# Risky breasts and the Pathologist

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# Aims of this talk

- To explain the role of the Breast Pathologist in the diagnosis of breast disease
- To summarise important features of breast carcinoma
- To review the common benign lesions that we see
- To explain about atypia and increased risk

# The stark statistics

- 1 in 8 women in UK will has a diagnosis of breast cancer during their lifetime
- Nearly 12,000 women died of the disease in 2013 in the UK
- Prognosis continues to improve- patients diagnosed earlier, better treatment options
- 78% of patients survive more than 10 years from diagnosis

# Risk factors for breast cancer

- Being a woman
- Family history of breast cancer
- Personal history of breast cancer
- Unopposed oestrogens- early period, late menopause, no children or delaying family
- Obesity
- Heavy alcohol consumption
- Radiation exposure
- Atypical epithelial lesions on prior biopsy

# How is breast cancer found?

- Screening population- all women over the age of 50 invited for screening by mammogram.
- Symptomatic population- present with lump, distortion/dimpling, newly inverted nipple, nipple discharge, itchy red skin around nipple.
- Metastatic disease- present with symptoms related to distant spread of tumour

# Genetic risk of breast cancer

- Most breast cancers are not associated with familial genetic mutation
- Most common gene is BRCA1 and BRCA2
- Strong family history of breast, ovarian and prostate cancers often with earlier onset
- However multiple other genes yet to be delineated or not as easy to currently test for or to give defined risk.

# Breast Pathologists- who are we?

- Medical doctors who spend at least 5 years after qualification training in pathology and who obtain the FRCPath postgraduate exam
- Defined sub-speciality of Surgical Pathology/Histopathology
- Post consultant specialisation in the area of breast pathology with obligate continual professional development

# Role of breast pathologists

- Reporting of all biopsies of the breast to provide the diagnosis which will guide all further management
- Reporting of all surgical specimens (WLE mastectomy and lymph node specimens) giving prognostic information and further guidance to surgeons and oncologists
- Weekly meetings with Breast team including surgeons, oncologists, radiologists and specialists nurses
- Contributing to ongoing research and audit in the field

