

Prebiopsy Localisation of Impalpable Breast Lesions

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Summary

Prebiopsy localization of impalpable breast lesions (IBL) assures removal of suspicious mammographically detected lesions. Specimen radiograph of the excised specimen is mandatory to confirm complete excision. The aim of this study was to audit our series of percutaneous hookwire localization and to determine the positive biopsy rate of the mammographically detected impalpable breast lesion in our center. Thirty-eight patients with suspicious IBL underwent excision biopsy under mammographic localization in our unit from late February 1998 to May 2003. The excised specimen is immobilized and compressed within the Transpec device. This device incorporates a reference grid visible in the specimen radiograph. Hence, the target lesion marked in the reference grid of the specimen radiograph will allow precise examination and exact localization of the suspicious lesion by the pathologist. The positive biopsy rate for malignant lesion was 26.3%, the majority fall in the range of 40-59 age group. Thirty-two (84.2%) of the patients had clustered micro-calcifications, 4 (10.5%) had impalpable mass lesions and in 2 (5.3%) spiculated lesions were seen on the preoperative mammogram. Mammographic feature of clustered micro-calcification accounts for all the malignant lesions in our series. Utilization of Transpec device has shown to be practical, reliable and cost effective in the management of IBL. Nonetheless, it should be emphasized that optimal specimen radiography and pathological correlation requires close cooperation between radiologist, surgeon and pathologist.

Key Words: Impalpable breast lesions, Specimen radiograph, Transpec®

Introduction

The widespread use of mammography had resulted in the increasing numbers of early detection of suspicious but clinically occult impalpable lesions of the breast^{1,2}. Thus, a prebiopsy localization is necessary to confirm the nature of all impalpable mammographically suspicious lesions of the breast to ensure accurate diagnosis or removal^{1,2,3}. The excised specimen must then be examined radiologically (specimen radiography) to ensure the exact lesion has been completely removed before a histological examination and diagnosis can be made^{2,3,4}. The purpose of this study was to audit our series of percutaneous hookwire localization and to determine the positive biopsy rate of the mammographically detected impalpable breast lesions.

Materials and Methods

A total of 38 patients with mammographically suspicious impalpable breast lesions (IBL) underwent percutaneous hookwire localization (HWL) and excision biopsy in our unit from February 1998 to May 2003. Their age ranged from 38 to 73 years (mean age of 51 years). The respective ethnic distribution of our study sample comprised of 14 (36.8%) Malay, 10 (26.4%) Indian and 14 (36.8%) Chinese patients.

The excised specimen was immobilized and compressed within the Transpec® device (Figure 1), which incorporates a reference grid visible on radiograph examination. The target lesion marked in the reference grid in the specimen radiograph allows

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optimal and precise examination and recovery by the pathologist thus minimizing the workload (Figure 2). It obviates the further need of bread loafing and specimen slice radiography to ensure the exact suspicious lesion has been completely removed before a pathological evaluation and diagnosis can be made.

Results

Complete information of the prebiopsy localization of the impalpable breast lesion was obtained from all 38 patients. Twenty-seven (71.0%) patients were asymptomatic detected on breast screening, 6 (15.8%) had breast pain, 3 (7.9%) had nipple discharge and 2 patients (5.3%) presented with axillary swelling. Mammographic features were clustered micro-calcifications seen in 32 (84.2%) patients, spiculation and distortion of normal architecture were seen in 2 (5.3%) patients and 4 (10.5%) patients had mass lesion.

The Transpec® device allowed the localized lesions to be precisely marked and examined by the pathologist. The average number of blocks per specimen was 5. Of the total 38 cases, 1 (3%) had incomplete removal of the suspicious breast lesion upon examination of the

excised specimen radiograph. This was due to wire migration and the excised lesion was later confirmed to be malignant in nature. Following the diagnosis made she was advised appropriately for further management and opted for mastectomy. All the other specimen radiographs showed complete removal of the mammographically suspicious breast lesions with good surgical margins.

The histopathology reports are presented in Table I. The positive biopsy rate for malignant lesion was confirmed in 10 patients (26.3%) of which in 4 cases ductal carcinoma in situ was diagnosed and the other 6 cases were of infiltrating carcinoma.

Thirty-five patients (92.1%) were between 40 and 59 years old and the majority of malignant cases were documented in this age group. Table II shows the patients' age distribution. Clustered micro-calcifications accounted for all 10 patients of the malignant lesions. In 22 patients (57.9%) the suspicious micro-calcification revealed a benign breast lesion. All the mammographic mass lesion and spiculation were also found to be benign. Table III shows the patients' clinical symptoms.

