Clinics in Surgery

Case Report
Published: 02 Aug, 2019

Endoscopic Nipple-Sparing Mastectomy with Immediate Prepectoral Implant-Based Reconstruction: First Report of Surgical Technique

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Abstract

Introduction: Technical innovations allow endoscopic Nipple-Sparing Mastectomy (NSM), which is well tolerated and associated with greater patient satisfaction. Endoscopic technique did not have wide diffusion; many centers have abandoned this technique because of technical challenges.

Implant-Based Reconstruction (IBR) remains the most common form of breast reconstruction. Current techniques involve partial or total coverage of the implant with pectoralis major muscle to prevent exposure or infection. Muscle dissection has functional and cosmetic consequences.

Methods: We present a case of 45 year-old patient presenting with personal history of right breast cancer. Patient requested left prophylactic mastectomy. We used a 4cm-long single hidden scar on axillary line. Endoscopic nipple-sparing mastectomy was done using a single port with three sleeves. Immediate breast reconstruction was performed by inserting a silicon implant in prepectoral plane without Acellular Dermal Matrix (ADM).

Results: At 6 months postoperatively, no complication had been reported. The patient was satisfied with the result and no further correction was necessary.

Conclusion: Endoscopic surgery is a valuable option for nipple-sparing mastectomy. This method is a less expensive alternative technique to robotic approach. It could enable safe prepectoral IBR without placement of ADM and with lower risk of complications.

Keywords: Breast implantation; Carcinoma; Endoscopy; Mammaplasty; Subcutaneous mastectomy

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Received Date: *08 Jul 2019*
Accepted Date: *31 Jul 2019*
Published Date: *02 Aug 2019*

Citation:
Rathat G, Herlin C, Bonnel C, Captier G, Duraes M. Endoscopic Nipple-Sparing Mastectomy with Immediate Prepectoral Implant-Based Reconstruction: First Report of Surgical Technique. Clin Surg. 2019; 4: 2542.

Introduction

Prophylactic mastectomy provides greatest reduction in risk of breast cancer development in BRCA population [1]. Choosing prophylactic mastectomy is a major decision for women and surgical esthetic outcome is an important patient consideration. Implanted-based Immediate Breast Reconstruction (IBR) following skin- or nipple-sparing mastectomy optimizes cosmetics and is associated with high patient satisfaction and good psychological adjustment.

Placement of prosthetic implants has been subject of discussion. Breast implants were firstly placed in prepectoral plane. This technique was abandoned due to high incidence of infection, capsular contracture and explanation. Sub muscular implant placement was adopted but has been associated with a number of complications including pain, functional impairment, unnatural appearing breast [2,3]. Prepectoral prosthetic breast reconstruction has gained popularity with emergence of Acellular Dermal Matrix (ADM) but remains controversial [2,4].

Endoscopic NSM (E-NSM) is associated with greater patient satisfaction but was not widely disseminated because of time-consuming learning curve and technical difficulties. Moreover, most of incisions used are visible and considered as in esthetic by patients [5,6]. Robotic assisted

Figure 1: Intraoperative view of the patient after immediate breast reconstruction and suture of axillary incision.

technology facilitates minimal invasive surgery but is a highly specialized, expensive and largely unavailable technique.

Endoscopic technique with axillary incision could be a great solution for NSM and enable safe prepectoral implant placement without adjunction of ADM. This article describes surgical technique and postoperative outcome of our first case of E-NSM associated with IBR.

Case Presentation

We report the case of 45 year-old patient presenting with personal history of breast cancer. She underwent a right mastectomy with delayed reconstruction using latissimus dorsi flap with implant. Patient requested left prophylactic mastectomy. Clinical examination, mammography and breast MRI did not show abnormalities. Her breast cup-size was B-cup.

Preoperative markings were made with patient in standing position. Skin incision was marked in axillary line, 5 cm posterior to lateral border of the gland which resulted in invisible scar with arms alongside the body. Intervention was performed under general anesthesia. Patient was placed in supine position, with ipsilateral arm abducted to 90°.

4 cm long incision was made as previously described. Adrenalin was infiltrated from external breast segments, as far as possible to internal segments. After subcutaneous dissection over an area of few centimeters, single port with three sleeves was inserted. It was connected to an insufflator to keep pressure at 8 mmHg to 10 mmHg. Surgery was performed using 10 mm-diameter straight 0° rigid endoscope. Dissection was performed with fenestrated bipolar forceps and monopolar scissors. Mastectomy began with subcutaneous dissection in lateral to medial direction and was completed with gland separation from deep fascia, just on pectoralis major muscle. Gland was extracted through axillary skin incision. Following irrigation and hemostasis of the mastectomy pocket, a drain was placed in surgical site. Immediate breast reconstruction was performed by inserting a silicon implant in prepectoral plane without ADM. Incision was closed hermetically in three planes (Figure 1 and 2). Operative time was 160 minutes. Patient left hospital on day 4 after surgery.

At 6 months postoperatively, no complication had been reported. The patient was satisfied with the result and no further correction was necessary.

Discussion

Mastectomy is associated with increased incidence of psychological disturbances which have been minimized by IBR. With advances in minimally invasive endoscopic techniques, patients can have mastectomy and IBR done with endoscopic assistance to minimize skin incision and improve cosmetic outcome. This technique was not significantly adopted in clinical practice because of technical difficulties and slow learning curve. Most of these methods involved three incisions which remained visible following surgery [7,8]. In 2014, Tukenmez et al. [9] described single-port technique but involved a visible scar and sub-pectoral plane IBR.

Figure 2: Pre (left) and postoperative view (right) of the patient.

Toesca et al. [10] developed a surgical approach using Da Vinci Surgical System® with small hidden axillary scar (2.5 cm length) and immediate breast reconstruction. In 2017, they described the outcome of the first 29 procedures which resulted in 7% conversion rate to traditional open surgery [11]. Sarfati et al. [6] used same surgical approach with three hidden incisions. Despite encouraging results, this technique has limitations such as limited access and operating costs.

We described an endoscopic technique with single hidden incision which allows complete NSM and IBR. Position of incision should reduce the risk of complications especially implant extrusion, the scar being distant from implant site. Under endoscopic vision, meticulous dissection with lower skin traumatism and hemostasis can be achieved. Moreover, E-NSM could represent a less expensive and more available alternative to robotic approach.

In this report, silicone implant was inserted in prepectoral plane. Several advancements in both mastectomy and reconstructive techniques allow safe, efficacious subcutaneous implant placement. This technique offers muscle preservation, superior breast shape and less pain [12,13].

Operating time was longer than traditional procedure. Learning curve should be rapid given easy use of surgical instruments and frequency of such surgical procedure.

Conclusion

We describe a technique of E-NSM and IBR with single hidden axillary incision. This method is a less expensive alternative technique to robotic approach. It could enable safe prepectoral IBR without placement of ADM and with lower risk of complications. A prospective study should be initiated to assess the role of this original approach in therapeutic arsenal for breast reconstructive surgery.

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