Pathological response post neo-adjuvant chemotherapy in breast excision specimens

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Introduction

- Most centres offer neoadjuvant chemotherapy(NACT).
- Aims of pathological assessment
  - evaluation of treatment effects
  - responsiveness to chemotherapy
  - tumour down staging
- Snapshot of our current practice

NHSBSP 2014 guidance

- **Tumour response:**
  - *Complete pathological response*
  - *Partial response to therapy*
  - No evidence of response to therapy.

- **Nodal response:**
  - No evidence of metastatic disease
    - No changes in the lymph nodes.
    - Response/'down-staging', e.g. fibrosis.
  - Metastatic disease present
    - Evidence of response
    - No response to therapy.

Aim and Objectives

- **To assess current practice in context of neo-adjuvant chemotherapy**
- To Assess
  - current types of specimens
  - number of blocks sampled and use of large tissue blocks
  - frequency of local pathological complete response
  - status quo in view of the 2014 NHS BSP guidelines regarding reporting of tumour characteristics and predictive factors

Audit Standards

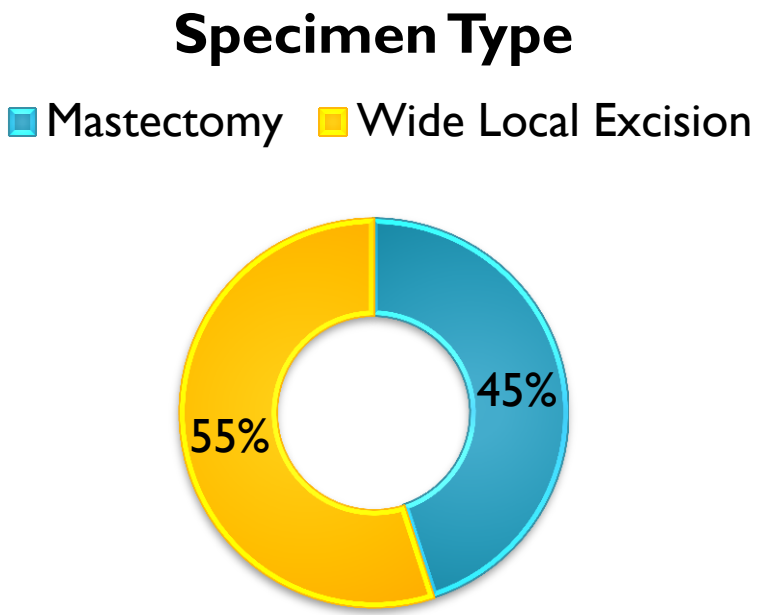
- 100 % reporting of prognostic and predictive in Pre-NACT cores
  - histological grade and sub-type
  - ER
- HER-2 status should have been determined in the majority of core biopsies during the audit period.
- Lymph node status should be assessed 100% by imaging of the axilla and pathological evaluation (FNA or core biopsy) if indicated
- (pCR) should be similar to the rates reported in the literature (12.1-25.8%)

Sampling & Data collection

- All breast excision specimens from patients received NACT.
- Oct 2012-Feb 2015.
- Data collected from APEX and Pathosys

