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Characterization of lesions missed on interpretation of CT colonography using a 2D search method.

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OBJECTIVE: We examined potential factors that may cause false-negative results on CT colonography examinations. **MATERIALS AND METHODS:** In this prospective and retrospective study, 500 asymptomatic patients at high risk for colorectal cancer underwent CT colonography and colonoscopy. Each CT data set was interpreted by two independent observers, who were unaware of endoscopic findings, using a method of searching through enlarged axial images to detect intraluminal lesions. Another observer identified and characterized lesions missed at prospective interpretation. Polyps were assessed for size, method of visualization, intrinsic and extrinsic features, and examination quality. **RESULTS:** We found 116 polyps at least 5 mm in diameter, 54 (47%) of which were missed by at least one of the prospective observers. Polyps seen in only one position were missed more often than polyps seen in both supine and prone positions (84% vs 50%, $p < 0.01$). Polyps located in suboptimally prepared colonic segments or along a thickened colonic wall were more frequently missed ($p = 0.02$ and $p = 0.05$, respectively). Endoscopic morphology and irregular surface contour were associated with missed lesions of all sizes ($p = 0.03$ and $p = 0.04$, respectively). Rounded intraluminal lesions were detected more often than other morphologies on CT ($p = 0.04$). **CONCLUSION:** Factors that influence the likelihood that a polyp may be missed at interpretation of CT colonography include being seen only in one position, having flat endoscopic or CT morphology, having surface irregularity, and being located in a poorly prepared segment or along a thickened colonic wall. Understanding these features should lead to improved polyp detection on CT colonography.