherapy is best for breast cancer
  BMJ, Oct 1997; 315: 899 – 904

* Janice Hopkins Tanne
Older women less likely to receive chemo-
therapy for breast cancer
BMJ, Jan 2003; 326: 184
* Susan Mayor
Chemotherapy and hormonal treatments
improve the 15 year survival rate for breast
cancer
BMJ, Ma 2005; 330: 1167
* Michael Dixon
Surgery nd radiotherapy for early bre st
cancer
BMJ, Dec 995; 311: 151 – 1516
* Ian H Kunkler and Adrian N Harn tt
Cardiovascular mor ality after radiotherapy for
breast cance
BMJ, May 2003; 326: 983
Margaret Daly, Elizabeth J Junor, and Ad ian N
Late effects after radiotherap for breast cancer
BMJ, Mar 1995; 310: 669
* acqui Wise
Radiotherapy plus hemotherapy is best for
breast cancer
BMJ, Oct 1997; 315: 899 – 90
* Margaret F Spittle
B achial plexus neuropathy after radiotherapy
for br ast cancer
BMJ, Dec 1995; 311: 1516 – 1517
* Michael Twitchen
Adjuvant radiotherapy is advisable for small
invasive breast cancers
BMJ, Jun 1998; 316: 1746

RECURRENCE

OF BREAST MASS

Young lady (23y) ,presented with small (2cm) in diameter, spherical ,firm, freely mobile mass in left UIQ , which was becoming painful & tender in menses.The mass excissed & send for histopathological examination, reaviling (Fibroadenoma).

Reported after 3 years with this large, firm , freely mobile mass which enlarging the breast with changing the direction of the nipple, still ther is no tethering, no nipple discharge, no axillary or infraclavicular lymphadenopathy. Excised completely with a rim of 1 cm of normal tissue and sent for histopathological examination ,which revealed (well capsulated Fibroadenoma).

What doyou thik isit *recurrent fibroadenoma* or *Phyllodes Tumor ?*

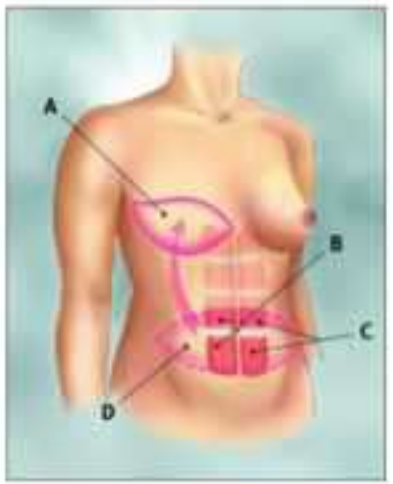
While fibroadenoma may evolve into phyllodes tumors, this is poorly documented.

No reliable histopathologic measures exist to differentiate the juvenilefibroadenoma from the benign phyllodes tumor.

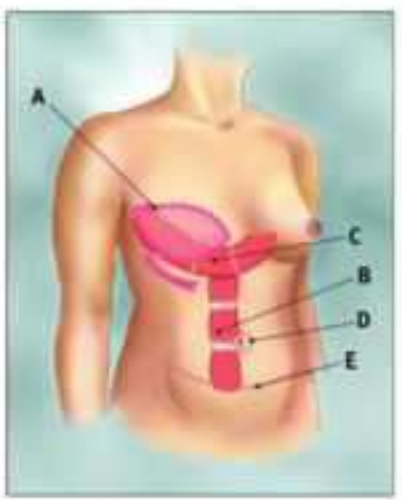
Histologically, phyllodes tumor may be indistinguishable from the largefibroadenoma.