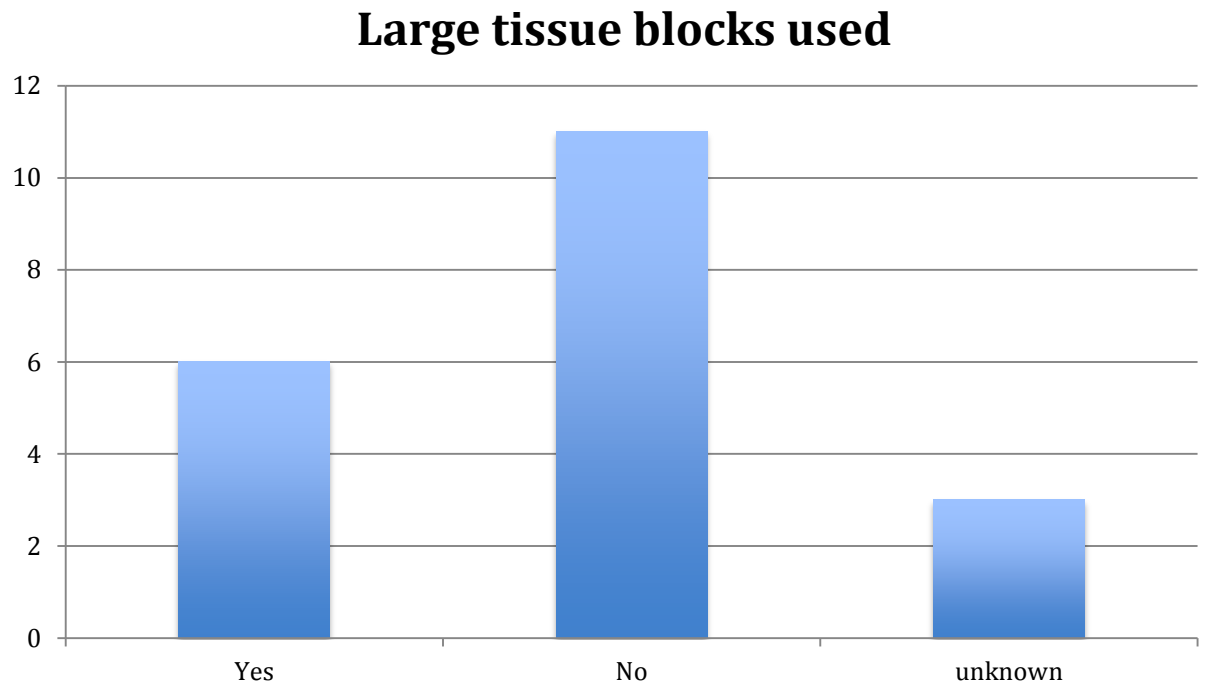
Findings

- Total Number of cases =20

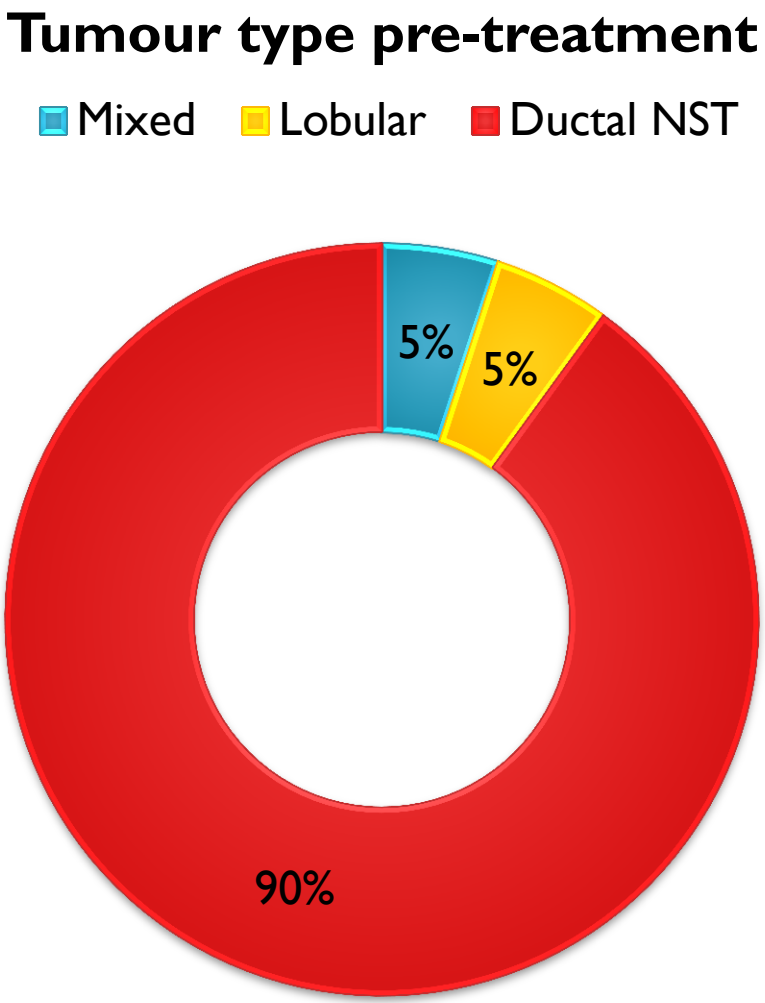


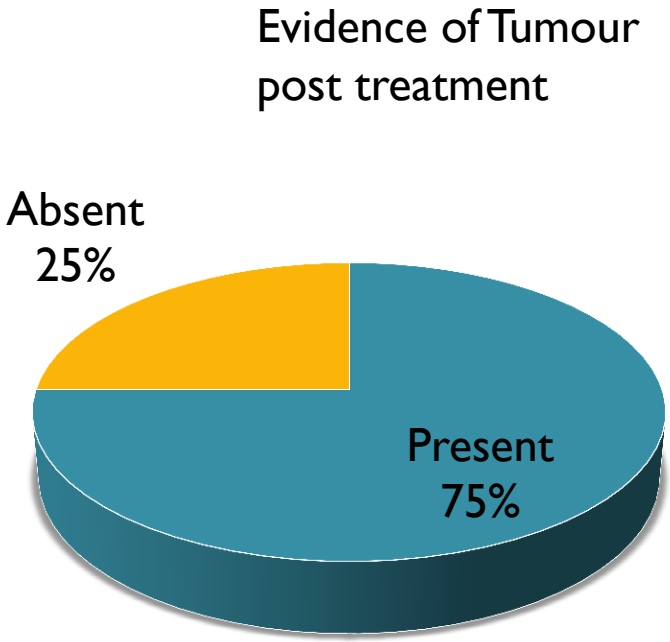