# Black White and Grey

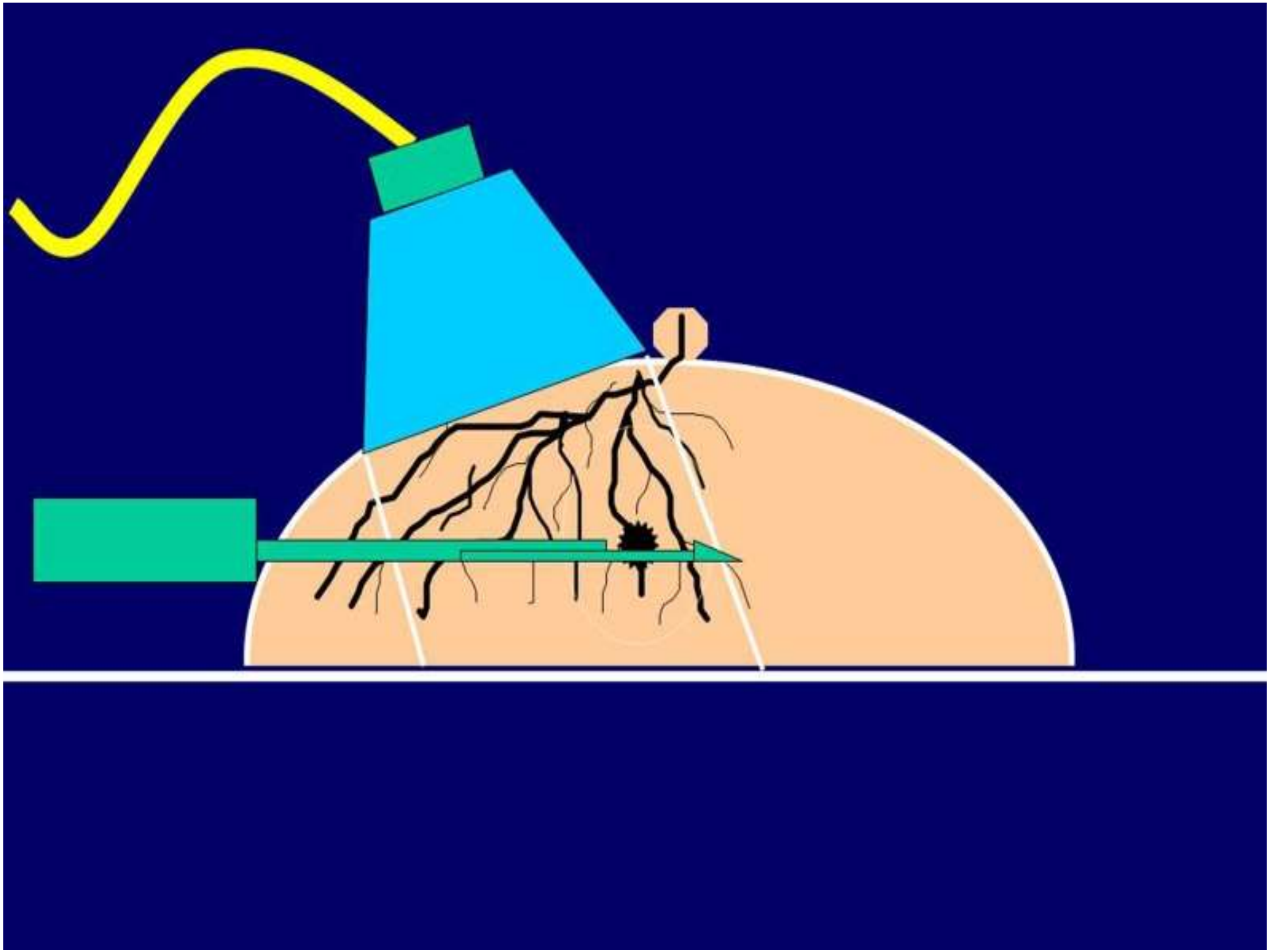
- Most cases are readily classifiable into Benign or Malignant
- BUT there are challenging cases
- Inter and intra observer variability
- We offer an opinion not a result!!!

# THE RECENT PAST

- Much less sophisticated imaging
- Failure to work as a multidisciplinary team to give a triple assessment
- Reliance on Fine Needle aspirates for pre-op diagnosis- false positives
- Many more diagnostic excision biopsies of benign lesions done which is now significantly reduced with use of core biopsies