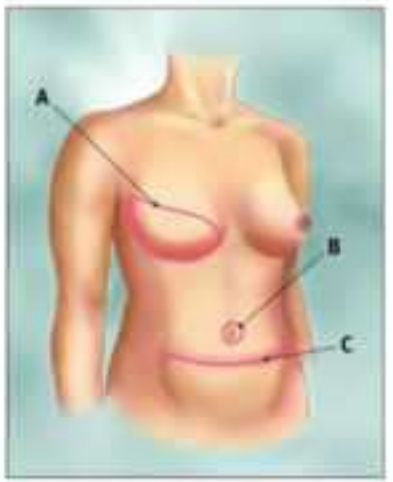
Borderline lesions are less likely to assume true malignant potential but have greater potential to recur locally than the usual phyllodes tumor. *(Schwartz Principles of surgery edi p)*

RECONSTRUCTION OF THE BREAST AFTER MASTECTOMY

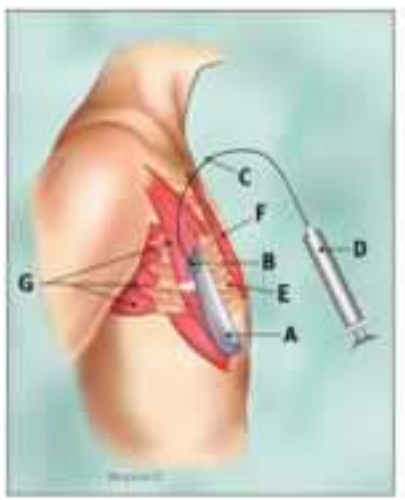


Usually Ipsilateral rectus abdominus muscle used for reconstruction of the site of the excised breast.



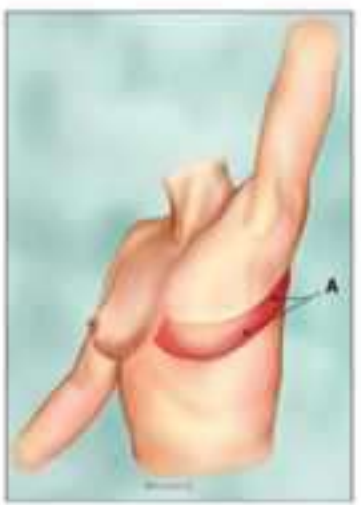


On need a Silicon Prothesis could be put over the transposisioned rectus to give near normal breast countor.



Latimus Dorsi muscle used in place of rectus muscle for reconstruction of the breast.

Silicon prothesis could be placed above it for better breast looking.



Following pictures are the end result of the breast reconstruction, prosthetic nipple and areola also could be used to give better form.

After nice,precise and successful reconstruction of the breast ; there is possibility of recurrence of the cancer.

This recurrence may need reexcision of the remaining breast tissue and overlying skin.

When Silicon implant used in the reconstruction , it will interfere with the procedure of the mammography and will affects the results of mammography in 2 ways;

1. **Silicon is not 100% transparent ,like water, i has 1/19th of the transparency of the water, o small recurrences and microcalcifications will not appear in the mammograms.**
2. **Silicon implants may produces an artifact , which may mimics or misinterpreted as sighs of recurrent cancer.**

either way it cause confusion andrevis on of the mammography , even unnecessory surger es.

So to avoid thes misleading points , specially in the high risk groups for recurrence , it is better to use external breast prosthesis over the skin .

Which is weared as a breast holder ang give the lady good form of the chest, some satisfaction and stronger insight.

Different types of breast & breasts prosthesis

Key References;

* Noone RB, Frazier TG, Noone GC, et al. Recurrence of breast carcinoma following immediate reconstruction: a 13-year review. Plast Reconstr Surg 1994;93:96.

* Berger K, Bostwick J. A woman's decision: breast care, treatment, and reconstruction, ed 2. St Louis, Quality Medical, 1994.

* Bostwick J. Breast reconstruction after mastectomy: an update. In: Wise L, Jo nson H Jr, eds. Breast cancer: controversies in management. New York, Futura, 1994:259.

* Park AJ, Black KRJ, Watson A. Sili one gel breast implants, breast cancer and onnective tissue disorders. Br J Surg 1993;80:109 .

* Schusterman MA, Kroll SS, Inc dence of autoimmune disease in patients afte breast reconstruction with silicone el implants versus autogenous tissue: a preli inary report. Ann Plast Surg 1993;31:1.

* Trabulsy PP, Anthony JP, Mathes SJ. Changing tren s in postmastectomy breast reconstruction: a 13-year experience. Plast Recons r Surg 1994;93:1418.