Blocks

- **Average 28 blocks per case**



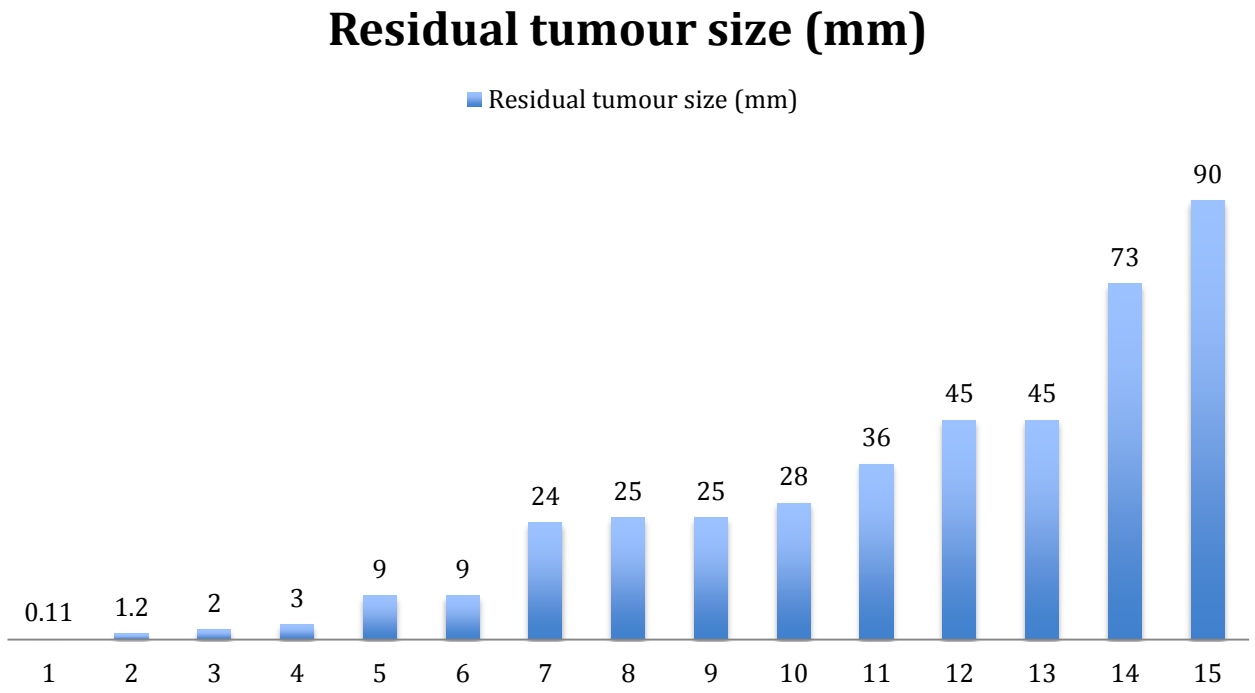
Histological Evidence of Tumour





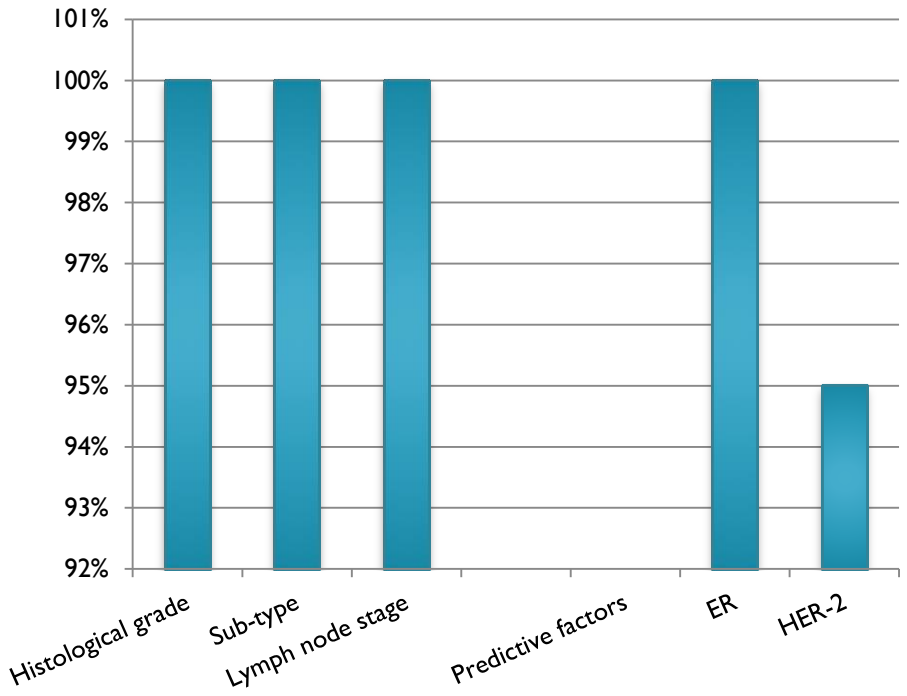
Residual Tumour Size

- Most of these tumours were large at time of diagnosis
- Difficult to assess ER,PR and HER 2 on small tumours

