

## Research Article

### **Resection Index at Stereotactic Wire Localization Breast Biopsies**

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**Abstract:** Advances and easy accessibility to the technologies of imaging makes it possible for the breast lesions to be recognized before they become palpable. General consensus with these nonpalpable lesions which may have the potential for being malignant is to option a biopsy in many countries. Marking the lesion with a wire is the most common technique in many countries for performing a biopsy. Causing a wide area of resection and especially for malignant cases, inadequate negative margins and cosmetic problems bring a lot of questions with this procedure. The aim of this study is to emphasize the necessity of finding a more appropriate method to prevent cosmetic issues due to an excess tissue extracted by wire guided breast biopsy. In this study, lesions of sixty patients were marked with a wire and the biopsy materials were analyzed for the volume resected, the resection index and negative margins for the lesions at Ankara Numune Training and Research Hospital. Patients were called and asked how their biopsy sites were looking. We wanted them to select one of the answers and recorded their verbal answers. Answers were presence "no difference "or "compression /contraction" after the procedure. The average resected volume was 12,13 cm<sup>3</sup>, the resection index was 14,64. The ratio for malignant lesions was 31,6% and 42% of the lesions had positive margins. Most of the biopsies done for these nonpalpable and highly suspicious lesions with this method were reported to be benign and inadequately large amount of tissue was resected for obtaining a negative margin. This procedure may face the patients with cosmetic problems. In case of nonpalpable breast lesions, alternative procedures for more effective and convenient biopsy methods are needed to be defined.

**Keywords:** The resection index, volume, nonpalpable breast lesions, wire localization

#### **INTRODUCTION**

There are some techniques used for localization of non palpable breast lesions. The location and the characteristics of the lesion as well as the facilities and the instruments in hand determine the technique that the surgeon chooses [1].

The most common technique used is the localization of the lesion with a wire under Ultrasonographic (usg) or mammography(MG) guide [2]. Technique problems of using needles are, placement of the wire, transportation of the patient as well as, choosing the type of the incision by the surgeon and a need of wide area of tissue resection for having negative margins [3]. The placement of the needle is traumatic and the wire guided needle may deviate or replacement from the correct localization may happen. If the needle localization changes (this happens frequently) and the breast tissue is fatty ,the resected material may not include the whole tissue. Surgeon may live difficulty to take whole lesion out [2]. Surgeon may live difficulty in choosing the incision type for reaching the lesion and the incision may be too far from the

lesion in the guidance of the wire. The wire may change its correct localization during manipulations at the surgery or even break down and surgeon may need to do more extensive excision. Time consumed for taking a mammography of the specimen. If the mammography does not include lesion, re-resection may be needed and surgery time is elongated. Extensive excision may cause late hematoma and cosmetic deformities.

#### **MATERIALS AND METHODS**

Sixty female patients who had non palpable lesions found at MG or USG were biopsied under wire guidance at Ankara Numune Training and Research Hospital. Surgeon gets the information about the exact location of the lesion from the radiologist who located the wire and decides about the type of incision to reach the lesion with the shortest way. The specimens were fixated with formol solution and then the size of each lesion and specimen was measured.

Ages of the patients, USG and/or MG reports, size of each lesion and specimen were reported to be malignant has been recorded. Pathology reports were

analyzed and the area of each material was calculated with the formula below [11].

$$V=1/6. a. b. c$$

a, b, and c are perpendicular diameters of tumor foci. Resection index was calculated by the resection volume/area of lesion. Patients were called and asked how their biopsy sites were looking. We wanted them to select one of the answers below and recoded their verbal answers. Answers were presence "no difference "or" depression/contraction" after the procedure. Study was approved and authorized by local ethic committee.

NCSS (Number cruncher stat system) 2007 and PASS 2012 SS programs were used for statistical analyses. While evaluating the study datas, districative statistical metods were used (mean, standard deviation, interquartyle range, ratio).

**RESULTS**

The clinicopathologic features of the patient are shown at table 1. Mammography of the specimens were taken

in patients (n=48) who were guided with wire under MG. In eight patients there was micro calcification observed at MG. Operation was ended after specimen graphy was seen by the radiologist and the surgeon. In cases with US guide,since a lesion would not be possible to display (n=12) a specimen graphy was not ordered. According to the specimen graphy, the lesions described for all the patients were correct at location. Benign lesions were reported by pathologists at 68.4% (n=41)of patients. Invasive cancer was reported in 18 patients and ductal carcinoma was reported in 1 patient. Surgical margin positivity was present at eight patients with at least one side involved. Lesion volume (mean SD) is 1,76(4.08)cm3, calculating resection volume 12,13 (4,71-40,29)cm3 and resection index 14,64 (6,03-62,80) resulted in 42% (8/19) of positive margins. If those patients with positive tumoral margin would have preferred conservative surgery; they would have needed re-exion. For the patient with ductal carcinoma in situ, a re-excision was performed to get a tumor-negative margin. 25% of patients on phone interview has mentioned to have collapse or retraction at the biopsy site.