* SANDHYA PRUTHI, MDDetec ion and Evaluation of a Palpable Breast Mass Mayo Clin Proc, June 2001, Vol 76 .644.

* Reece GP, et al.Surgical removal of a p imary tumor in patients with metastatic can er. N Engl J Med.December 6, 2001, Vol. 345, No. 23.415.

* Munhoz AM, Montag E, Arruda EG, Aldrighi C, Gemperli R, Aldrighi JM, Ferreira MC. Critical analysis of reduction mammaplasty techniques in combination with conservative breast surgery for early breast cancer treatment. Plast Reconstr Surg. 2006 Apr;117(4):1091 103

* Bellioni M, delli Santi G, Loreti A, La Pinta M.* Shortening deepithelialization time in reduction mammaplasty: the braces technique. last Reconstr Surg. 2006 Mar;117(3):1065 6.

* Hage JJ, Karim RB Risk of breast cance among reduction mamm- aplasty patients and the s rategies used by plastic surgeons to detect uch cancer. Plast Reconstr Surg. 2006 Mar;117(3):727,35

* Lahiri A, Duff CG, Brown TL, Griffit s RW. Anthropometric measurements and their value in predicting complications following r duction mammaplasty and abdominoplasty. Ann last Surg. 2006 Mar;56(3):248 50.

* Gunde lioglu O, Altundag O, Altundag K, Bilen BT, Borman H Lactation, galactorrhea, a d timing of reduction mammaplasty. Plast Reconstr Surg. 2006 Feb;117(2):701

* Spector JA, Kleinerman R, Culliford AT 4th, Karp NS. The vertical reduction mammaplasty: a prospective analysis of patient outcomes. Plast Reconstr Surg. 2006 Feb;117(2):374,81

* O'Blenes CA, Delbridge CL, Miller J, Pantelis A, Morris SF Prospective s udy of outcomes after reduction mammaplasty: long term follow up. Plast Reconstr Surg. 2006 Fe ;117(2):351 8.

* Hefter W, Elvenes OP Role of the size of the pedicle in reduction ammaplasty. Scand J Plast Reconstr urg Hand Surg. 2006; 40(1):13 8.

RECURRENCE OF BREAST CANCER

Local recurrence after mastectomy usually appears as one or more asymptomatic nodules in or under the skin of the chest wall.

These nodules are usually located in or near the scar of the mastectomy.

A few patients present with diffuse chest wall involvement with multiple nodules; this, however, seems most common in patients who had locally ad anced tumors originally.

Sixty percent of recurrent breast cancer occurs within two years aftermastectomy. If the initial local treatment for breast cancer is adequate, local chest wall recurrence rates should be less than 5 %in stage Idisease and less than 10 % in stage II disease.

Some 80% to 90% of local recurrences appear by 5 years after mastectomy; nearly all occur by 10 years.

Local recurrences occurring 15 to 50 years after initial surgery have been reported.

About 25% to 30% of patients with local or regional recurrence have preceding distant metastases.

Another 25% of patients are diagnosed as ha ing simultaneous local and distant treatment fai ure or develop distant metastases within a few months of t e discovery of local recurrence.

This pattern appears to hold true regardless of the in erval from initial surgery to recurrence.

nly 25% to 30% of patients with chest wall failure suffer significant morbidity from their local re urrence.

To what extent this favorable ou comeis he re-sult of the treatments received, rather than the natural history of their illness, is no clear.

In the National Surgical Adjuvant Breas & Bowel Project (NSABP) trials,Fisher and collea ues (1989) reported that among patients with negative nodes, 12 percent of those who underwent irradiation and 37 % f those who did not undergo irradiation have a recurrence of reast tumor during the 8 years of follow up ($p < .001$).

The probability of a recurrence in those with +ve nodes (all of whom received chem therapy) was only 6 percent with irradiation and 43 percent with no ir adiation.

Irradiation ofthe breast obvio sly is mportant to decrease local recurrence & the need for s bsequent mastectomy.

Local rec rrence in itself may rarely be a cause of death due to infection or pneumothorax.

Reccurence
in Regional lymph nodes

The first manifestation of nodal recurrence is usually an asymptomatic mass in the axilla or in the supraclavicular fossa.

