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Automated Endoscopic Multibiopsy (AEM) in Vivo

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With IRB and FDA 510K approval, we performed AEM in 34 patients at colonoscopy for indications of inflammation, neoplasia, unexplained diarrhea and AIDS using 6, 12 or 24 specimen instruments. After diagnostic colonoscopy the AEM was inserted and multiple biopsies obtained during withdrawal. No complications occurred. AEM is a 2.8mm diameter hand operated instrument that collects specimens in its tip during a single endoscope pass. Target biopsies are rapidly collected, oriented and serially stored automatically in a perforated plastic internal cassette within a perforated metal tip for fixation and processing in situ. AEM flexibility allows full endoscope deflection and accurate positioning. An endoscopist log documents sequence, site and indication of each biopsy. At completion the AEM tip is separated into fixative for transport to pathology. In pathology the internal specimen cassette is removed and processed by frozen section, microwave or standard paraffin processing. Endoscopy Improvements:1.Single pass AEM reduces procedure duration, anesthesia and staff effort; 2.Shorter procedures increase facility use and reduce cost;3.More specimens improve diagnostic yield.; 4.Limited biopsy handling reduces staff work place risks from sharps, infectious specimens and patient fluids; 5.Cassette specimen storage prevents loss and fragmentation during collection, fixation, transport and processing; 6. Transported storage cylinders are immediately ready for pathologic processing; 7.Frozen section or microwave processing yields prompt diagnosis. Pathology Improvements: 1. Specimen filtration and orientation is obviated; 2. Frozen section or immediate processing yields rapid diagnosis. 3. Reduced handling limits staff health risk; 4.Reduced work speeds processing to reduce cost; 4. Serial specimens saves $4.66 for each omitted slide. Results compared to random endoscopic biopsies: 1.AEM biopsies cut without crush and shear artifact; 2.Serial oriented specimens without loss, fragmentation or artifacts improves diagnostic information; 3.Block serial sectioning adds information and avoids recutting delay; 4.More information in comparison to batched jumbled specimens; 5. Diagnostic yield increased by more specimens and improved presentation; 6.Less diagnostic delay or equivocal readings. Conclusions: AEM yields more specimens faster with fewer artifacts, less loss and handling to reduced cost and improve work place safety. Accelerated processing speeds diagnosis and therapy to improve care and save hospital days. AEM improves the technique and diagnostic value of endoscopic biopsy in both endoscopy suite and pathology laboratory at reduced cost.