# Breast core biopsies

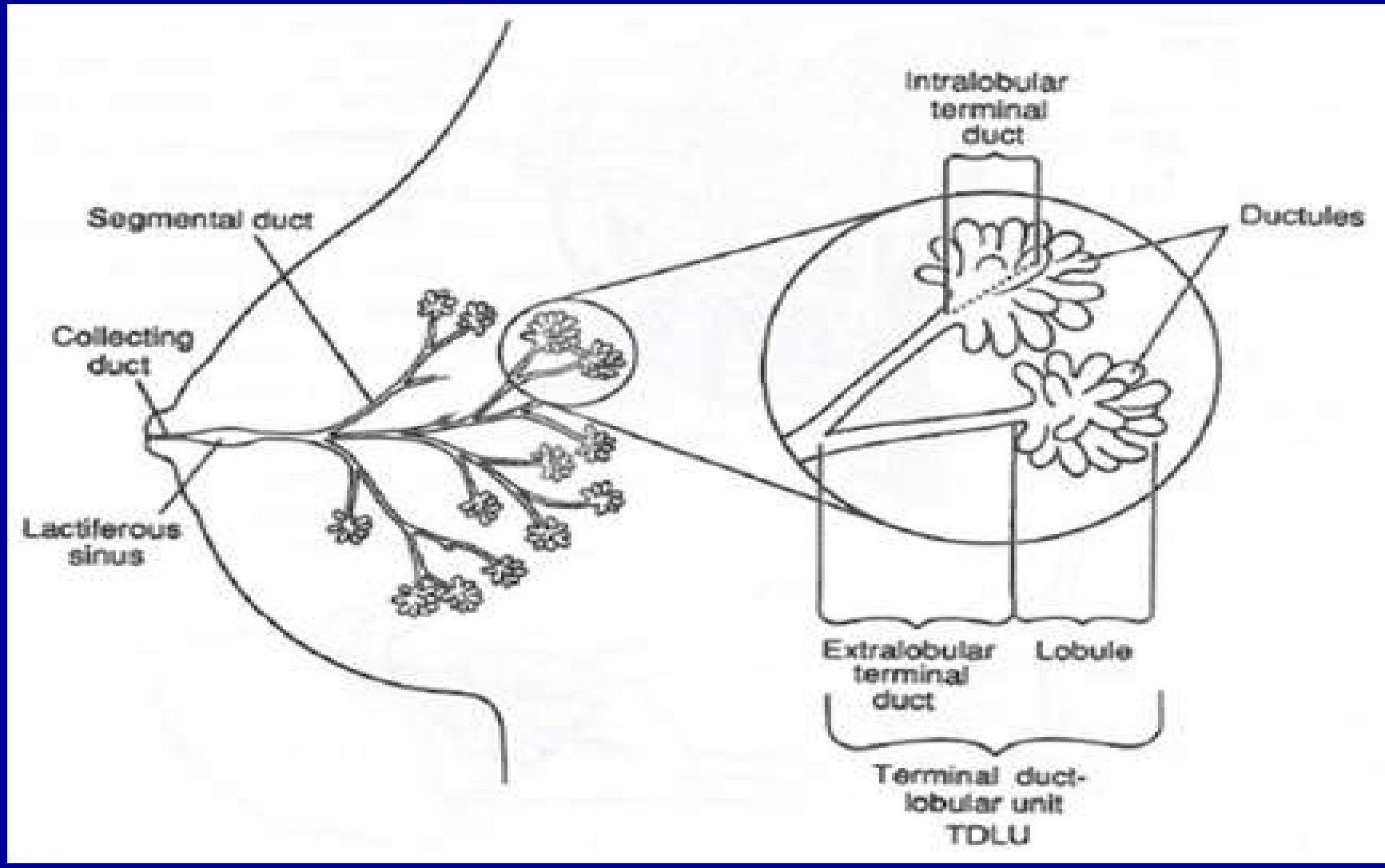
- Procedure performed in Outpatients or Radiology department
- Can be done freehand but usually done under ultrasound or x-ray (stereotactic) guidance
- Usually get 3-8 cores that are less than 1mm transverse diameter and up to 20 mm in length



# REPORTING OF BREAST BIOPSIES

- B1 Normal breast tissue ?representative of the lesion seen
- B2 Benign breast changes/lesion
- B3 Atypia probably benign, some lesions as standard
- B4 Atypia probably malignant but insufficient to call on biopsy
- B5 Malignant A-in-situ B- invasive

# ANATOMY OF HUMAN BREAST



# Types of breast cancer- invasive

- Invasive ductal/NST carcinoma (80%)
- Invasive lobular carcinoma (10%)
- Special types (10%) eg Tubular, Cribriform, Medullary, Micropapillary, Metaplastic.