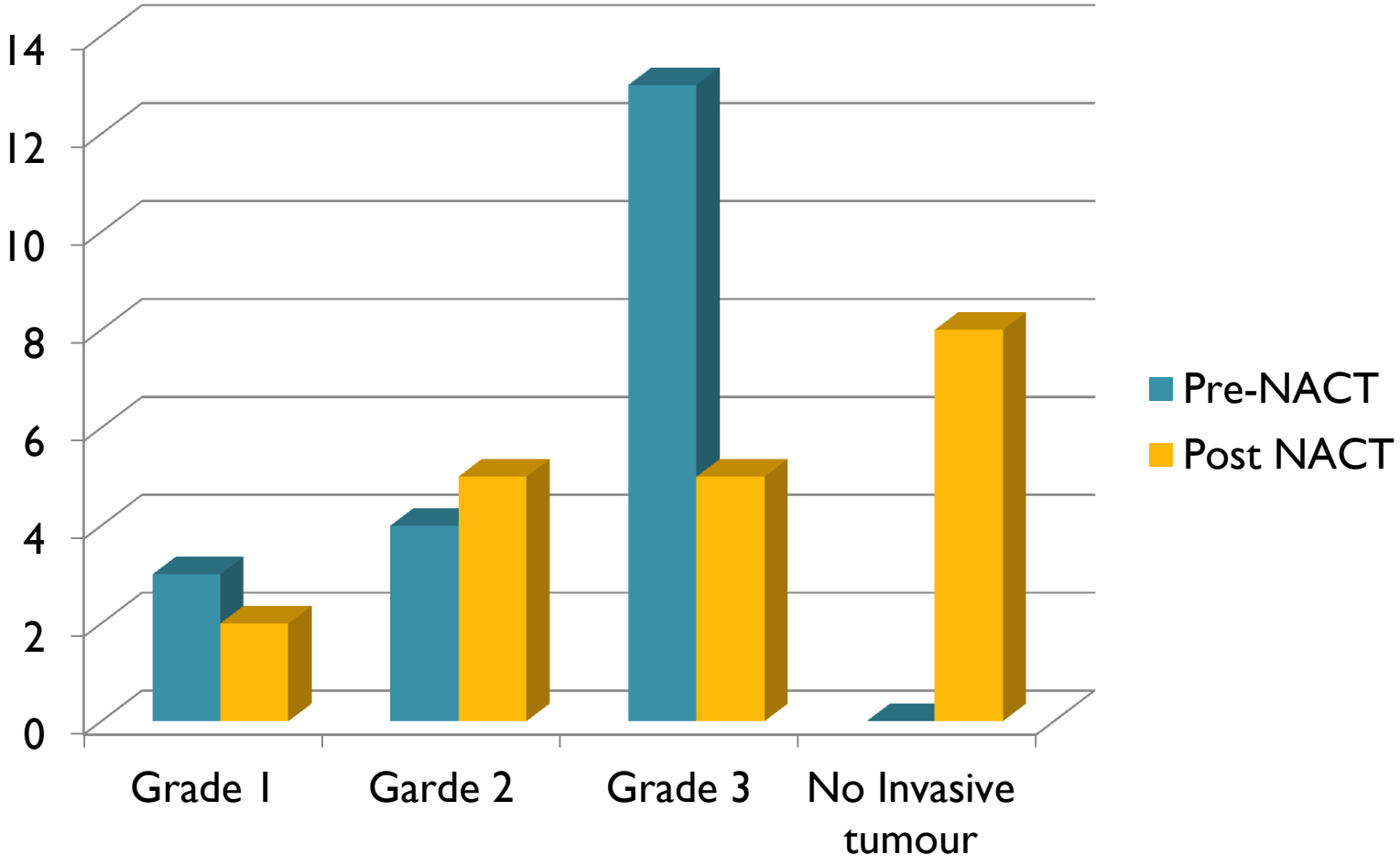


Pre-treatment assessment

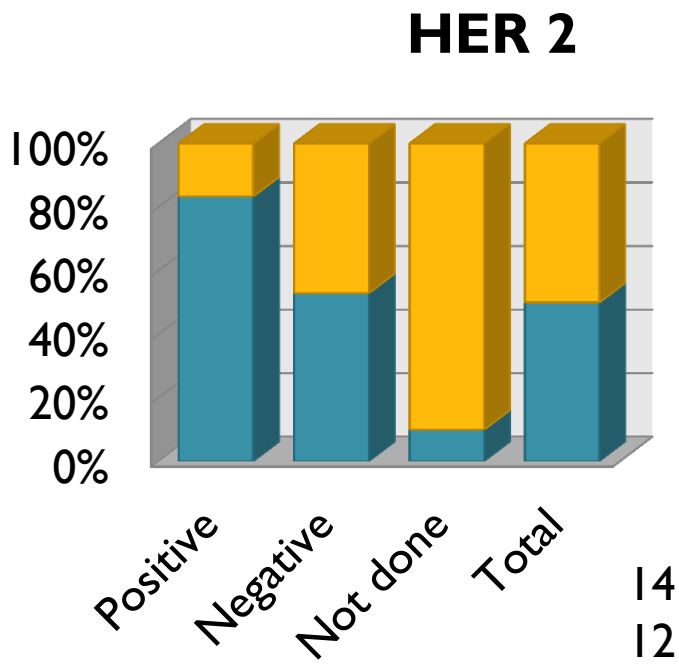
- PR not routinely assessed unless ER is negative; therefore PR has not been included into the audit.
- SOP change in July 2013: HER-2 status was assessed on excision specimens.