Some solitary sternal metastases may result from direct extension of involved internal mammary lymph nodes.

Nodal treatment failures may occur more than 5 years after primary treatment.

Only a minor ty of patients present with symptoms referable to egional treatment failur (eg, arm edema, neurologic impairment, or pain) n addition to lymphadenopathy.

Significant ain or other istressing symptoms during the patients' lifetimes ccures in 32% of patients with regional treatment failure .
Sixteen percen of patients with isolated axillary treatment failu e and 25% of patients wi h other nodal disease sites who did not have such symptoms on presentation developed them despite tr atment.

Prognosis after nodal tumor recurrence may be re ated to the site involved.

With isolated axillary failure 61% of the patie ts may live without disease for 45 months, comparing with 38% for patients w th other involved nodal sites.

Long-term su vival rates after disease recurrence in the supra lavicular lym h nodes after mastectomy are similar to those of p tients with isolated chest wall ecurrence in most series but some suggest a worse prognosis.

KEY REFERENCES;

* Recht A, Pierce SM, Abner A, et al. Regionalnodal failure after conservative surgery & radiotherapy for early-stage breast carcinoma. J Clin Oncol 1991;9:988.

* Fentim n IA, Lavelle MA, Caplan D, et al. The sig ificance of supraclavicular fossa node recurrence after radical mastectomy. Cancer 1986;57:908.

* Kiricuta IC, Will er J, Kölbl O, et al. The prognostic significance of he supraclavicular lymph node metastases in reast cancer patients. nt J Radiat Onc l Biol Phys 1993;28:387.

* Jackso SM. Carcinoma of the breast: the significance of supraclavicular lymph node metastases. Clin R diol 1966;17:107.

* Bonnerot V, Dao T, Campana F, et al. Evaluation o MR imaging for detecting recurrent tumor thin irradiated brachial plexus. (Abstract) Radiology 1993 189:151.

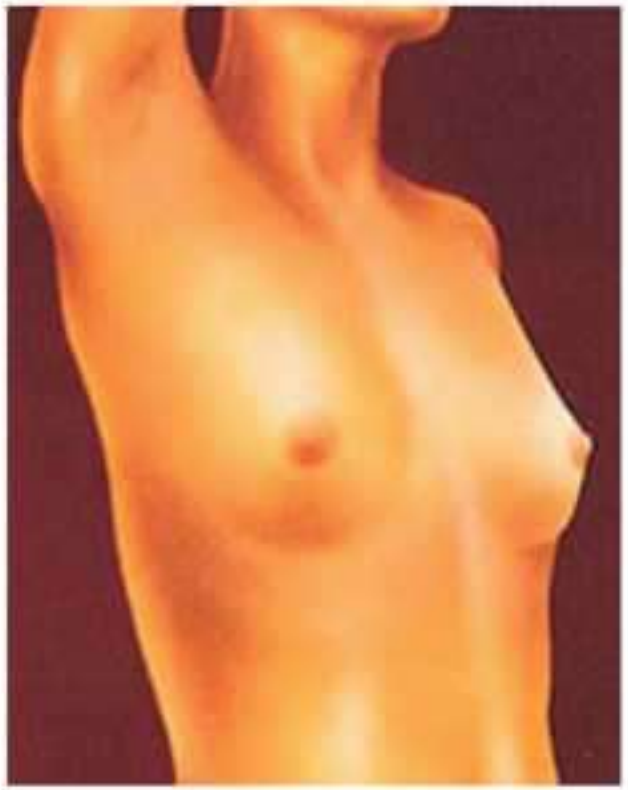
* Gateley CA, Mansel RE, Owen , et al. Treatment of the axilla in operable br ast cancer. (Abstract) Br Surg 1991;78:750.

* Fowble B, Solin LJ, Sc ultz DJ, et al. Frequency, sites of relapse, and outcome of regio- l node failures following conservative surgery & radiation for early breast cancer. Int J Radiat Oncol Biol Phys 1989;17:703.

