

Performance and Prospects of a New VAB Ultrasound-Guided Biopsy System Without Cables: 13 G Elite

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Letter to Editor

In the last few years, the cytological diagnosis of breast lesions in clinical practice is gradually being replaced by micro-histology with core-biopsy (CB) systems with a 14-18 G needle or vacuum assisted breast (VAB) biopsy with 7-11 G. However, currently the fine needle aspiration cytology (FNAC) is still the technique at the lower cost and the most sensitive method to detect axillary metastases; nevertheless, a series of disadvantages related to false negatives (FN), a moderate number of inappropriate samplings, operator-dependent results and limited information on tumour histology have been highlighted [1,2]. Furthermore, some issues were identified about the sampling of large lesions, diagnosis of microcalcifications, the discrimination between invasive and *in-situ* lesions and between benignity and malignancy of papillary lesions [3,4].

Regarding micro-histological sampling, VAB devices offer less histological underestimation than CB systems, a better diagnostic accuracy, a higher negative predictive value (NPV) and the possibility of complete excision of some lesions [5,6]. The main advantage of VAB systems consists of obtaining an adequate number of samples with a single needle insertion, allowing for a correct sampling even in difficult positions so reducing the number of surgical biopsies performed for diagnostic purposes and the related costs [7]. Nonetheless, the general poor handling of these devices, often equipped with a bulky handpiece with cables, makes them impractical for ultrasound-guided sampling. These disadvantages have been overcome by VAB systems with a 10-13 G double-lumen disposable sterile probe (Mammotome Elite, Leica Biosystems, Newcastle, UK) and a handy and wireless handpiece which combines the diagnostic reliability of VAB device with the ease of use and practicality like CB system.

In our experience [8], from January 2016 to February 2018 two operators performed 916 ultrasounds guided micro-histological samples on BIRADS U3, U4 and U5 lesions from 5 to 45 mm including 830 cases by CB (14-16 G) and 86 by 13 G Elite VAB systems; among them, 16 procedures were repetitions of inconclusive CBs (3 B1 and 13 B3) and 13 repetitions of non-direct FNAC. CB procedure was performed as a first-choice investigation, while Elite technique was used in the following cases: when the operator has preferred it due to difficult site, when the first cytohistological outcome was not decisive (Classes 1 and 3), during an attempt to completely remove the lesion, need to take large fragments for that type and particular characteristics of the lesion, in cases of radio-pathological discrepancy as a second biopptic line. The 86 samples by VAB Elite technique showed 3 B1 (3.49%), 36 B2 (41.86%), 15 B3 (17.44%), and 32 B5 (37.20%) as histological diagnosis: therefore, the procedure has highlighted a low rate of inadequacy in agreement with previously published VAB results [9].

The results obtained by CB system were as follows: 22 B1 (2.65%), 368 B2 (44.33%), 75 B3 (9%), 4 B4 (0.48%), 361 B5 (43.49%). In our experience, the Elite procedure was well tolerated by patients and

free of serious complications: the good control of its handpiece led to reach lesions even in locations of difficult sampling by CB system. The ultrasound examination to display microcalcifications allows for removing even this type of findings, avoiding the stereotaxic VAB, contributing to a partial timesaving and reducing both workload of staff and costs.

Overall, in our preliminary experience 13 G Elite VAB system showed to be highly performing with an estimate of correct sampling of 93.68% and with only two cases of underestimation. With respect to the cutting needle, significant variations were noted between the two techniques evaluated on the same subset of patients: in 83.33% of cases, the initial cyto-histological class was modified suggesting an important role of Elite technique for complex or dubious diagnoses [10]. However, compared to the larger sample by CB system, Elite procedure showed a significantly comparable rate of inadequacy, but a significantly higher rate of inconclusive results (B1+B3) with respect to the first technique. Elite samples taken by the pathologist were more extensive and of higher quality than CB ones: this could be linked to the particular typology of some lesions undergone to biopsy (nodules or non-mass lesions without well-defined boundaries), but the comparison between these two techniques would require more numerous cohorts, preferably equivalent, in order to correlate the results with the gold standard of definitive histology.

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