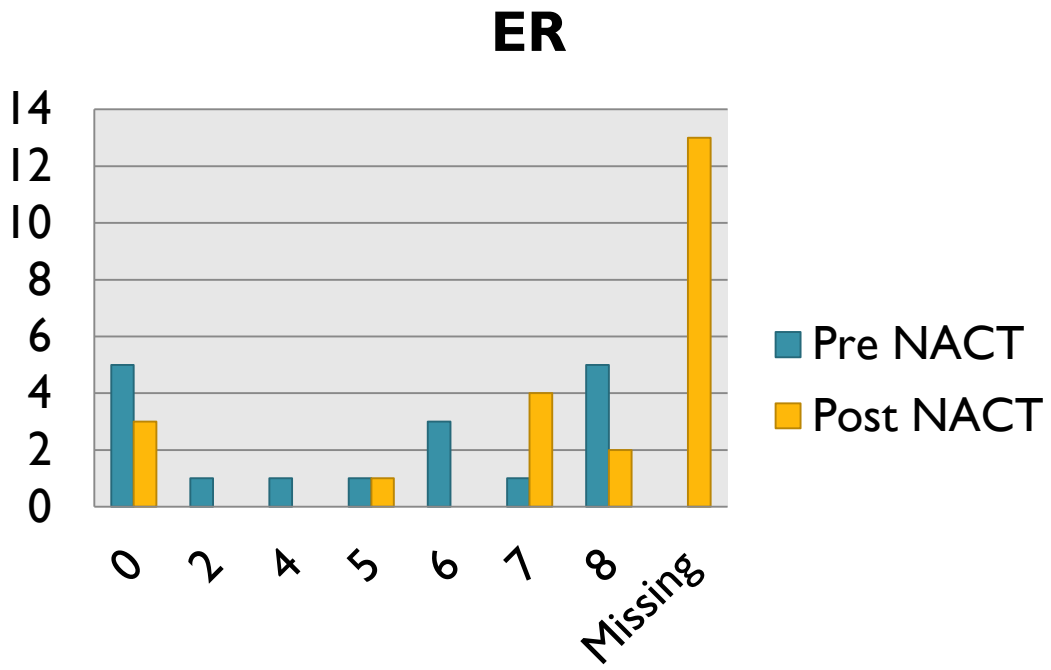


Tumour Grade



HER2 and ER Pre and Post NACT



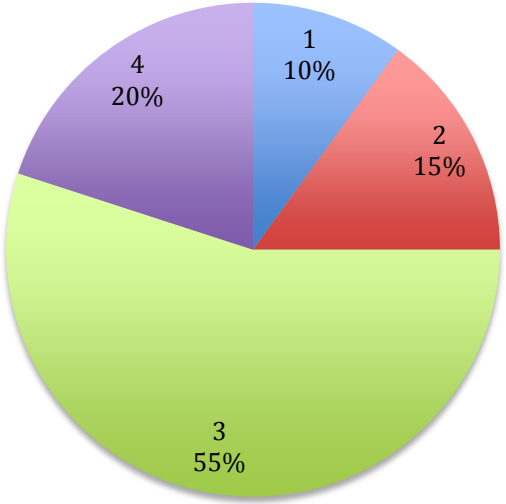


PCR rate in audit population

Study	Complete pathological response (pCR) of primary tumour	
RVI Audit (NHSBSP-G)		25%
Chevalier		14.3%
Sataloff		25.8%
Mazouni	Total	12.1%
	pCR	3.4% (RVI 5%)
	pCR with DCIS	8.6% (RVI 20%)