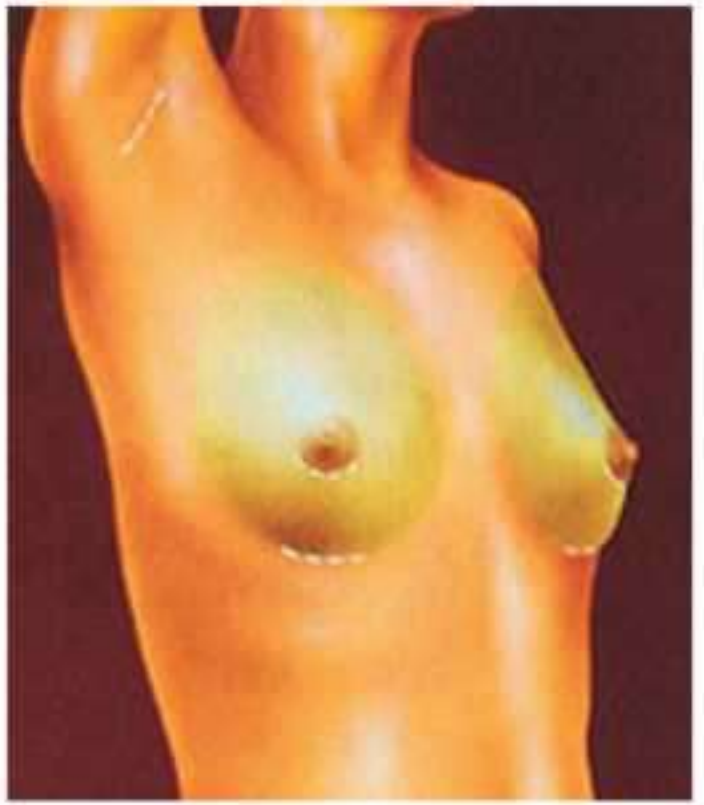
* Dunphy FR, Spitzer G, Rossiter Fornoff JE, et al.Factors predicting long-term survival for metasta ic breast cancer patients treated with high- ose chemotherapy and bone marrow support. ncer 1994;73:21 7.

Augmentation Mammoplasty
Silicone Implants

The debate about silicone implants is likely to continue until adequate scientific information can either prove or disprove an association between silicone and various systemic disorders



Many questions remain unanswered `Wit the recognition that the multitude of women who have implants are simply concerned but that others feel strongly that their implant medical problems, the answers to thes questions must be pursued. Given the highly controversial nd emotionally charged opinions surrounding this debate, clinicians should approach t ese patients by realizing that the objective ests .that are needed are not yet available Appropriate recommendations for therapy logically follows thorough clinical evaluation of these patients .

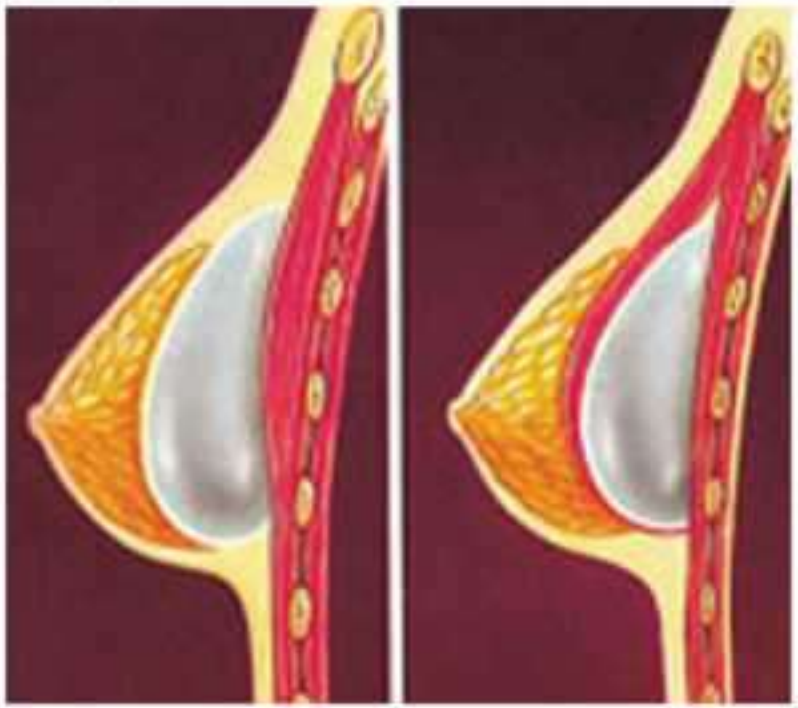


Silicone, once touted as the most biologically inert substance known to humans, has become the center of widespread debate. Laboratory and clinical data accumulated during the past 20 to 30 years suggest that silicone and its related chemical compounds cause a local inflammatory .response, which can be severe But the question remains of whether silicone an

Over the years silicone breast implants have evolved, and there have been substantial changes in their design and chemical composition.

