

# Implementation of Intra-Operative Specimen Tomosynthesis and Impact of Re-Excision Rates for Image Guided Partial Mastectomies

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## Introduction

- Image guided localization is a valuable tool commonly utilized during partial mastectomy (PM) to ensure accurate removal of early-stage breast cancer.
- Many techniques and imaging modalities exist to confirm completeness of the initial procedure including: six (6) quadrant shaves, selective shaves, pathologic gross evaluation and margin probe use.
- Still, approximately 1 out of 5 patients require a second procedure in order to obtain a negative surgical margin
- A promising tool, intraoperative specimen tomosynthesis allows for imaging in the OR instead of remote radiologic interpretation, overall decreasing operative time and potentially unnecessary shaves and re-excisions

## Objective

- To determine the effect of the Mozart Specimen Tomosynthesis System (Kubtec Imaging, Stratford CT) on re-excision rates for image-guided PMs.

## Methods

- Re-excision rates were collected for a single surgeon over 6 years, 37 months before and 37 months after the implementation of Mozart.
- For the first 37 months, shave margins were determined by palpation and radiologist interpretation of 2D images. For the second, Mozart was used.
- Final pathology of the initial specimen, pathology of additional shave margins, and overall positive margin rate were determined for both groups.

## Results

- 561 image guided PMs were performed, 250 before use of Mozart and 311 after.
- A majority of both the pre and post Mozart groups were localized using a single wire (**Table 1**).
- More additional shaves were taken under the guidance of Mozart than without (**Chart 1**), resulting in 11.28% of the first group with positive margins compared to 5.5% of the second group, with an odds ratio of 0.458.
- The majority of positive margins contained cancer (**Chart 2**).

Localization technique	n	% col
<b>Pre-Mozart (n=250)</b>		
Single Wire	227	90.8%
Bracketed wire	19	7.6%
Image guided skin marking	4	1.6%
<b>Post-Mozart (n=311)</b>		
Single Wire	165	53.05%
Savi Scout Radar Localization	123	39.55%
Bracketed wire	20	6.43%
Savi Bracket	2	0.64%
Image guided skin marking	1	0.32%

Table 1. Localization Techniques for PMs

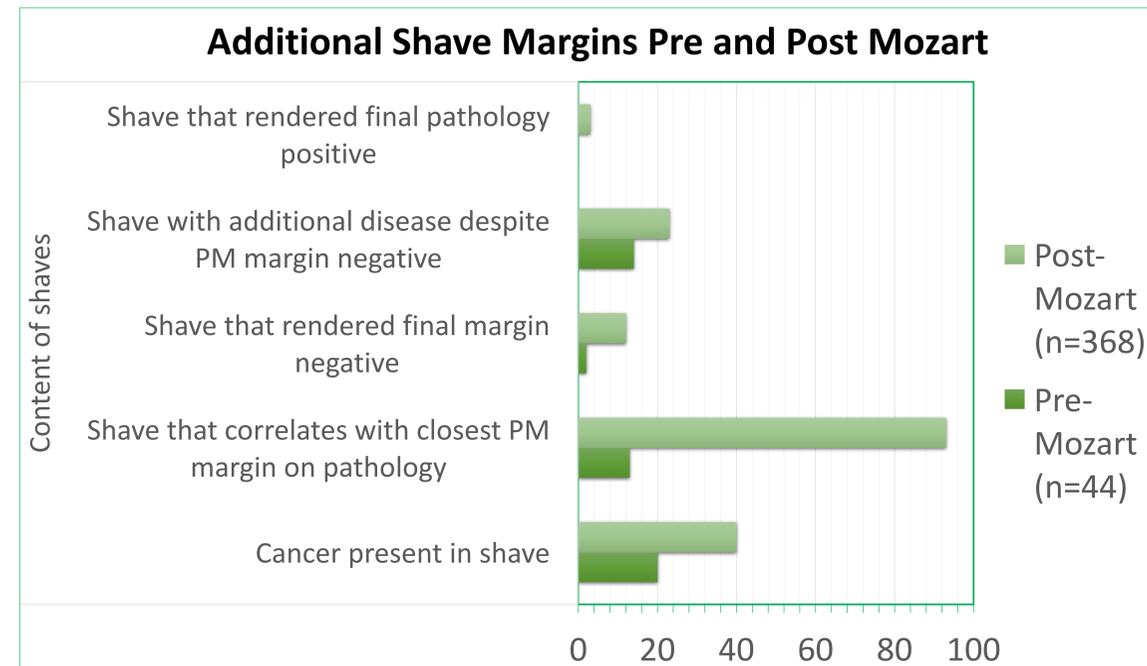


Chart 1. Summary of additional Shave margins pre and post use of Mozart

## Summary of Lumpectomy Positive Margin Characteristics: Pre and Post Mozart

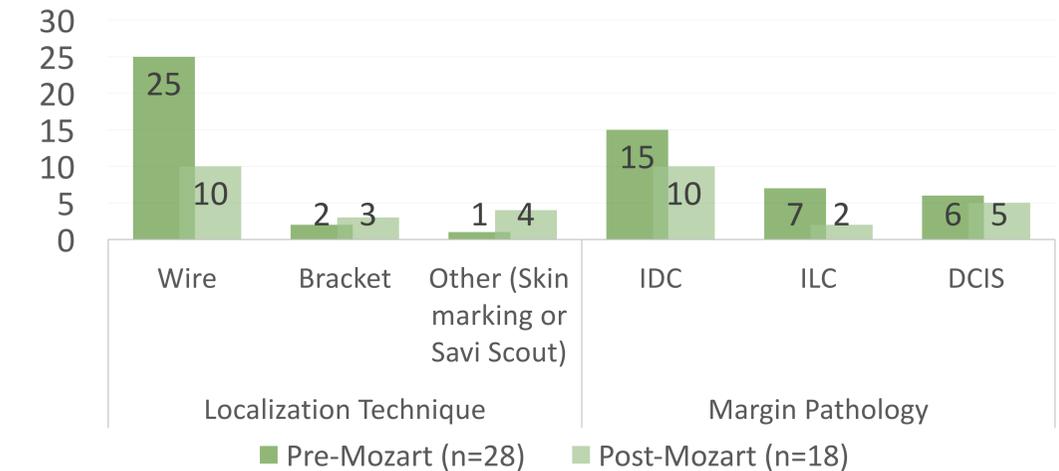


Chart 2. Summary of localization technique and margin pathology of all positive margins, both pre and post Mozart

## Conclusions

- Use of Mozart for localization versus remote radiologic interpretation for determining additional shave margins is associated with lower positive margins rates.
- Most importantly, use of Mozart was shown to discover positive margins that would have been missed based on final pathology of initial specimen alone.
- While there were significantly more shave margins taken based on selective shave margin determination, this is far fewer than the 1,866 that would be taken from full cavity shave
- Further studies are needed to compare the two techniques.