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## Comparison of Liqui-PREP™ and conventional preparation for the evaluation of thyroid fine needle aspiration

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This study investigated agreement regarding thyroid aspiration cytology between the Liqui-PREP™ (LGM International Inc., Ft. Lauderdale, FL) and conventional methods. We also evaluated interobserver variation in thyroid aspiration cytology prepared by Liqui-PREP™. From 189 patients, pairs of conventional and Liqui-PREP™ slides were obtained. The conventional slides were routinely diagnosed and categorized into the following six categories: benign (118 cases), indeterminate follicular lesion (12 cases), follicular neoplasm (two cases), suspicious for malignancy (three cases), malignant (46 cases), and non-diagnostic (8 cases). Liqui-PREP™ slides were also evaluated blindly by three cytopathologists and fallen into the same categories. Interobserver variability was calculated as a kappa value.

Specimens from 155 patients (83%) were allowed to be same categories in both conventional and Liqui-PREP™ slides by all of three cytopathologists. The concurrence for each cytopathologist was 89% ( $k = 0.78$ ), 92% ( $k = 0.83$ ) and 85% ( $k = 0.70$ ), respectively. Among 34 discordant cases, there were benign (17 cases), indeterminate follicular lesion (13 cases), follicular neoplasm (one case), suspicious for malignancy (one case) and malignant (two cases) in conventional preparation. Nuclei tended to appear smaller and more irregular in Liqui-PREP™, but the intranuclear pseudoinclusions were more easily observed. Some cases of nodular hyperplasia with oncocytic change or degenerative atypia in conventional smear were categorized into suspicious in favor of malignancy in Liqui-PREP™. The interobserver agreement among three cytopathologists in Liqui-PREP™ slides showed substantial or almost perfect agreement each other. In addition, Liqui-PREP™ significantly eliminated blood and cytologic morphology could be easily detected in low-power view. However, more technical improvement in cell preservation and the education of cytologic slides processed by Liqui-PREP™ for the cytopathologists are needed to avoid overdiagnosis caused by irregular nuclear membrane, which is exaggerated in Liqui-PREP™ slide.