Table I: Histopathological findings

Findings	No	%
Malignant lesions		
Ductal carcinoma in situ	5	13.2%
Infiltrating ductal carcinoma	5	13.2%
Benign lesions		
Fibrocystic disease	18	47.4%
Fibroadenoma	7	18.4%
No malignancy	3	7.8%
Total	38	100%

Table II: Age distribution

Age (years)	Total	Benign	Malignant
30-39	1	-	1
40-49	13	8	5
50-59	20	16	4
60-69	3	3	-
70-79	1	1	-
Total	38	28	10

Table II: Clinical symptoms

Symptoms	Total	Benign	Malignant
Asymptomatic	27	22	5
Nipple discharge	3	-	3
Breast pain	6	6	-
Axillary swelling	2	-	2
Total	38	28	10

Discussion

Over the years screening mammography has increased the numbers of early detection of impalpable breast lesions^{1,2}. There are many different options available to obtain a diagnosis of the impalpable breast lesions. With the advent of diagnostic imaging studies, a stereotactic biopsy couple with usage of FNAC, core biopsy or mammotome has been introduced. Stereotactic mammography involves using computers to pinpoint the exact location of a breast mass based on mammograms (x-rays) taken from two different angles. This technique however allows only a diagnostic approach as compared to the hookwire localization. HWL not only offers diagnostic capabilities but also provides therapeutic advantage of complete local excision if the margins are clear. Moreover the stereotactic FNAC requires a trained radiologist and cyto-pathologist. On the other hand the availability of stereotactic biopsy facilities is very limited in our country. Furthermore the cost of stereotactic mammotome or even Automated Breast Biopsy instrument (ABBI) biopsy makes it not practical to offer all patients who have impalpable breast lesions.

The management of IBL requires close co-operation between the radiologist, surgeon and pathologist^{1,2,5}. It involves several important steps: firstly mammographic guided localization of the IBL, secondly surgical removal of the lesion follow by radiological localization of the target lesion within the excised specimen, and finally the demonstration of the target lesion in histologic section.

Some mammographic mass lesions and micro-calcifications may show typical features of malignancy. However, a large percentage of IBLs are indeterminate and there is a considerable overlap in appearance of benign and malignant lesions^{3,4,5}. The level of suspicion in mammogram detected impalpable breast lesions and the availability of resources is important to ensure accurate diagnosis. As such the decision

between a biopsy and close follow up requires several considerations. A biopsy would mean the discomfort of localization, ward admission, surgery under general anaesthesia and the possible consequences of scarring and disfigurement. Conversely, close follow up would mean the anxiety of misdiagnosis and frequent mammography. With the advent of hookwire localization since the 1960s, excision biopsies of IBL have become more common and this technique has now become the method of choice for localizing mammographically detected IBL.

Once the lesion is excised, the utilization of Transpec device for precise radiographic localization of the target lesion has assisted in minimizing the cost and workload for the pathologist. It obviates the need for specimen slice radiograph and has reduced the average number of blocks per specimen in this study.

The positive biopsy rate of 26.3% in this study seems to correlate consistently with most other published series of between 20-30%^{3,4,5,6}. The failure of excision rates for hookwire-localized lesions have been reported as between 1.5% to 10 %^{7,8}. This is due to inaccurate wire placement, wire transection, and wire migration, the latter being identified as the problem accounting for 3% of incomplete excision in this study. This rate is however quite low considering the large number of localization done.

Conclusion

The positive biopsy rate of the mammographically detected impalpable breast lesion in our study was 26.3%. Utilization of Transpec® device has shown to be practical, reliable and cost effective in the management of IBL. Nonetheless, it should be emphasized that optimal specimen radiography and pathological correlation requires close cooperation between radiologist, surgeon and pathologist.

References

1. Zulficar A; Param V; Meah FA; Nair S; Norizan A. Prebiopsy localization of nonpalpable breast lesions. *Med J Malaysia* 1993; 48(3): 317-24.
2. Snyder RE. Specimen radiography and preoperative localization of nonpalpable breast cancer. *Cancer* 1980; 46(4 Suppl): 950-6.
3. Owings DV; Hann L; Schnitt SJ. How thoroughly should needle localization breast biopsy be sampled for microscopic examination? A prospective mammographic/pathologic correlative study. *American Journal of Surgical Pathology* 1990; 14(6): 578-83.
4. Ramsay-Stewart G; Lauer CS. Use of a specimen-evaluation device for the diagnosis of impalpable breast lesions detected by mammography. *Medical Journal of Australia* 1992; 156(4): 244-6.
5. Tomlinson J; Harvey J; Sterrett G; Ingram D; Thompson R; Robbins P; Parsons R. An audit of 267 consecutively excised mammographically detected breast lesions 1989-1993. *Pathology* 1997; 29(1): 21-7.
6. Wilhelm MC; Wanebo HJ. Technique and guidelines for needle localization biopsy of nonpalpable lesions of the breast. *Surg Gynae & Obstet.* 1988; 167: 439-41.
7. Bronstein AD; Kilcoyne RF; Moe RE. Complications of needle localization of foreign bodies and nonpalpable breast lesions. *Arch Surg* 1988; 123: 775-9.
8. Graham RA; Homer MJ; Sigler CJ. The efficacy of specimen radiography in evaluating the surgical margins of impalpable breast carcinoma. *American Journal of Roentology* 1994; 162(1): 33-6.