

DOES INTRA-OPERATIVE MARGIN ASSESSMENT IMPROVE RE-EXCISION RATES? A POPULATION-BASED ANALYSIS OF OUTCOMES FOR DCIS

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BACKGROUND & OBJECTIVES

- Re-excision rates for inadequate margins in breast-conserving surgery (BCS) for DCIS are unacceptably high
- Intra-operative margin assessment has been shown to improve positive margins and re-excision rates, but optimal methods remain unclear
- Our study sought to:
 1. Evaluate provincial outcomes in BCS for DCIS using a 2mm margin threshold
 2. Determine effect of intra-operative margin assessment on margin status and need for re-excision

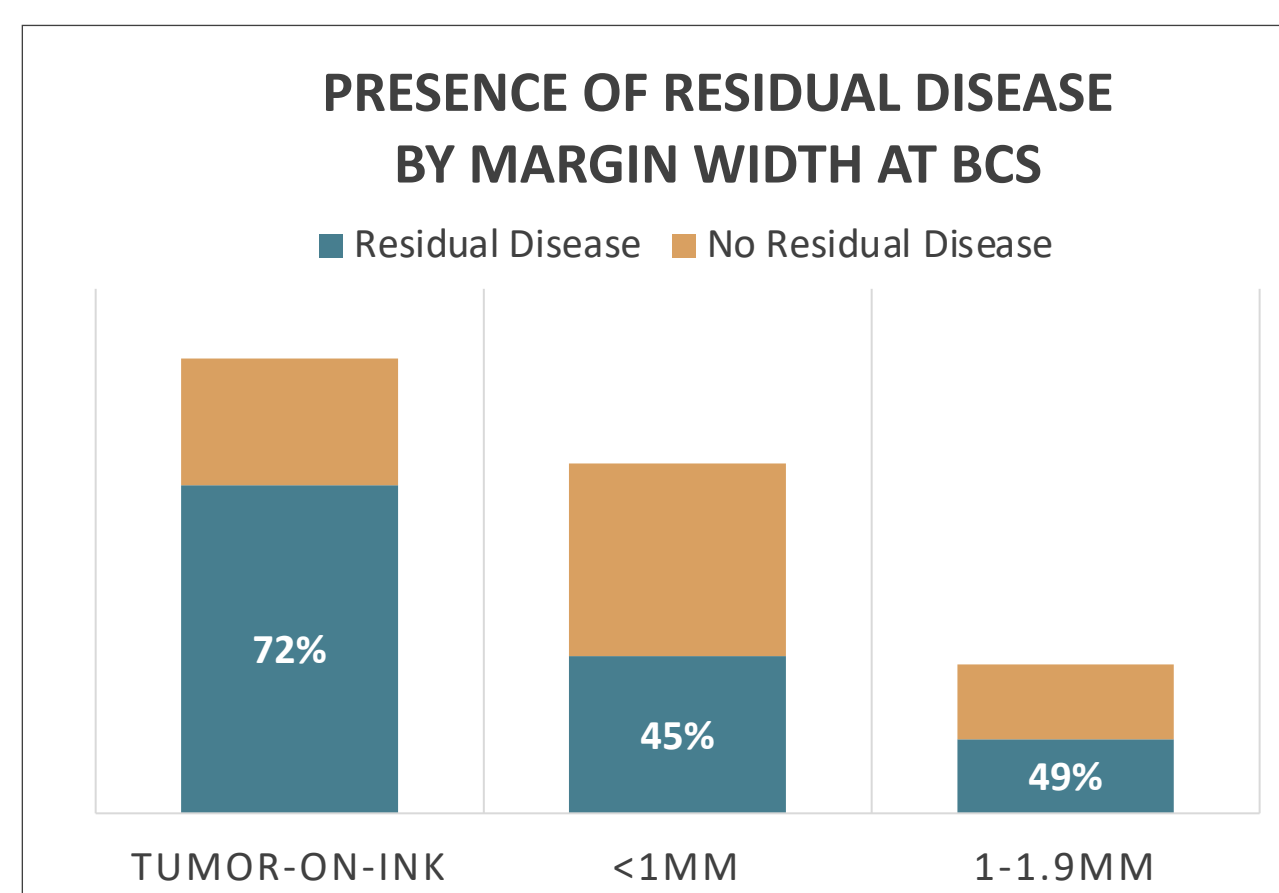
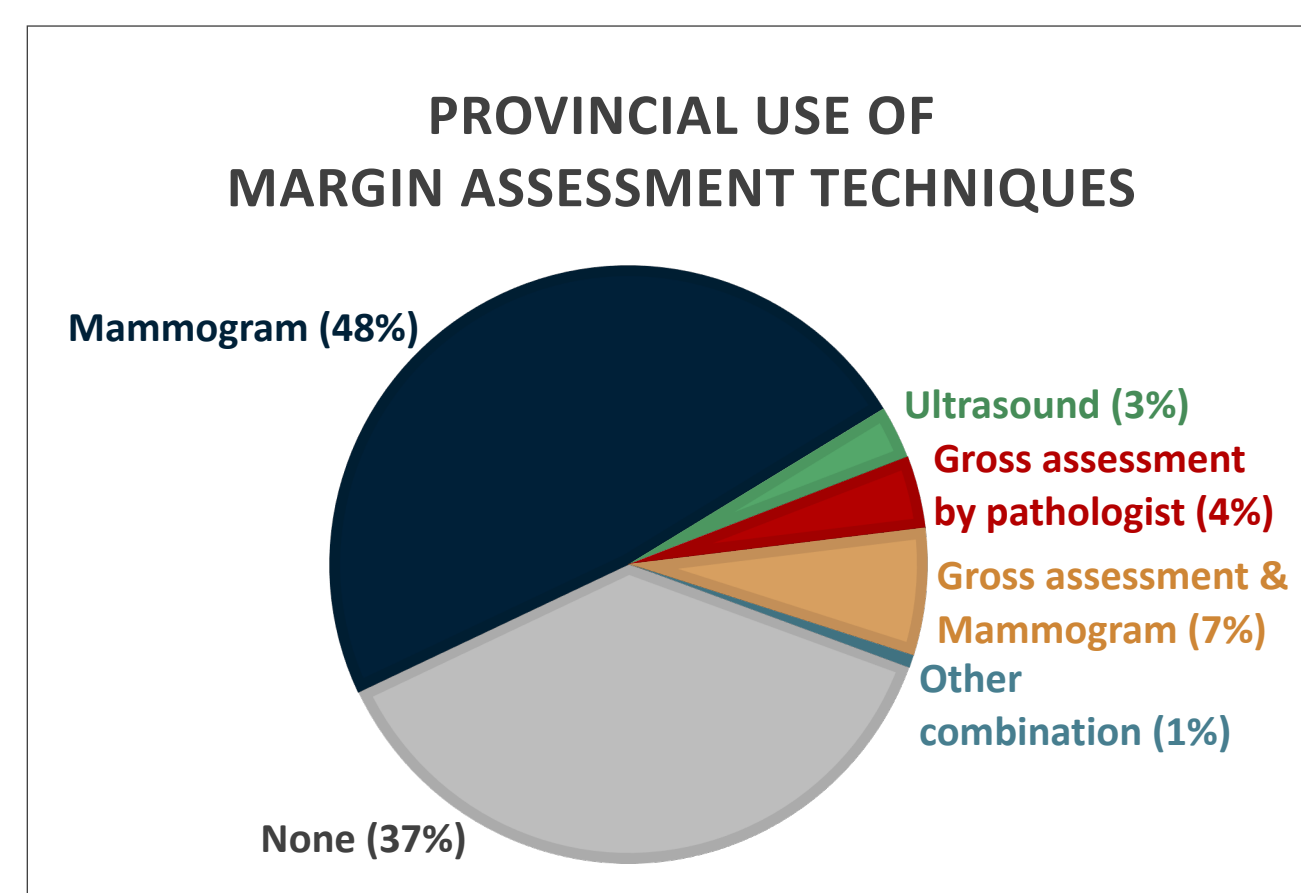
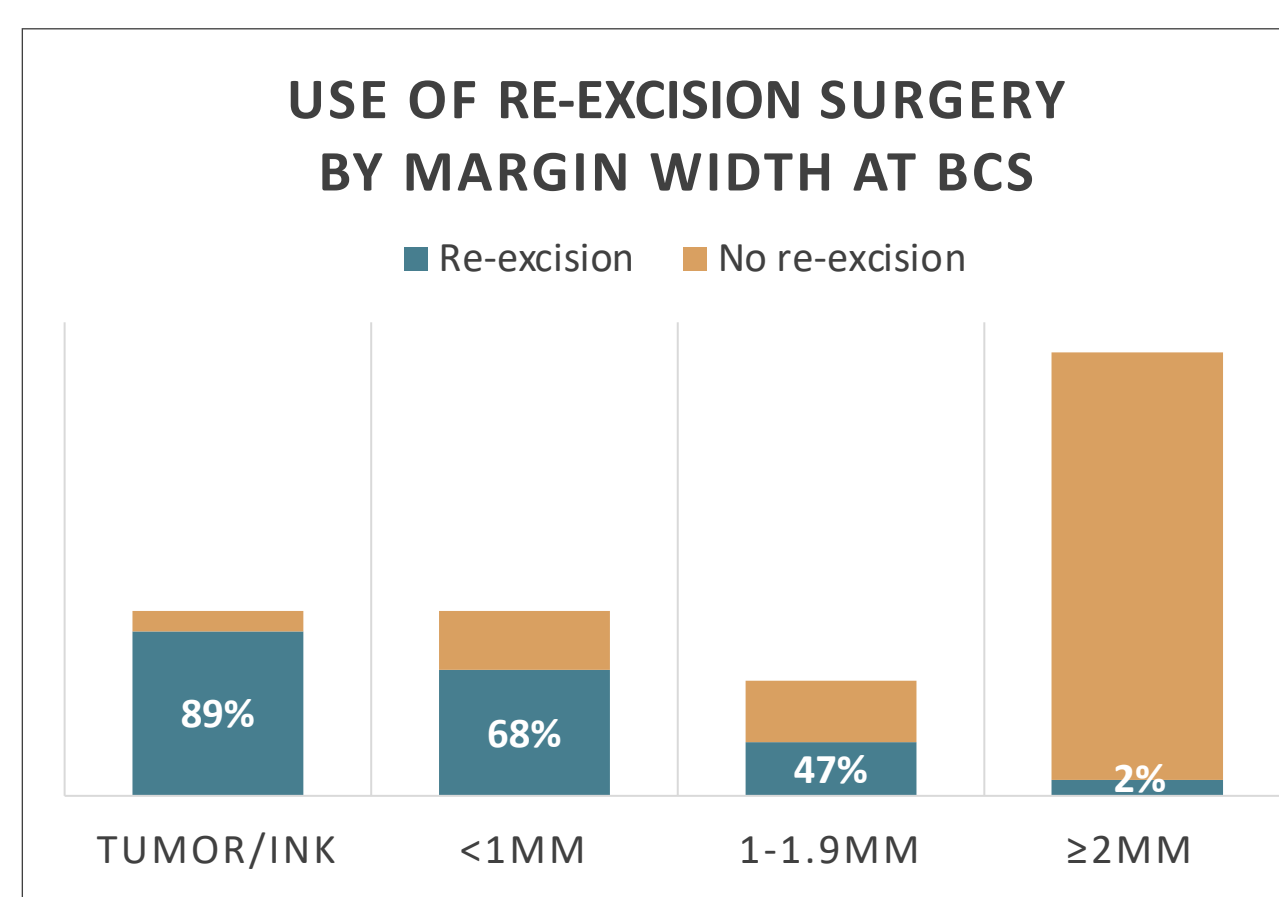
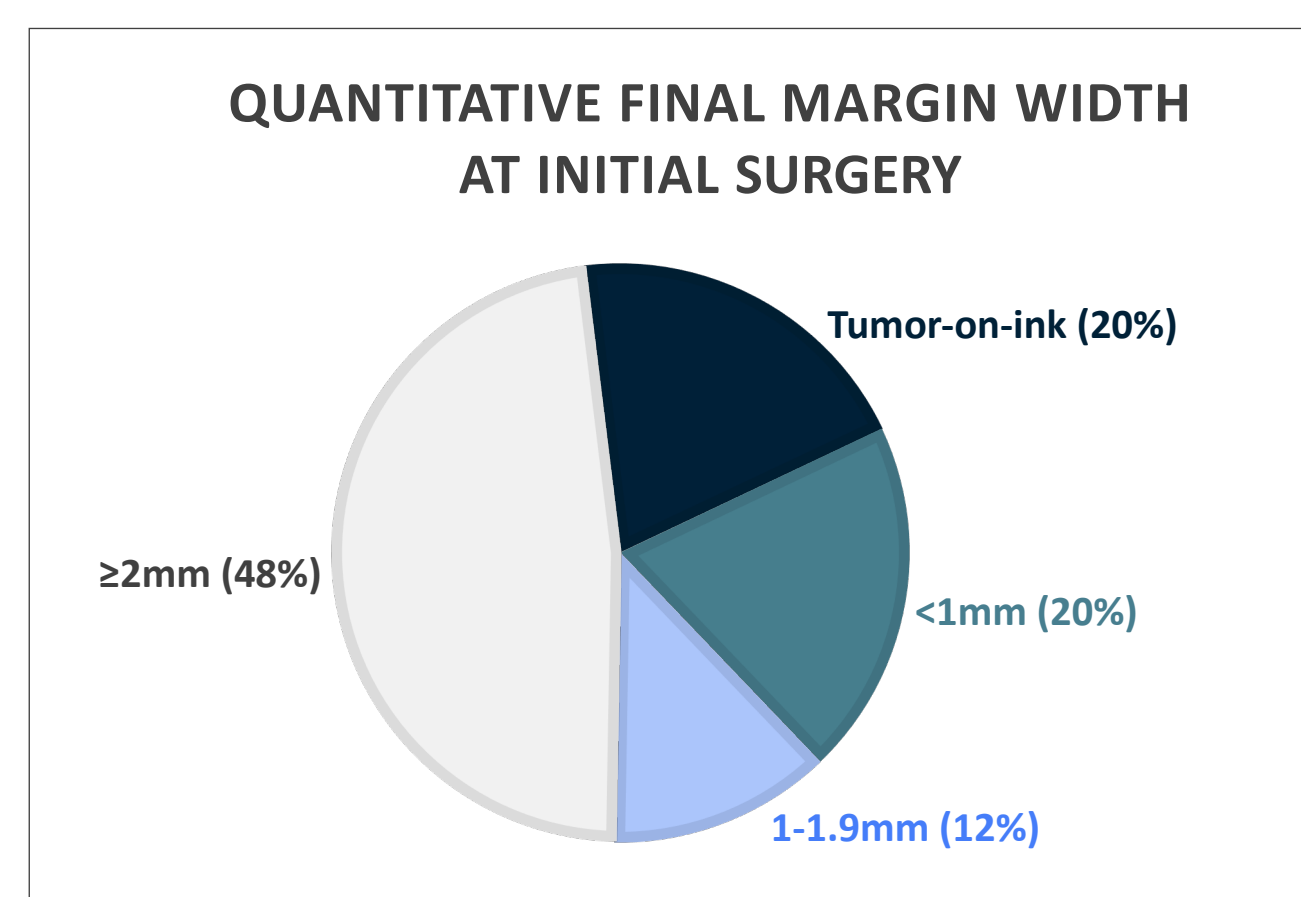
METHODS