The basic structure, however, remains the same and consists of a silicone elastomer shell filled with silicone gel.

The outer shell is, for themost part, a cross-linked polymer compounded with fumed silica (SiO_2).



The gel consists of approximately 10% silicone oil and 90% polymerized gel.

Silicone breast implants contain a number of chemical impurities (produced during the manufacturing process), including crystalline silica & other organic and inorganic compounds.

As mentioned earlier, silica is used in the production of the elastomer shells, and numerous studies have shown that microscopic pieces of the shell can break off and become engulfed by macrophages, exposing body tissues to fumed silica.

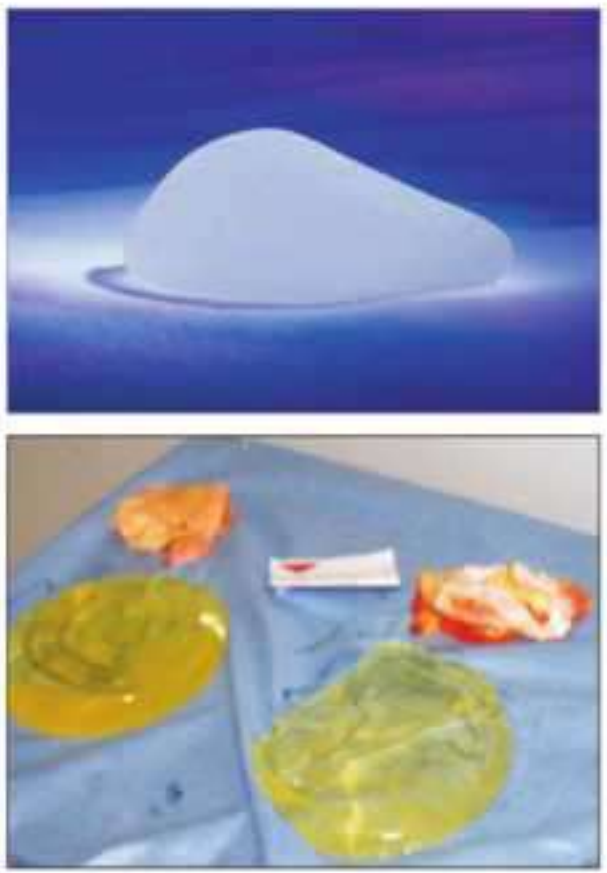
In addition, some authors have suggested that silicone gel may be converted to silica in surrounding tissues.

These findings may be important, because diseases occurring after exposure to silica, such as silicosis, represent a possible link between this form of silicone and immune diseas

Rupture of modern silicone implants occurs in about 4% to 6% of women with no symptoms. In contrast, another study reported that 90% .

of implants show evidence of severe leakage or rupture after 10 years.

In any event, the two accepted mechanisms by which silicone can escape from within the implant are overt breakage or rupture, and gel bleed, which occurs by seepage of silicone gel through the semipermeable outer membrane, the end result being free silicone particles in the surroundi g tissues.



Ruptured Silicone implant

EXAMPLES

Key References

* Fisher J. The silicone controversy when will science prevail N Engl J Med 1992;326:1696.

* Peters W, Keystone E, Smith D -Factors affecting the rupture of silicone .gel breast implants Ann Plast Surg 1994;32:449.

* Peters W. The mechanical propertie of .breast prostheses Ann Pl st Surg 1981;6:179.

* de Ca ara JS, Kammer BA. Rupture and .aging of silicone gel breast implants Pla t Reconstr Surg 1993 91:829.

