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Charcoal Localization for Surgical Resection of Non-Palpable Suspicious Breast Lesions.
A promising method for communities of low resources.
A prospective observational effectiveness study.

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Abstract
Background: Breast cancer is more frequently detected as radiographic non-palpable lesions with the increased utilization of national screening programs. Moreover, the sizes of tumors detected have decreased in recent years, increasing the need for accurate image-directed localization for surgical excision in a significant portion of cases. Although Wire guided localization has been the most commonly used method for many years, inherent problems remain and limit its practice. Radio-guided occult lesion localization (ROLL) is currently the standard method of localization, however, it is unavailable in most low resource communities. This encourages us to use charcoal localization which is a simple and cheap method of surgical localization of non-palpable suspicious breast lesions.
Methods: This prospective study included 34 patients who presented with non-palpable suspicious breast lesions (BIRADS 4 or 5). All patients were injected 1-3 ml of sterilized 3% aqueous suspension of charcoal granules under the guidance of ultrasound at the superficial border of the suspicious lesion and the track between the lesion and the needle entry point in the skin which will occur at the future incision. This method was carried out in most patients one day before the operation, however, two patients underwent surgical excision after 6 days of localization without any interruption.
Results: Thirty-four patients had 36 Lesions. The median age was 43 years. The mean diameter of lesions was 10.9 mm. Of 36 lesions; the BIRADS as follow10 (4a), 12 (4b), 8 (4c), and 6 (5). Postoperative investigations revealed 16 malignant lesions and 20 benign lesions. All 20 benign lesions were managed by wide local excision; All 14 BIRADS 4a lesions were proved to be benign. Sixteen malignant lesions were managed as the following; nine patients had breast-conserving surgery, five patients had modified radical mastectomy (three patients had past history of modified radical mastectomy, one patient had Multicentric IDC and one patient had infiltrated safety margins on conservation), and one patient had Nipple Sparing Mastectomy with immediate breast reconstruction by Latissimus Dorsi Flap. There was no reaction or infection reported in our study.
Conclusion: Charcoal localization has many advantages and helps surgical localization.
Key words: Charcoal localization, non-palpable breast lesions, low resources communities, breast cancer, breast surgery