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Vacuum-assisted excision: a single-step approach to the diagnosis and treatment of early breast cancers – initial report

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Objective: The aim of this study was to describe the initial experience applying vacuum-assisted excision (VAE) associated with cavity margins sampling shaving (CMSH) to breast lesions (BL), smaller than 15 mm and suspected of malignancy, as a single-step approach in diagnosing and treating early breast cancers (EBC). **Methodology:** An open interventional study was conducted recruiting patients with Category 4 and 5 ACR BI-RADS™ BL, smaller than 15 mm, candidates for VAE. Patients with diagnosed multifocal/multicentric breast cancer (BC) were excluded. The VAE was performed, complete BL excision was achieved, and CMSH was obtained by 12 entire cavity circumference core samples (CS). If BC was confirmed, patients were submitted to standard surgery (SS) and adjuvant therapy. Data on demographic, imaging, pathology, VAE-CMSH, and surgery were recorded. BREAST-Q core biopsy score (CBS) was applied to analyze patient satisfaction. The SPSS® 20.0 software was used for statistical analyses. **Results:** From 01/12/2023 to 06/03/2024, 12 patients were assigned with a mean age of 53.92 years and a mean imaging tumor size (iT) of 10.7 mm (7–15). Mean 40 CS weighting 18.3 g were retrieved in 21 min VAE-CMSH time. Two patients had skin laceration and one diffuse breast bruising, despite high satisfaction, with a mean BreastQ-CBS of 15.1/16. Three lesions were invasive cancers (IC), four lesions of the indeterminate potential of malignancy (B3 lesions), three fibroadenomas, and two fibrocystic diseases. The IC were BI-RADS 4C masses, 12 mm mean iT, 6.3 mm (6–7) mean pathological size, two lobular and one ductal, all luminal A like in immunohistochemistry, completely resected by ultrasound-guided VAE-CMSH, submitted to lumpectomy with negative sentinel node biopsy (pN0), representing true negative cases (neither residual tumor on CMSH nor on SS). **Conclusion:** VAE-CMSH is a feasible, fast, well-tolerated outpatient procedure with high patient satisfaction. It can accurately diagnose and completely resect suspected BL smaller than 15 mm in a single-step approach, including B3 lesions and EBC, presenting promising results and no false negatives in the first three BC patients.

Keywords: early breast cancer; vacuum-assisted biopsy; minimally invasive breast cancer treatment.