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## ADVANTAGE OF Z-STACKING FOR TELE CONSULTATION BETWEEN THE USA AND COLOMBIA

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**Introduction & Aim:** There is an emerging need for tele cytology in Colombia as the demand for cytopathology has increased. However, due to economic and technological constraints tele cytology services are limited. Our aim was to evaluate the diagnostic feasibility of using whole slide imaging with and without Z-stacking for tele cytology in Colombia, South America.

**Methods:** Archival glass slides from 17 fine needle aspiration smears were digitized employing whole slide imaging (WSI) (Nanozoomer 2.0 HT, Hamamatsu) in one Z-plane at 40x and panoramic digital imaging (Panoptiq system, Views IQ) combining low-magnification digital maps with embedded 40x Z stacks of representative regions of interest. Fourteen Colombian pathologists reviewed both sets of digital images. Diagnostic concordance, time to diagnosis, image quality (scale 1-10), and usefulness of Z stacking, and technical difficulties were recorded.

**Results:** Image quality scored by pathologists was on average 8.3 for WSI and 8.7 for panoramic images with Z stacks ( $p=0.03$ ). However, diagnostic concordance was not impacted by image quality ranking. In the majority of cases (72.4%) pathologists deemed Z-stacking to be diagnostically helpful. Technical issues related to Z-stack video performance constituted only a minor proportion of technical problems reported. Slow downloads and crashing of files while viewing was mostly experienced with larger WSI files.

**Conclusion:** This study demonstrated that international tele cytology for diagnostic purposes is feasible. Panoramic images had to be acquired manually but were of suitable diagnostic quality and generated smaller image files associated with fewer technical errors. Z-stacking proved to be useful in the majority of cases and is thus recommended for tele cytology.

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