

# Outcomes after preservation of the internal mammary artery perforator in nipple-sparing mastectomy

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## Introduction

- Nipple-sparing mastectomy (NSM) has gained widespread acceptance as an oncologically safe procedure with excellent cosmetic results.
- However, nipple-areola complex (NAC) and skin flap ischemia and necrosis continue to be serious complications, with literature reported rates ranging from 15 to 26%.
- Preoperative MRI has previously been shown to characterize breast vascularity as single versus dual blood supply.
- With the dominant blood supply to the NAC originating from the internal mammary (IM) artery, this study assessed the impact of breast magnetic resonance imaging (MRI)-guided identification of dominant internal mammary perforators and preservation thereof during NSM on post-operative outcomes.

## Methods

- Following IRB approval, all patients who underwent NSM by a single breast surgeon followed by immediate breast reconstruction from January 2018 to June 2019 were identified using a prospectively maintained database.
- In all cases, the preoperative breast MRI was reviewed by the breast surgeon, and the dominant blood flow confirmed with a breast radiologist prior to mastectomy.
- Parameters of interest included intraoperative confirmation of preoperatively identified IM perforator(s) and preservation thereof, and postoperative complications.

## Results

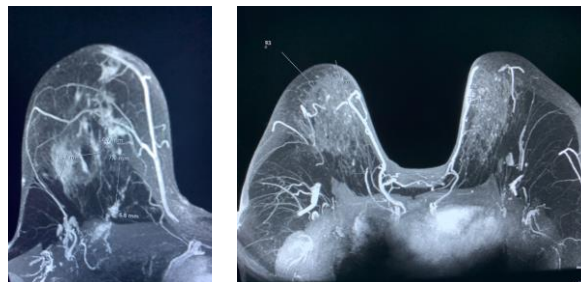


Figure 1. MRI identifying internal mammary artery perforator dominant blood flow

- Eighty NSM with immediate reconstruction were performed in 53 consecutive patients with a mean age and BMI of 47.9 and 26, respectively, were included in the study.
- Preoperative MRI demonstrated a dominant IM perforator in 74% (59/80) of NSM. Intraoperatively, the dominant IM perforator was identified and preserved in 72% (57/80) of NSM.
- The dominant IM perforator was preserved in 97% of those identified by preoperative MRI (57/59).

## Conclusions

- Preoperative MRI can reliably identify IM perforator dominant blood flow. This study demonstrates the feasibility of intraoperative IM perforator identification and preservation during NSM in the majority of patients.
- Evaluation of ischemic complications in this cohort of patients suggest that preservation of the IM perforator blood flow is associated with lower rates of ischemic complications than reported in the literature.

Type of Post-Operative Complication	Complications among mastectomies with reconstruction n=80
Epidermolysis	4 (5%)
Necrosis	6 (7.5%)
Nipple Necrosis	5 (6.25%)
Areola Necrosis	2 (2.5%)
Skin Necrosis	2 (2.5%)
Infection	5 (6.25%)
Other Complications	2 (2.25%)
Re-operation and Procedures	
Re-operation Total	6 (7.5%)
Re-operation for NAC or Skin Ischemia	2 (2.25%)
Implant Removal	1 (1.25%)

Table 1. Post-operative complications after NSM with immediate reconstruction

- 4/80 mastectomies had epidermolysis without necrosis.
- 6/80 mastectomies had necrosis and the total rate of any necrosis in this cohort was 7.5%.
- The sub-categories of necrosis shown (nipple, areolar and skin necrosis) reflect the absolute number of mastectomies with those types of necrosis. Some women had more than one type of necrosis for example nipple and areolar or areolar and skin.
- All re-operations and office procedures for complications are reported among the 80 mastectomies. Re-operations for margin re-excision, ALND or oncologic reasons without complications were excluded.

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