Tu1002

**Propofol Analgesia for Colonoscopy - Quickener Exam Time But With a Potential Risk**

Louis Y. Korman, Nadim Haddad, David C. Metz, Susan K. Lazzerow, Hannah L. Miller, Stanley B. Benjamin, Vladimir Egrov, Miland Patel, Armen Sarvaryan

Introduction: The Colonoscopy Force Monitor (CFM) is a handheld, wireless device that continuously measures forces applied to the colonoscopy insertion tube. Previous studies demonstrated that there is wide variation in the forces applied during colonoscopy compared to the colonoscopy by experienced endoscopists (Korman GIE 2010 327) and that a force of 270NON (1kg) is associated with serrated neoplasms (Wu GIE 1978 236). The purpose of this study was to compare forces when patients receive propofol (P) or conscious sedation (C).

Methods: A retrospective study of force applications associated with the insertion of the insertoscope to the colonoscopy by experienced endoscopists (Korman GIE 2010 327) and that a force of 270N (1kg) is associated with serrated neoplasms (Wu GIE 1978 236). The purpose of this study was to compare forces when patients receive propofol (P) or conscious sedation (C).

Results: Twenty seven patients received propofol (mean dose + SD: 272.6 ± 73.9 μg/kg/min) and 14 patients received conscious sedation. A scoring system was developed that allowed grading of the magnitude and pattern of force applied during colonoscopy and this is associated with shorter procedure times when compared to conscious sedation using an optic and benzdiazepine. Although individual endoscopists demonstrated different force application patterns, there does not appear to be a correlation between the magnitude of force and examination time. Finally, the quantitative difference in endoscopic performance was not associated with significant change in patients’ visualisation of colonic mucosa. The mean number of correct answers on the pre-test was 45%, while the mean number of correct answers on the post-test was 46% (p= NS). No significant difference of the change in scores between the scores of junior and senior fellows was noted. Improvement in scores from pre- to post-test was greater among the junior fellows than senior fellows. More junior fellows changed their initial incorrect answer to a correct one on the post-test, while more senior fellows changed their initial correct answer to an incorrect one on the post-test.

Tu1003

**Colonoscopy: What Endoscopists Inspect Under Optimal Conditions**

Jitziedi Edakkanambeth Varayil, Felicity Enders, Wallapak Tavanapong, JungHwan Oh, Johnny Wong, Petrus C. de Groen

Background: The protective effect of colonoscopy, in particular for right-sided colorectal cancer (CRC), is disappointingly low. Two main reasons for this low protective effect are thought to be (1) existing lesions are not seen and thus not removed, and (2) rapid development of new lesions which are typically underrepresented during a hospital based GI rotation. These findings provide the rationale for targeted educational interventions to address deficiencies of persistent deficiency and overall performance. Future directions include the development of educational activities following established principles of curriculum development and adult learning theory in order to meet GI learners’ identified needs.

Methods: A pre-test consisting of 34 NBI and white light (WL) images was administered to GI fellows 10 days prior to the simulated colonoscopy. Participants were then given a 20 minute training on the NBI system and its characteristics for adenomatous and hyperplastic polyps. Afterward, fellows were given a tool describing characteristics of polyps suggestive of adenomatous or hyperplastic polyps, allowing for real-time endoscopic interpretation to differentiate between adenoma and hyperplasia. The use of NBI for endoscopic examiners takes advantage of the increased blood flow and microvascular characteristics. The trainee was not allowed more than 4 attempts per day. Each module was considered successful if the module was completed within 10 attempts and no patient was identified as having CRC.

Results: Of the set of images, 20 were adenomas, 9 were hyperplastic, and 5 were normal mucosa. The mean number of correct answers on the pre-test was 45%, while the mean number of correct answers on the post-test was 46% (p= NS). No significant difference of the change in scores between the scores of junior and senior fellows was noted. Improvement in scores from pre- to post-test was greater among the junior fellows. More junior fellows changed their initial incorrect answer to a correct one on the post-test, while more senior fellows changed their initial correct answer to an incorrect one on the post-test.

Tu1004

**Virtual Reality Curriculum in Endoscopy: Modular Self-Directed Training on Simulator (Simbionix GI Mentor) Using Expert Benchmark**

Laure Martelli, Pasquale Berlingieri, Owen Epstein

Background: There is increasing interest in the use of virtual reality (VR) simulators in endoscopy training. This is in parallel with the reduction in working hours available for junior doctors to train (European working time directive) and the demand of good clinical governance. Aim: To analyse the impact and didactic value of a VR curriculum in endoscopy using GI Mentor simulator for the training of junior doctors naive to endoscopic procedures.

Materials & Methods: We created a VR curriculum in endoscopy on GI Mentor simulator using benchmark results obtained by expert endoscopists in previous published studies. This was divided in 3 modules: psychomotor skills, gastroscopy (OGD) and colonoscopy. Table 1: Each criterion necessary to pass the OGD module after a medium of 7 attempts, 5 are still practising. 3 Five experienced and 8 trainee endoscopists used the CFM to perform colonoscopy in 51 patients. Patients were divided into 2 groups based on the sedation administered. Continuous force records were processed and maximum and average linear and torque forces, time derivative of force, combined linear and torque force vectors and total examination time were calculated. Results: Twenty seven patients received propofol (mean dose + SD: 272.6 ± 73.9 μg/kg/min) and 14 patients received conscious sedation. A scoring system was developed that allowed grading of the magnitude and pattern of force applied during colonoscopy and this is associated with shorter procedure times when compared to conscious sedation using an optic and benzodiazepine. Although individual endoscopists demonstrated different force application patterns, there does not appear to be a correlation between the magnitude of force and examination time. Finally, the quantitative difference in endoscopic performance was not associated with significant change in patients’ visualisation of colonic mucosa. The mean number of correct answers on the pre-test was 45%, while the mean number of correct answers on the post-test was 46% (p= NS). No significant difference of the change in scores between the scores of junior and senior fellows was noted. Improvement in scores from pre- to post-test was greater among the junior fellows. More junior fellows changed their initial incorrect answer to a correct one on the post-test, while more senior fellows changed their initial correct answer to an incorrect one on the post-test.

Tu1005

**Recognition of Mucosal Surface Patterns With Narrow Band Imaging Among GI Fellows: Pre and Post-Test Analysis**

Daniel Heller, Xaralambos Zervos, Jamie S. Barkin, Daniel A. Sussman

Background: Narrow band imaging (NBI) enhances the ability to evaluate the surface pit patterns and vascular architecture of colorectal polyps. These patterns differ between adenomas and hyperplastic polyps, allowing for real time endoscopic interpretation to differentiate between benign and potentially malignant tissue. As the use of NBI increases, it is important that gastroenterology (GI) fellows become familiar with the interpretation of these endoscopic patterns. Conclusions: Self-directed learning following pre-established goals through a curriculum is an effective way to train novices in endoscopy with the potential of improving patient comfort and safety during the initial phase of the learning curve. This study will be included in training and available in teaching hospitals. Further studies are required to assess the ability to transfer skills learnt in a simulator on a real clinical setting and to overcome those barriers which are preventing trainees from completing the curriculum.

Table 1

<table>
<thead>
<tr>
<th>Mucosal Surface Patterns</th>
<th>Pre-Test Score</th>
<th>Post-Test Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>% mucosa visualized</td>
<td>85%</td>
<td>95%</td>
</tr>
<tr>
<td>% clear view</td>
<td>90%</td>
<td>100%</td>
</tr>
</tbody>
</table>

N: number of fellows completing the module; Q: number of attempts.