* Wells A, Daniels S, G nasekaran S, et al. Local increase in hyaluronic acid a d interleukin-2 in the capsul s surrounding silicone brea t implants. Ann Plast Surg 1994 33:1.

* Erguvan Dogan B, Yang WT.
Direct injection of paraffin into the breast: mammographic, sonographic, and MRI features of early complications.
AJR Am J Roentgenol. 2006 Mar;186(3):888.94
* Brinton LA, Lubin JH, Murray MC, Colton T, Hoover RN
Mortality rates among augmentation mammoplasty patients: an update.
Epidemiology. 2006 Mar;17(2):162.9.
* Parsa FD, Parsa AA, Hsu A
Subfascial periareolar augmentation mammaplasty.
Plast Reconstr Surg. 2006 Feb;117(2):681,2
* Romundstad L, Breivik H, Roald H, Skolleborg K, Haugen T, Narum J, Stubhaug A.
Methylprednisolone reduces pain, emesis, and fatigue after breast augmentation surgery: a single dose, randomized, parallel group study with methylprednisolone 125 mg, parecoxib 40 mg, and placebo.
Anesth Analg. 2006 Feb;102(2):418.25.
* Okwueze MI, Spear ME, Zwyghuizen AM, Braun SA, Ajmal N, Nanney LB, Hagan KF, Wolfort SF, Shack RB.
Effect of augmentation mammaplasty on breast sensation.
Plast Reconstr Surg. 2006 Jan;117(1):73.83
* Adams WP Jr, Rios JL, Smith SJ
Enhancing patient outcomes in aesthetic and reconstructive breast surgery using triple antibiotic breast irrigation: six year prospective clinical study.
Plast Reconstr Surg. 2006 Jan;117(1):30.6.
* Henriksen TF, Fryzek JP, Holmich LR, McLaughlin JK, Krag C, Karlsen R, Kjoller K, Olsen JH, Friis S
Reconstructive breast implantation after mastectomy for breast cancer: clinical outcomes in a nationwide prospective cohort study.
Arch Surg. 2005 Dec;140(12):1152.9

REDUCTION MAMMOPLASTY
Breast Lift

Treatment of macromastia involves a physician-directed weight-loss program for obese patients.

Reduction mammoplasty may be offered to the patient with macromastia after a thorough discussion of the risks andbenefits of surgery.

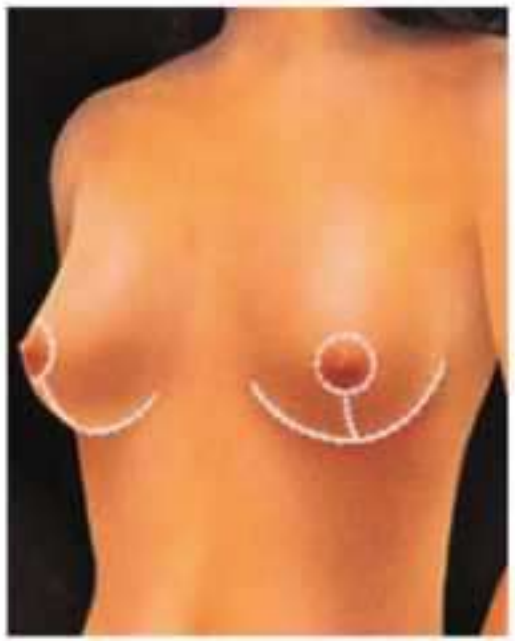
Most reduction techniques involve long scars that canbe difficult to conceal completely.

Lactation and nipple sensibility can beaffec ed by the procedure.

Other complications nclude hematoma, fat necrosis, nipple necrosis, & h pertrophic scar formation.

There are awide umber of reduction techniques employed y surgeons to reduce the size of the breast & reposi ion the nipple-areola complex.

The nipple and areola are carried on a dermal pedicle that may be basedsuperiorly, inferiorly, or medially



The central pedicle techniquemaintains the nipple areola complex at the apex of the breast mound .

Breast tissue is excised with relatively more removed from the inferior and lateral poles of the breast.