**Table 1: The clinicopathologic features of the patients**

<b>Mean age(years) (mean(SD))</b>	51 (10)
<b>Radiological</b>	
BIRADS3	4
BIRADS4	33
BIRADS4a	8
BIRADS4b	2
BIRADS4c	2
BIRADS 5	8
<b>Histology</b>	
Invasive ductal cancer	15
Invasive lobuler cancer	3
Ductal Carsinoma insitu	1
Fibroadenoma	8
Fibrocystic changes	8
Hyperplasia	15
Intraductal Papillom	9
Fat Necrosis	1
Surgical border positivity	8/19 (%42)
Volume of lesion (mean, SD)	1,76(4.08)
Resection volume, median(interquartile range),cm3	12,13 (4,71-40,29)
Resection index, median(interquartile range)	14,64 (6,03-62,80)

**DISCUSSION**

Easy accessibility to imaging techniques increased the diagnosis of non palpable breast lesions. 15-25 % of breast cancers are clinically occult (nonpalpable) intraductal carcinomas [8]. In our study, 60 patients who had nonpalpable suspicious lesions were biopsied which were assigned with a wire; 19 of them were diagnosed malignant (31.6%). In case of localization of nonpalpable breast lesions the most

widely used technique is hook wire localization. This technique has been compared with other newly advancing techniques in the literature.In case of stereotactic core needle biopsy (SCNB) less tissue is resected, less cosmetic deformities are seen and biopsies are known to be reported with 90% accuracy [4]. It is also suggested that SCNB decreases resection need, makes single stage surgery possible and is more cost effective (1,4) In studies comparing SCNB with

wire localization positive margin rates of 45% to 76% were told to be seen, and if no negative margins were reported it needs re-resection and the cosmetic results were worse [1]. In case of lumpectomies performed after stereotactic wire localization biopsies having negative margins are more difficult and more tissue is extracted [1,3]. In our study lesion volume (mean SD) is 1,76(4.08)cm<sup>3</sup>, calculating resection volume 12,13 (4,71-40,29)cm<sup>3</sup> and resection index 14,64 (6,03-62,80) resulted in 42% of positive margins. When taking into consideration the resection margin fourteen times the area of the lesion should be excised and this can be commented as a wide resection. Since most of these suspicious masses are benign in nature as in our study (68.4%), unnecessary wide resections causes' early postoperative hematoma formation and cosmetic problems in the late postoperative period. To make resection area smaller the incision should be done according of the area that the lesion is located but not the to the site that the wire enters. The surgeon should take into consideration the distance of the wire located from the lesion, the distance of the lesion to the chest wall and the idea of the radiologist for the amount of the lesion to have a negative margin for a smaller amount of excision. We take care about all of the above in our clinic. But it is not always possible to make the surgical area small enough to escape from cosmetic problems. We have collapse and depression at 25% of patients in spite of all the efforts.

Taylor *et al.* suggested that a100 cm<sup>3</sup> volume of resection would cause cosmetic problems free from the volume of the breast [12]. Rahman *et al.* advice to perform sonographic hematoma guided lumpectomy since wire localization causes a wider resection area (median resection volume of 143,4 [6]. At Milan European Institute of Oncology a technique called radio guided occult lesion localization) ROLL was developed and non of the disadvantages were reported [7].

Luni *et al.* compared ROLL technique with Hook Wire localization technique. They found out that excision with ROLL technique was dependable effective localization technique. The location of the lesion can be assigned correctly and and can be controlled by using a probe intraoperatively. Best type of incision can be chosen to reach the lesion. There is a high correct excision area and the lesion is usually located at the center of the specimen so the area resected rarely wide [2].

Alternative methods for wire localized lumpectomies are advancing. A new sonographic hematoma guided SHG lumpectomy is recommended to perform instead of wire localization lumpectomy since margin and resection volume would be minimal [5]. Ideal localization methods for non palpable breast lesions; the lesion should be localized correctly, the ideal incision site, should be applied with minimal discomfort to the patient. It must be applicable in the

operation room. Lesion must be localized with the shortest distance to the incision, should give us negative margins or re-excision ratio must be minimized and cosmetic results must be tolerable [9,10].

When taking into consideration the criteria above, localizing with wire is not very satisfactory. Advances in technology are needed for an optimal technique to develop.

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