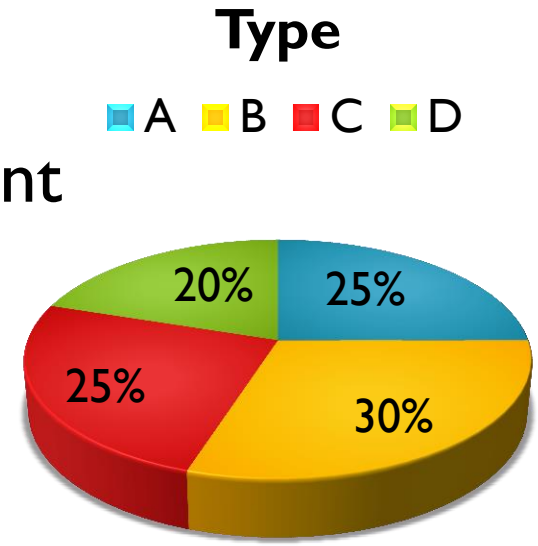
PCR according to Chevallier et al.

1. Disappearance of all tumors both on macroscopic and microscopic assessment.
2. In situ carcinoma present but no residual invasive tumor and no metastatic lymph nodes.
3. Invasive carcinoma present with stromal changes(sclerosis, fibrosis).
4. Few modifications of the appearance of the tumor.



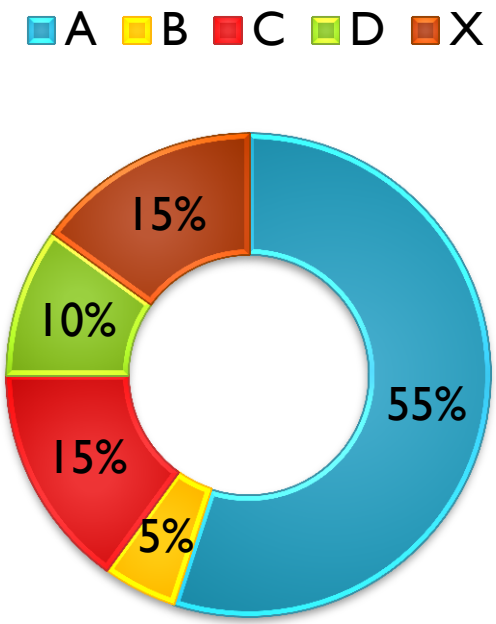
PCR according to Sataloff et al.

- **A:** total or near total therapeutic effect (in the latter case: scattered cells accounting for >5% of the tumor surface).
- **B:** subjectively >50% therapeutic effect but less than total or near total.
- **C:** >50% therapeutic effect.
- **D:** no therapeutic effect evident

