

# Are surgeons better than us in painting excision specimens?

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# Background

- I work at Liverpool University Hospitals Foundation Trust (service to two units at RLBUHT and AUH)
- Breast excision specimens received in the labs come in various shapes
- Newly appointed surgeon at unit I suggested to trial painting specimens in the theatres
- With some hesitation we agreed to trial it for a period of three months
- Any issues we would feedback directly or at the MDT
- To ensure consistency I encouraged the lead surgeon at the other unit (Unit II) to do the same
- Standard colour coding was shared with both departments
- A short verbal tutorial was given on how to avoid paint running over into different margins

# Results of 1<sup>st</sup> Audit Cycle

- 71 patients required re excision - (January 2017 – August 2018)
- 1/3<sup>rd</sup> of positive margins- intraoperatively, 2/3rds identified histologically
- Most common positive margins: superior, inferior, medial.
- 68% of cases- benign changes only
- **Re-excision rate 14.9%** (1mm for invasive carcinoma and 2mm for DCIS)
  - 71 patients underwent re-excision out of a total of 477 wide local excisions
  - **GIRFT Data 2014 – 2017: 19.2% (National Average: 21.7%)**

# Aims -2<sup>nd</sup> Audit Cycle

- Identify the re-excision rate following intraoperative painting of specimens in comparison to previous audit  
and in light of updated NICE guidance July 2018
- Identify the positivity rate in re excision specimens
- To determine the number of specimens inked in theatre, and the impact this has on results

# Audit Standards

- GIRFT data 2014-17
- Comparison with previous audit 2017-2018
- *NICE guidelines re: positive margins -July 2018*
- Recommend offering further surgery after breast conserving surgery- invasive cancer and/or DCIS is present at the radial resection margins (defined as 0mm margin or “tumour on ink” present in the specimen).
- For those with invasive tumour and/or DCIS present within 2mm (but not tumour on ink), NICE advises a personalised care approach

# Data Collection

- Retrospective data collected for a period of 1 year  
(01/05/2019 – 30/04/2020)  
COVID-19 effect
- Reliability of data collection
- Identified patients using the following operation codes
  - OPCS 27.8 – Other Specified
  - OPCS 27.9 – Unspecified, includes mastectomy NEC
  - OPCS 28.4 – Re-excision of breast margins
- Used SNOMED codes to search on Tpath PathoSys

# Results

## Royal

- 81 patients identified
- 55 patients excluded
- 26 patients included

## Aintree

- 69 patients identified
- 31 patients excluded
- 38 patients included

## Total

- **150 patients identified**
- **86 patients excluded**
- **64 patients included**

# Cases excluded from audit

Reason for Exclusion	Number of patients
No re-excision procedure	21
Primary mastectomy	39
Mastectomy for recurrence (<5yr ago)	6
Mastectomy for recurrence (>5yr ago)	4
Risk reducing mastectomy – malignancy on contralateral side	2
2 <sup>nd</sup> re-excision specimen (or more)	7
Initial procedure was excision biopsy	1
Transgender Surgery	1
Phyllodes (benign, borderline)	2
Duplicate	1
Re-excision following WLE with benign changes	2
<b>TOTAL:</b>	<b>86</b>



# Findings of audit

## Common diagnoses for re-operation

Diagnosis	%
DCIS	36%
Invasive Ductal and DCIS	38%
Invasive Ductal	2%
Invasive Lobular and DCIS	5%
Invasive Lobular	3%
Invasive lobular and LCIS	8%
Mixed invasive	2%
Mixed invasive and DCIS	5%
Invasive mucinous and DCIS	2%

**86% have a DCIS component**

# Initial Procedure

All 64 patients had a WLE +/- shave excision of margins

# Painting of specimens

- Out of 64 WLE specimens 28 were painted prior to specimen reception. This amounts to 44% of specimens.
  - UNIT 1 73% (19/26) of specimens were painted
  - UNIT 2 24% (9/38) of specimens were painted

# Margin positivity at first operation

- Shaves submitted with primary excision?
  - Yes = **31/64** (total 45 shaves)
  - No = 33/64
- **Overall positive margin pick up**
  - Intra-operative = **24/64 (37%)**
  - Histological = **40/64 (63%)**

## Which margins were close?

64 patients had a total of 140 margins <1mm

Positive Margin (<1mm)	Number of Patients
Inferior	31
Medial	27
Superior	25
Posterior	24
Lateral	18
Anterior	15

# Close margins in mm

Distance to nearest margin	Number of patients
Tumour on ink(involved)	32
0.1mm	8
0.2mm	9
0.3mm	6
0.4mm	1
0.5mm	5
>0.6mm	3