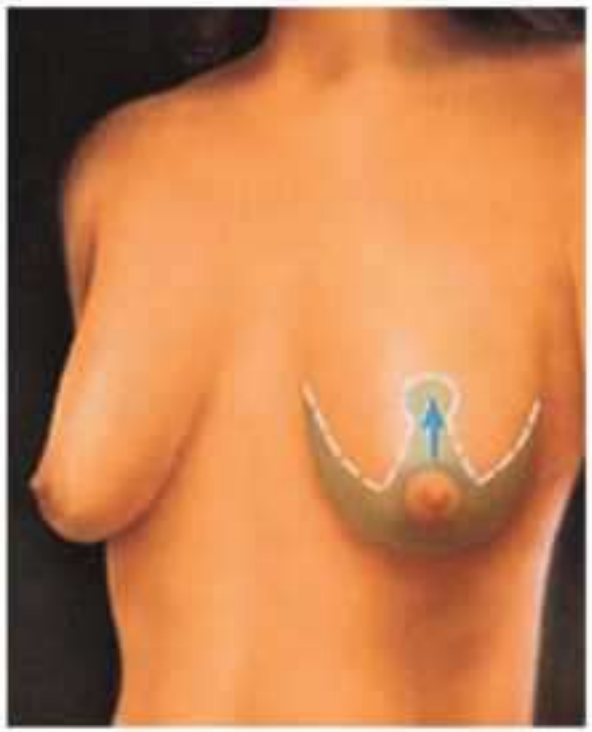
Excess breast skin is also excised and skin redraped around the new breast mound and nipple-ar olacomplex.

The blood supply to the breast is from br nches of the internal mammary arteries, intercostal e-rforators, lateral thoracic artery, and branches of

the thoracoacromial trunk.

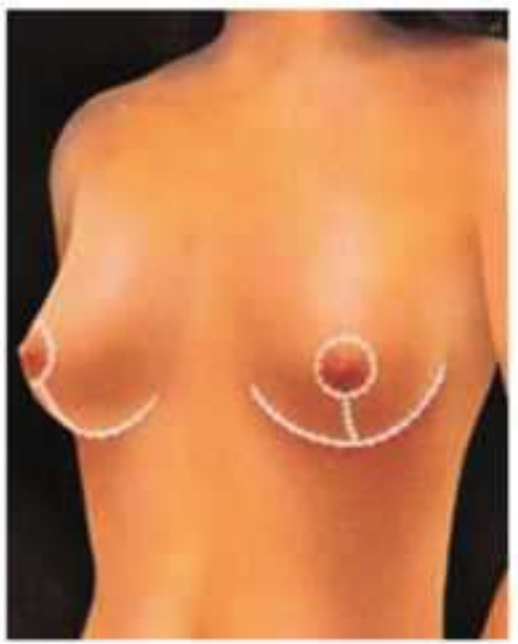
Any technique of breast reduction selected must preserve the blood supply to the breast parenchyma & nipple.

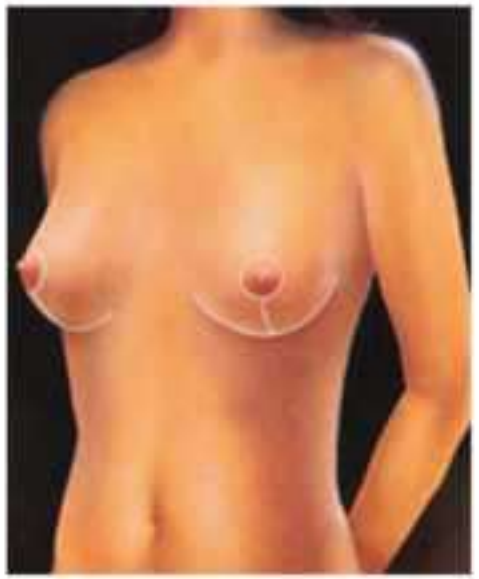
The central breast pedicle has the theoretical advantage of preserving all these arterial contributions



The patient with extremely large breasts will necessarily have a long pedicle from the chest wall to the nipple-areola complex.
This makes the blood supply to the nipple more tenuous & thus carries a higher risk of nipple necrosis.

In these patients it is safest to move the nipple as a free nipple graft.





LOCAL EXAMPLE