

Management of the Ischemic Nipple–Areola Complex After Breast Reduction

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KEYWORDS

• Areolar • Nipple • Necrosis • Ischemia • Management

KEY POINTS

- The anatomy of breast circulation as a key element to prevent nipple–areolar complex (NAC) ischemia and necrosis.
- Ischemia detection during the operative procedure to enable reperfusion maneuvers is important.
- Reperfusion techniques are described as essential to revert NAC sufferance.
- NAC grafting as last option in salvage attempt, and as primary indication.
- NAC reconstruction with different techniques and with synthetic materials is described.



Video content accompanies this article at www.plastic.theclinics.com

INTRODUCTION

Partial or total nipple necrosis after breast reduction surgery can be a devastating complication for the patient and the surgeon (Figs. 1 and 2). Frequent monitoring of the nipple–areola complex (NAC) and early identification of vascular compromise followed by appropriate action may prevent total NAC loss. Intraoperative pale appearance of the NAC complex can be the initial sign indicating that “something is wrong.”^{1–3}

Different maneuvers other than tissue resection that are performed during breast reduction surgery can alter NAC vitality and lead to ischemia and partial/total loss, areolar sufferance, nipple projection loss, and/or hypopigmentation.^{4–6} This situation can arise independent of the technique.^{7–9}

NAC necrosis has been reported in 2% of breast reduction cases and in 1% of mastopexy cases; epidermolysis with blisterlike formation owing to intradermal or subdermal edema may result in 5% to 11% of cases.^{1,10}

ANATOMIC CONSIDERATIONS

An important element for understanding the possibility of NAC ischemia and necrosis is awareness of breast and NAC vascular anatomy.^{11,12} Any surgical maneuver involving the breast parenchyma will alter not only its architecture but its blood supply as well. Detaching the parenchyma from the pectoralis fascia is not necessary during reduction procedures; this alters not only the vascularization but also the breast innervation, leading to unnecessary complications.^{13,14} Regardless of the

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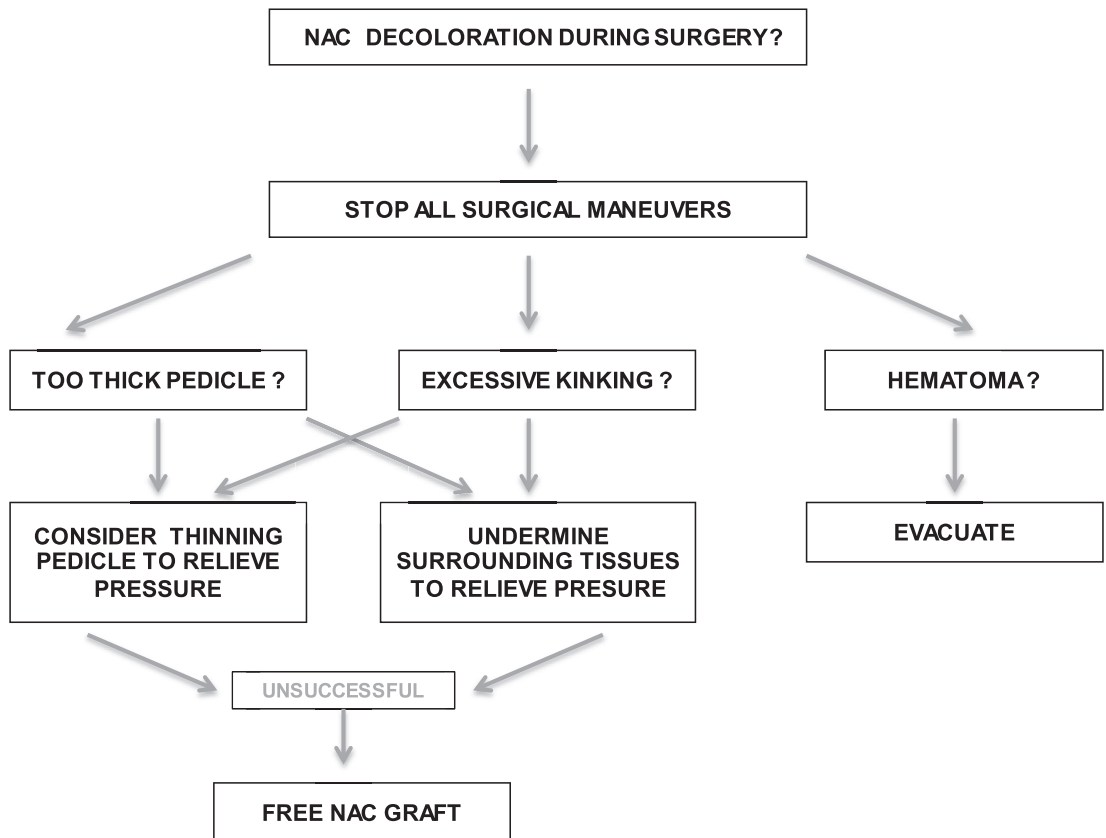


Fig. 1. Suspected nipple-areola complex ischemia during surgery.

chosen pedicle, the reduction technique, and resected breast parenchyma, the remaining breast tissue and NAC can be mobilized to the final position without detachment from the pectoralis fascia (Video 1). This can be done with inverted pyramidal resections, thereby avoiding the remaining dead spaces.^{15,16}

Vascular Nutrition of the Breast

- Internal and external mammary systems (Fig. 3);
- Thoracoacromial artery with corresponding perforators;
- Intercostal perforator vessels;
- Lateral thoracic system; and
- Supraclavicular branches.

Another key element to keep in mind during breast reduction revisions is the patient history related to previous breast surgeries and access to surgical protocols (it is ideal if pictures are available). It is impossible to determine the surgical strategies previously used based only on the visible skin scar pattern alone; information on the surgery performed over the parenchyma

related to the original breast size, resected tissue volume, selected NAC pedicle, original existing relations of the NAC, and surgery dates is fundamental to prevent NAC loss during a revision surgery (Fig. 4).¹⁶⁻¹⁹

RISK FACTORS CONTRIBUTING TO NIPPLE-AREOLA COMPLEX NECROSIS

NAC ischemia and necrosis occurs more frequently in cases involving large reductions (resection >1000 g), where a long pedicle is created to carry NAC perfusion, and folding during closure can stress the circulation.^{12,20-22}

Be Alert to

- Length of pedicle (>10 cm mobilization);
- Large reductions (>1000 g);
- Excessive pedicle folding, kinking, or malrotation;
- Excessive thinning of the pedicle;
- Dense gland pedicle (compression);
- Simultaneous augmentation, mastopexy, and reduction with implant compression; and

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