**50% of patients underwent re-operation for an “involved” margin  
95% for a margin <0.5mm**

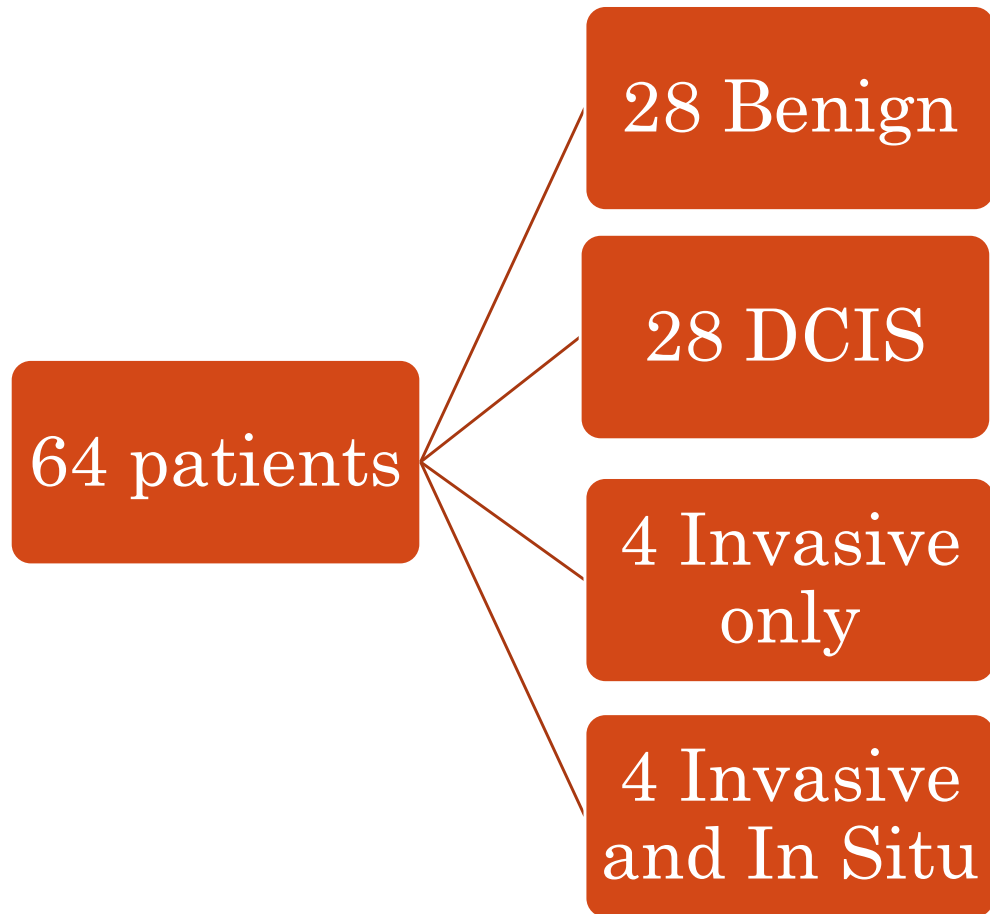
# Re-operation

- 64 patients underwent re-operation...
  - 49 had 1 re-excision procedure
  - 13 had a 2nd re-excision procedure
  - 2 had a 3rd re-excision procedure

1 <sup>st</sup> re-excision Procedure	Number of Patients
Re-excision of cavity only	5
Re-excision of cavity + shaves	2
Shaves only	53
Completion mastectomy	4



# Diagnoses in re-excision specimen



**54% of patients who underwent re-operation for positive histological margins had malignant disease in the re-excision specimen**

# Re-excision Rates

- UNIT 1
  - **8.36%** (26/311)
  - Compared to 14.9% (71/477) in previous audit cycle - reduction in re-excision rate of 6.5%
  
- UNIT 2
  - **18.10%** (40/221)
  - Nil previous data to compare.
  
- Average re-excision rate across both sites: 13.2%

# Comparison (Unit 1 data only)

	1 <sup>st</sup> Cycle	2 <sup>nd</sup> Cycle
Total WLEs	477 (1.5yrs)	311 (1yr, with COVID)
Re-excision rate	14.9%	8.36%
Malignancy in re excision specimen	32%	54%
Inking of specimens		73%

# Conclusion

- Relatively simple and inexpensive change produced a measurable improvement in patient outcomes
- Reduction in cut up time
- Decrease in re excision rate
- Increase in positivity rate in re excision specimens
- No complaints from pathologists except for initial teething problems
- Continue with this practise
- Encourage another unit to embrace the same

## References

- *NICE Guideline (NG101): Early and locally advanced breast cancer: Diagnosis and management (2018) nice.org.uk/guidance/ng101*
- **The effect of intraoperative specimen inking on lumpectomy re-excision rates**  
January 2010 [World Journal of Surgical Oncology](#)
- *NICE Guideline NG101 Evidence reviews (2018) Early and locally advanced breast cancer: Diagnosis and management [A] Evidence reviews for surgery to the breast*  
*Cardoso et al. (2012): The European Society of Breast Cancer Specialists recommendations for the management of young women with breast cancer; European Journal of Cancer (2012) 48, 3355– 3377*
- *SIGN Guideline 134: Treatment of primary breast cancer*  
<https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=2&cad=rja&uact=8&ved=2ahUKEwjQ2LzJkNeAhWlAMAKHR30CiYQFjABegQIBxAC&url=https%3A%2F%2Fwww.sign.ac.uk%2Fassets%2Fsign134.pdf&usg=AOvVaw3js-UwJVGTMAfGDxZWZfC>