

## Case Study

### Removal of Invasive Ductal Carcinoma with a Novel Soft-tissue Excision Device

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#### Introduction

The Phantom Flexible Loop Electrosurgical Electrode (Rubicon Medical, Redwood City, CA) is a novel soft-tissue excision tool for breast surgery. This case study reports early surgical experience with the device.

#### Background

Female patient, age 54, presented with invasive ductal carcinoma in the left breast. The patient was referred to the surgeon after diagnosis of invasive breast cancer from a core biopsy. The cancer was discovered during a routine screening mammogram. The ultrasound image of the lesion prior to surgical intervention showed a mass 0.7 x 0.7 x 0.8 cm in size (Figure 1).

#### Phantom Procedure

The patient was taken to the operating room and under anesthesia, a 3 mm incision was made in the lower axilla for percutaneous insertion of the device. A secondary incision for removal of the excised specimen was mapped prior to excision (Figure 2). The device was positioned immediately below the lesion under ultrasound guidance (SonoSite MicroMaxx, Bothell, WA). The Phantom device was connected via an electrosurgical pencil adapter to the monopolar energy port of a Force EZ generator (ValleyLab, Boulder, CO) with energy settings at 180 watts, pure-cut. After positioning of the device was confirmed under ultrasound, RF energy was applied and the device loop was deployed from the 3:00 to the 9:00 positions, over the imaged lesion. Excision was clearly visible under ultrasound, represented by the arc of the device as the cutting loop eclipsed the target lesion.

The secondary incision was 3 cm in length directly over the tumor (Figure 3). The excised specimen was extracted from the breast using an Allis clamp. Orientation of the lesion was performed by placing sutures on the anterior, lateral, and superior margins of the excised specimen (Figure 4). The procedure time from insertion of the device to extraction of the specimen was six minutes.

#### Pathology and Outcome

Pathology reported the specimen size as 5.5 x 3.5 x 2.0 cm and the weight as 14.4 gm. The specimen analysis showed invasive ductal carcinoma with lobular features, Grade I, 1.0 cm. The excised specimen resulted in clear margins with the following characteristics: inferior margin 4mm; all others 7.5mm; no LVI; sentinel node negative. The cosmetic outcome on surgical assessment was excellent.

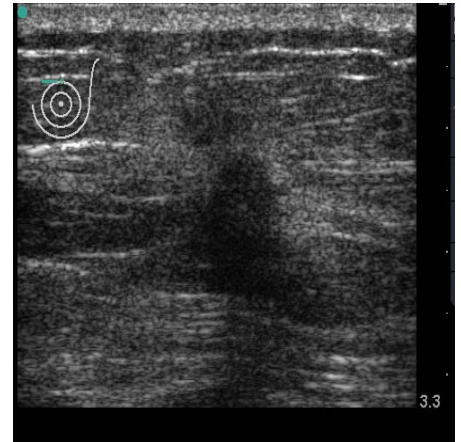


Figure 1: Ultrasound image of lesion



Figure 2: Whole breast and target of second incision for removal



Figure 3: Specimen removal incision



Figure 4: Oriented specimen post-excision