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Vacuum-assisted biopsy in the era of low-risk ductal carcinoma in situ active monitoring: real world data and implications

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Objective: This study aimed to evaluate vacuum-assisted biopsy (VAB) as a diagnostic test for detecting low-risk ductal carcinoma in situ (LR-DCIS) under active surveillance in real-world clinical practice. **Methods:** A database analysis was conducted on 116 cancers—both invasive breast cancer and ductal carcinoma in situ—diagnosed by VAB and subsequently submitted to standard surgical treatment, with complete histological data from VAB and surgery, between April 13, 2017 and November 28, 2020. The VAB results were matched to the surgical pathology, considered the gold standard. The pathological diagnoses were grouped into malignancies requiring guideline surgical treatment [DCIS with high risk (HR-DCIS) of invasive breast cancer or progression to invasive breast cancer] versus those eligible for alternative active surveillance (LR-DCIS). HR-DCIS invasive breast cancer was considered positive, while LR-DCIS was considered negative. VAB sensitivity, specificity, positive predictive value (PPV), negative predictive value (NPV), and accuracy were obtained. **Results:** The mean age was 55.6 (standard deviation ±12.3) years; mean invasive breast cancer size was 7.14 (±5.17) mm, and 12.60 (±11.63) mm for DCIS; 65.52% was ultrasound guided (70/116) and 44.48% (46/116)was stereotactic guided; 42.24% (49/116) presented masses, 26.72% (31/116) masses associated with calcifications, and 31.03% (36/116) had calcifications. Out of the 116 malignancies diagnosed by VAB, 15 (12.9%) resulted in LR-DCIS in the biopsy, 10 (8.6%) confirmed LR-DCIS in surgery, and 5 (4.3%) upgraded to HR-DCIS invasive breast cancer in surgery. VAB showed 95.28% sensitivity, 100% specificity, 100% PPV, and 66.67% NPV. **Conclusion:** VAB LR-DCIS active monitoring would lead to a moderate overall reduction of short-term breast cancer surgical overtreatment in real world clinical practice.

Keywords: breast cancer; biopsy; DCIS.