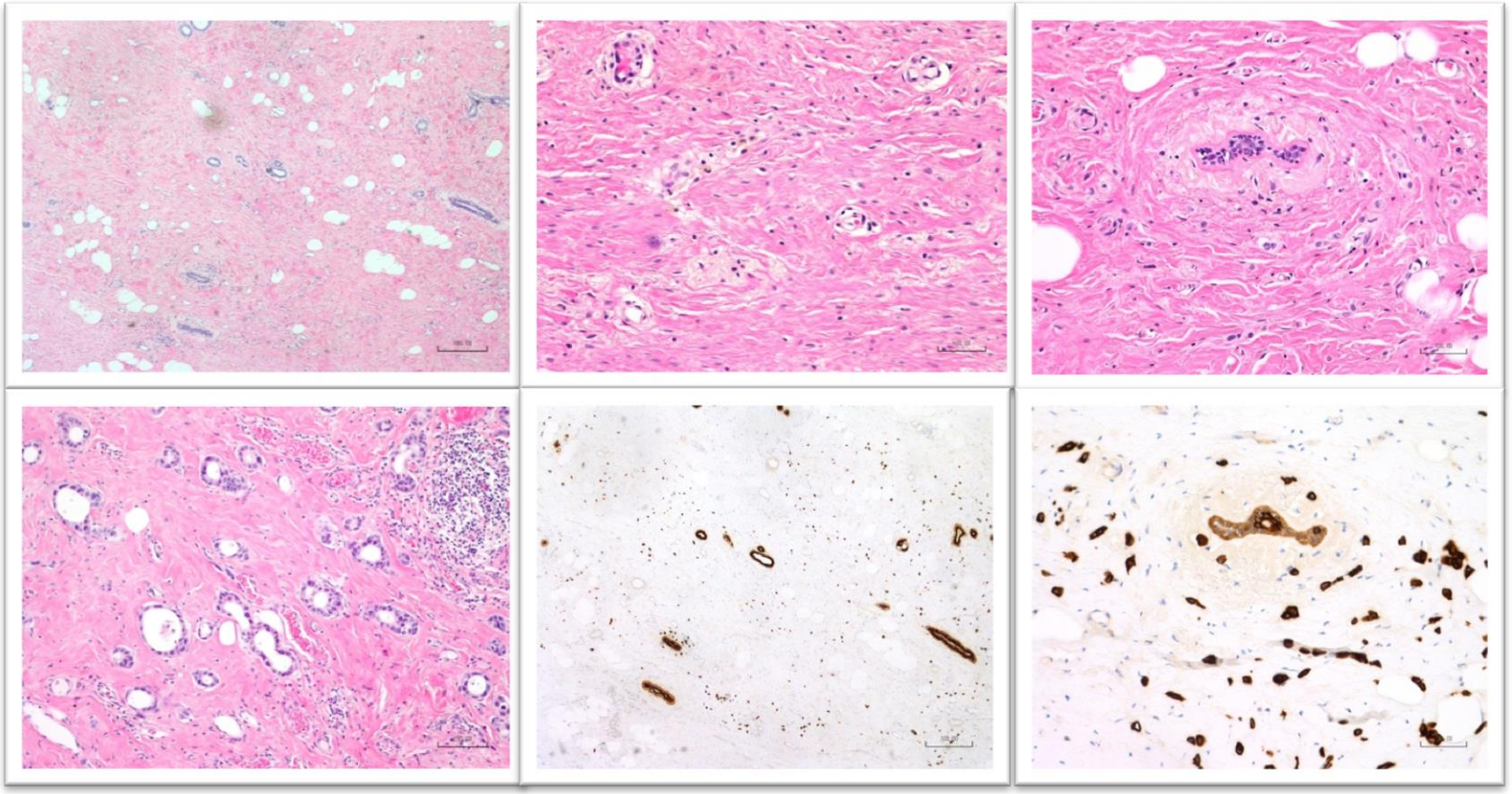


Lymph nodes according to Sataloff

- **N-A:** evidence of therapeutic effect, no metastatic disease.
- **N-B:** no nodal metastasis or therapeutic effect.
- **N-C:** evidence of therapeutic effect but nodal metastasis still present.
- **N-D:** viable metastatic disease, no therapeutic effect.



Histological Response to NACT



Areas of good practice

- 100% pathology reporting of histological grade, histological sub-type, ER and lymph node stage
- 95%- 100 % reporting of HER 2 on pre-treatment cores.
- pCR rates largely in keeping with international levels (around 25%)

Areas of good practice

- Partial response was seen in 55% of cases
- 100% reporting of prognostic and predictive factors Post NACT
- The average number of blocks taken per case was 28 blocks (SD 9)
- Reporting of these cases by only 2 pathologists encourages less inter-observer variability

Areas for improvement:

- Terminology for pathological response should be brought in line with 2014 NHS BSP guidelines
- Increase the use of large blocks

Areas for improvement:

- Reporting of ER and HER-2 status in excision specimens post NACT appears variable and clarification of oncologic requirements should be discussed.

- Not all cases may have been identified on Pathosys and greater awareness in marking these cases as neo-adjuvant should be encouraged among pathologists.

Recommendations

- Standardised terminology of reporting of pathological tumour response as recommend by 2014 NHS BSP guidelines.
- Clarify with oncologists the requirements for re-testing ER and HER-2 on excision specimens following neo-adjuvant chemotherapy and recording these requirements in SOP on q-pulse.
- Re-audit after 2 years in view of increasing numbers of patients receiving neo-adjuvant chemotherapy and oncoplastic surgery.

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