- Retrospective, population-based review of all patients with wire-localized BCS in Alberta, Canada from Jan 2010 – Dec 2014 for biopsy-proven pure DCIS
- Cohort of 588 patients obtained from prospectively-maintained database (Alberta WebSMR)
- Descriptive statistics used to evaluate practice patterns and re-excision outcomes
- Multivariable logistic regression adjusting for known confounders and controlling for surgeon effect used to assess effect of *specimen mammography*, *intra-operative ultrasound* and *gross assessment by pathologist* on margin status and re-excision rates

RESULTS

- Overall positive margin rate 52%, re-excision rate 39%, and mastectomy rate 15%
- Re-excisions performed in 89% of patients when final margin at BCS was tumor-on-ink, 68% if <1mm, 47% if 1-1.9mm and only 2% if ≥2mm
- Residual disease present in 72% of cases performed for a tumor-on-ink margin, 45% for <1mm and 49% for 1-1.9mm
- Intra-operative margin assessment used in 63% of patients, most often *specimen mammography* (77%)
- Adjusting for confounders, no difference in margin status or re-excision rates between those with *any* margin assessment versus wire localization alone
- Effect of margin assessment varied by technique (p<0.001)
- *Gross assessment by pathologist*, frequently combined with *specimen mammography*, significantly reduced positive margins and re-excisions

	Frequency (%)	95%CI
Positive margin status at initial BCS	52%	48-56%
Re-excision surgery	39%	35-43%
Mastectomy as final surgery	15%	12-18%



	Positive Margin Status			Re-Excision Surgery		
	Adj. OR	P-value	95% CI	Adj. OR	P-value	95% CI
Any margin assessment	0.75	0.202	0.49-1.16	1.14	0.564	0.72-1.81
Specimen mammography	0.90	0.650	0.56-1.41	1.46	0.166	0.85-2.52
Intra-operative ultrasound	0.50	0.018	0.28-0.89	0.66	0.193	0.35-1.23
Gross assessment by pathologist	0.54	0.002	0.37-0.80	0.61	0.036	0.39-0.97

DISCUSSION

Findings:

- Practice patterns in Alberta, Canada are consistent with 2016 SSO/ASTRO/ASCO margin guidelines for DCIS, with few re-excisions for margins ≥2mm
- Positive margins and re-excision rates remain high, with women frequently converted to mastectomy when a re-excision is performed
- Significant rates of residual disease in re-excisions for margins <2mm
- *Gross assessment by pathologist* reduced positive margins and re-excisions, though these findings may be driven by a technique used at a single centre in the province combining gross assessment with intact/sliced specimen mammography

Strengths:

- Population-based study capturing 95% of breast surgeries in the province from fourteen different institutions
- Patient and surgical data from prospectively-maintained database

Limitations:

- Intent of margin assessment techniques not known, especially for *specimen mammography* as some may use merely to confirm lesion excision, not for true margin assessment
- Variability in implementation of modalities and surgeons' thresholds for immediate revisions
- Analysis does not account for specific multi-modality techniques

CONCLUSIONS

- Despite adherence to a 2mm margin threshold in BCS for DCIS, positive margins and re-excision rates remain high in our province, with significant rates of residual disease found for margins <2mm
- Over one in three women converted to mastectomy when re-excised
- Gross margin assessment by a pathologist may reduce re-excision rates, but further study needed given the variability of this technique's implementation in our population

FUTURE DIRECTIONS

- Prospective study with standardized margin assessment techniques, including combination methods, needed to elucidate optimal methods
- Identifying predictors of residual disease with close margins <2mm may help stratify patients who will benefit most from re-excision surgery