# What information do we give?

- Type of cancer
- Grade of cancer- Grade 1, 2 ,3
- Oestrogen receptor status
- Herceptin status
- Triple assessment – surgical, radiological and pathological findings are correlated to ensure that it all fits

# Grade of invasive cancers

- The degree to which a malignant tumour mimics the tissue from which it has originated
- The breast system is based on the percentage of glands present, the variability of the nuclei and the proliferation rate
- Tumours are Grade 1, 2 or 3 or can be described as well, moderate or poorly differentiated

# BENIGN LESIONS

- **Fibrocystic change without atypia**
- **Fibroadenoma**

- **Hamartoma**
- Cysts
- Duct ectasia
- Fat necrosis
- Sclerosing adenosis

# Fibrocystic change without atypia

- Estimated that over 80 % of women have these benign breast changes
- Can result in lumpy or painful breasts
- Degrees of changes may be significant
- Includes fibrosis, cysts, apocrine change, usual type hyperplasia, sclerosing adenosis
- Controversial as to whether there is any increase in risk- most clinicians think not

# Fibroadenoma

- Benign lesion of the breast
- Combination of epithelial and stromal elements
- Presents as a lump
- Commonest in the 19-31yr age group
- Typical appearance on radiology
- Biopsy to confirm that this is correct diagnosis
- Some patients opt for excision
- Clinicans happy to leave if the biopsy does not show any atypical features
- We don’t use the term “Complex Fibroadenoma”

# Benign lesion that require excision

- Nipple papillomas
- Radial scars/Complex sclerosing lesions
- Benign Phylloides tumours

- If these are biopsied, they are given a score of B3. They are either formally excised or more recently undergo Vacuum assisted large core removal. They can show focal atypia

