Endoscopic Nipple Sparing Mastectomy: Early Outcomes and Learning Curve from a Unicentric Series of 21 Cases

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Abstract

Endoscopic nipple-sparing mastectomy (eNSM) is an innovative technic consisting in removal of breast glandular tissue while preserving the skin envelope and the nipple-areolar complex through a small, hidden incision using an endoscopic system. Our rapid learning curve has allowed us to optimize operating time and experience few postoperative complication.

Introduction

Endoscopic nipple-sparing mastectomy (eNSM) is a minimally invasive technique offering improved cosmetic outcomes while preserving oncologic safety. As its international use expands, mastering the procedure presents technical and ergonomic challenges, and few studies have described the early learning curve or setup innovations [1,2].
The objective was to evaluate the learning curve, perioperative outcomes, and technical refinements of eNSM in a unicentric early experience.



Figure 1. Incision



Figure 2. Gel point placement

Methods and Materials

We conducted a retrospective, descriptive study of 21 consecutive eNSM procedures between November 2024 and June 2025. The procedure was offered to patients undergoing mastectomy with immediate implant-based reconstruction. Patients with prior ipsilateral breast irradiation were excluded. We collected data on patient characteristics, indications, operative time, hospital stay, adjuvant treatments, and complications.
A specific technical feature of our approach is the use of a high horizontal axillary incision, parallel to the natural axillary crease, providing optimal access and cosmetic concealment. For bilateral procedures, a single video tower positioned at the foot of the patient allowed both sides to be treated successively without reinstallation. In one case, we performed a simultaneous bilateral eNSM using two surgical teams and dual video towers, achieving a total operative time of 137 minutes for both sides.



Figure 3. Video tower position – bilateral procedure

Results

A total of 21 eNSM procedures were performed: 9 unilateral and 6 bilateral.
The median age was 46 years. Indications included 8 multifocal tumors and 8 prophylactic mastectomies.
Among the 13 invasive cancers: 9 were HR+/HER2–, 1 HR+/HER2+, and 2 triple-negative.
The median tumor size was 13 mm, and associated DCIS was present in 4 cases (median size: 30 mm). Two patients had nodal involvement.
Neoadjuvant chemotherapy was administered in 2 patients, and 1 received adjuvant chemotherapy. Two patients underwent adjuvant radiotherapy.
Operative time for unilateral eNSM was a median of 105 minutes (range: 105–180), and for bilateral procedures 160 minutes (range: 137–210). A trend toward shorter operating times was observed over the series, especially with team coordination and ergonomics optimization. The fastest bilateral case (137 minutes) was achieved using a double-surgical team, double-video tower approach.
One intraoperative complication occurred (bleeding requiring conversion to open surgery), during the initial phase. No postoperative complications were reported.
All patients underwent immediate implant-based reconstruction (median volume: 310 cc, range: 260–525). Median hospital stay was 2 nights (range: 2–4).



Figure 4a.



Figure 4b.

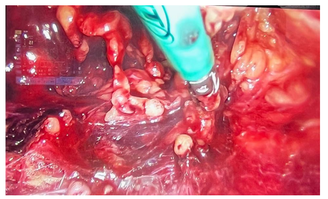


Figure 4c.

Figure 4a, 4b, 4c. Per operative views



Figure 5. Postoperative scar (3 months)

Conclusions

Our experience confirms the feasibility and safety of eNSM in selected patients, with a short learning curve. Technical optimizations—such as high axillary incisions and ergonomically placed video towers—facilitated bilateral procedures without repositioning. Simultaneous dual-team surgery further reduced operative time. These innovations may help standardize and streamline eNSM in high-volume centers [3].

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