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Direct Comparison of an Optical Colonoscopy and Virtual Colonoscopy Colorectal Cancer Screening Program in the Average Risk Patient

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Background: Virtual Colonoscopy (VC), also known as CT Colonography is a new technology that has not been directly compared in practice to standard colorectal cancer (CRC) screening with optical colonoscopy (OC). Aim: To compare the findings of CRC screening in an average risk population between a third party covered VC program and a screening program using OC. Methods: VC CRC screening for patients with no increased risk of colon cancer is provided at our institution covered by third party payers. On VC screening tests at our program polyps < or = 5 mm are not reported, patients with polyps 6-9 mm are offered VC surveillance vs. colonoscopic polypectomy, and polyps > or = 10 mm are referred for polypectomy. OC screening is performed with removal or ablation of all polyps regardless of size. Results of polyp findings in patients 50 years old or greater and having an average risk of CRC were compared between OC and VC on a per patient basis. Results: 1110 patients were screened with VC (4/04-4/05), 1132 with OC (1/05-5/05), mean age 56.1 yrs both groups. 933 total polyps were seen on OC, 255 of which were recovered adenomas. 153 total polyps were seen on VC, 61 recovered adenomas with 50 patients in VC surveillance. OC identified a significantly greater number of patients with polyps (443, 39.1%) than VC (120, 10.8%), $p < 0.0001$). There was no difference between OC (32, 2.8%) and VC (43, 3.9%) in the identification of patients with polyps > 10 mm, ($p = 0.17$). OC (132, 11.7%) identified a significantly greater number of patients with medium sized polyps (6-9 mm) than VC (77, 6.9%), ($p < 0.0001$). OC identified 362 patients (32.0%) with polyps < or = 5 mm; this size polyp was not identified/reported on VC per protocol. OC screening led to a significantly greater number of patients with known adenomas removed than VC (187, 16.5%) vs. (48, 4.3%), ($p < 0.0001$) with 50 patients (4.5%) undergoing VC surveillance. An identical number of advanced adenomas (> = 10 mm or advanced histology) were resected by OC (31, 2.7%) and VC (31, 2.8%). There was no significant difference in complication rate between the OC screening program (7, .6%) and the VC program (3, .3%), ($p = .15$). All complications were related to OC procedure. Conclusions: 1) OC and VC screening programs will identify an equal number of patients with large polyps and advanced adenomas. 2) OC colorectal cancer screening will identify a significantly greater number of patients with medium and small polyps and adenomas than VC. 3) The importance and behavior of polyps <10 mm needs to be further determined and studied as VC screening and surveillance programs are instituted into practice.

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Colonoscopic Screening for Colorectal Cancer-Impact On Later Need for Usual Care Lower Gastrointestinal Endoscopies

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Introduction: Colonoscopic screening for colorectal cancer is being implemented in an increasing number of countries. Concerns have been raised about whether the health services are capable of meeting the demand for endoscopic examinations. A change in the need for lower gastrointestinal endoscopies for indications other than post-screening surveillance in a screened population might be important in calculating cost-benefit and demand for endoscopic resources. Aims & Methods: We wanted to investigate whether being invited to a "once only" colonoscopic screening examination for colorectal cancer would affect the demand for later distal gastrointestinal endoscopies for indications other than follow-up of the findings at the screening examinations (usual care endoscopies). In 1996 a screening group of 634 individuals, mean age 67.5 years (range 63-72), randomly drawn from the official population registry, was invited to a colonoscopic screening examination for colorectal cancer. Four hundred and fifty-one (71%) individuals attended. An age and sex-matched control group of 634 individuals was enrolled from the same registry. The control group received ordinary care through the local health service. Both groups belonged to the encatchment area of one single hospital. Distal endoscopies performed in the two groups from January 1996 to December 2004 were registered by investigating medical records. Results: A total of 1268 individuals, 52.4% women, were followed for 9 years. In the screening group, 63 (9.9%) and in the control group, 110 (17.4%) individuals (odds ratio 0.53, 95% confidence interval 0.38-0.73, $p < 0 .001$) had had a total of 85 and 169 non-screening related distal endocopies respectively ($p < 0.001$). According to the Norwegian guidelines for post-polypectomy surveillance, 50 (8%) individuals in the screening group had had a total of 64 follow-up colonoscopies in the same period after findings of adenomas at the screening examinations in 1996. Conclusion: We found that in the 9 years following the screening colonoscopy the screening group, compared to the control group, had had 50% fewer lower gastrointestinal endoscopic examinations due to indications other than follow-up of findings at the screening examinations. This indicates that being invited to a colonoscopic screening examination for colorectal cancer might reduce the need for later usual care lower gastrointestinal endoscopies. This finding could have an impact on the estimation of endoscopic resources needed for colorectal cancer screening.

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Impact of Endoscopist Withdrawal Speed On Polyp Yield: Implications for Optimal Colonoscopy Withdrawal Time

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Background: In 2002, a U.S. Multi-Society Task Force on Colorectal Cancer recommended that the withdrawal phase for colonoscopy should average at least 6 to 10 minutes. This was based on limited data from observation of ten consecutive colonoscopies by each of two endoscopists known to have differing adenoma miss rates. Objectives: A) Characterize the relationship between endoscopist withdrawal time and polyp detection at colonoscopy. B) Characterize the withdrawal time that corresponds to the median polyp yield among endoscopists. C) Derive evidence-based recommendations for minimum acceptable colonoscopy withdrawal time. Design: Procedural data from all colonoscopies performed at the outpatient endoscopy unit of our institution between January 2003 and December 2003 were reviewed. Endoscopists were characterized by their mean withdrawal time for a negative procedure and individual polyp detection rates (polyp yield), as defined by the percent of procedures in which they identified one or more polyps in each size category. Results: 10,955 colonoscopies performed by 43 endoscopists were included. The median withdrawal time was 6.3 minutes (range 4.2-11.9). The median polyp yield for all size polyps was 42.7% (range 23.6 to 65.6%), including 29.8% (<5 mm), 5.9% (6-9 mm), 6.7% (10-19 mm), and 2.1% (>20 mm). Longer withdrawal time was associated with higher polyp yield, $r = 0.76$ ($p < 0.0001$), although this relationship weakened for larger polyps; $r = 0.19$ for polyps 6-9 mm, $r = 0.28$ for polyps 10-19 mm, $r = 0.02$ for polyps >20 mm. The overall median polyp yield of 42.7% corresponded to a withdrawal time of 6.7 minutes (Figure). Conclusions: Our findings identify an association between increasing time spent on colonoscopy withdrawal and polyp yield. These findings support a minimum withdrawal time of 7 minutes which corresponds to a polyp yield above the median performance among endoscopist peers.