# ATYPIA (of Breast epithelium)

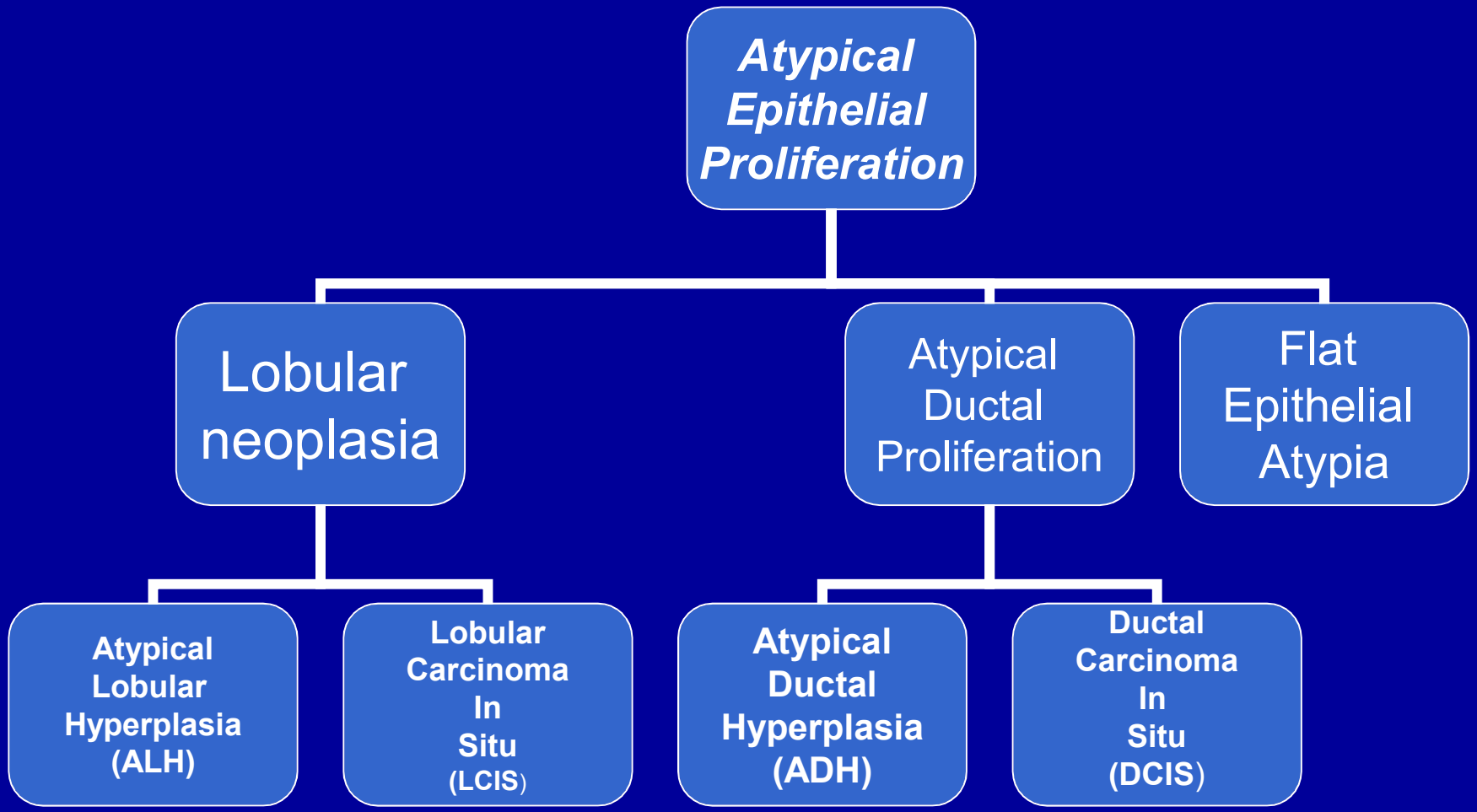
***PAST***

- Lumpers versus splitters
- Pathologists not always involved in studies
- Not always talking about the same entity
- Not always talking about the same population

***CURRENTLY***

- Much stricter criteria in place in more recent studies- pathology review, use of digital images
- BUT still potential for variation of opinion at the lower edges of the spectrum

# PATHOLOGY CLASSIFICATION OF ATYPIA IN THE BREAST



# DUCTAL CARCINOMA IN SITU

- Precursor lesion BUT non obligate
- 20% develop Invasive Carcinoma if untreated
- Proliferation is confined to duct profiles, hasn't spilled out into the stroma
- Can be asymptomatic or present with a lump or discharge. Usually detected at screening as associated with calcifications
- Often seen in association with an invasive carcinoma – same risk factors

# DUCTAL CARCINOMA IN SITU

- **GRADE** – LOW, INTERMEDIATE, HIGH
- **EXTENT**
- **AGE AT DIAGNOSIS**
- **R/R 8-11** DEVELOPING INVASIVE CA
- TREATED BY EXCISION TO GET CLEAR MARGINS
- RADIOTHERAPY IF HIGH GRADE
- HORMONAL THERAPY IF POSITIVE

# Atypical ductal hyperplasia

- Doesn’t quite meet criteria for DCIS
- Small area affected <3mm
- O/R 2.4,  95% CI 1.3-4.5
- Generalised increased risk but 61.3% of cancers that develop are in the ipsilateral breast
- Synergistic effect of family history (8x)
- Careful follow up of individual recommended.

# LOBULAR NEOPLASIA (LIN)

- Spectrum of changes ranging from Atypical Lobular hyperplasia to Lobular carcinoma in situ
- Increased risk of breast cancer bilaterally
- Not all cancers that develop are lobular in nature
- Not precursor lesion, increased risk persists over lifetime of individual

# Atypical Lobular hyperplasia

- X 3-4 increased risk of developing carcinoma
- Usually found incidentally in biopsy of another lesion eg Fibroadenoma, Fibrocystic change, Radial scar.
- Risk probably more significant in premenopausal patients
- Prompts careful follow up but aim is not to excise all of changes as usually diffuse and bilateral

# Lobular carcinoma in situ

- 8-10 fold increased risk of developing carcinoma over lifetime
- Risk is bilateral
- Often found incidentally when patient is being investigated for another abnormality in the breast
- Aim is not to excise but to prompt careful follow up of the patient

# CONCLUSIONS

- Hopefully you now understand a bit more about the role of the Breast Pathologist
- Most cases are easily categorised into Benign or Malignant with known outcomes
- There are a group of conditions associated with a significantly increased risk of cancer that require careful long term follow up of the patient