

containing preparations). 4-lt and 2-lt PEG-based compounds achieved the highest score for quality of bowel cleansing (85.9% and 85.3% of procedures) as compared to 69.6% of 2-glasses solutions (OR 0.38). Acceptability was significantly better for 2-lt PEG- (OR 6.34) and 2-glasses-preparations (OR 3.26) as compared to 4-lt PEG-solutions. At multivariate analysis, splitting dosage (OR 2.94) and reasons for colonoscopy (OR 0.42) emerged as major determinants for high patients' acceptability, whereas constipation (OR 3.95), having had a previous colonoscopy (OR 2.29) and patients' dissatisfaction for the preparation taken (OR 0.37) were the major determinants for good cleansing.

Conclusions: Both 2-lt and 4-lt PEG preparations provide the most effective bowel cleansing for colonoscopy in clinical practice, with a significantly better acceptability for the 2-lt solutions. Major independent determinants for a good/excellent procedure include splitting regimen, reasons for colonoscopy, previous colonoscopy and constipation.

P.15.3

MODE, TYPE AND DOSE OF LAXATIVE TO BE TAKEN FOR ADEQUATE COLON CLEANSING BEFORE COLONOSCOPY: A SERIES OF META-ANALYSES OF CONTROLLED STUDIES

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Background and aim: Colonoscopy quality begins with a clean colon. Inadequate bowel prep can result in missed lesions, aborted procedures, increased discomfort and procedural time as well as potential increase in complication rates. Several different schemes and preparation methods are available with no clearcut superiority of any over the other. A series of meta-analyses were performed to evaluate the differences in degree of colon cleansing comparing two fundamental schedules: split vs. non split regimen, taking into account the different types and volume of commercial products, in patients who need a colonoscopy.

Material and methods: Search of full-text articles in MEDLINE, EMBASE/Excerpta Medica, Current Contents and Cochrane Library databases was associated with hand-search of relevant journal published articles, fully recursive search of reference lists of the original studies. Articles selected were separately reviewed by 2 of the authors, and those fulfilling the inclusion criteria were selected for further analysis. Decisions regarding inclusion of articles and data extraction were reached by consensus. If there was disagreement, the papers were jointly evaluated to solve the inconsistency.

Results: Preliminary search identified 1385 potentially relevant papers. After application of predefined exclusion criteria, a total of 26 papers for an overall 6808 patients were included. Independently of the type of purgative, the frequency of excellent or good degree of colon cleansing was always significantly higher with the split regimen (overall mean difference 20.9% [95% CI 16.3–25.5], $p < 0.0001$). Significant heterogeneity (i -square 89% $p < 0.000$) was found. The superiority of the split schedule persisted even when comparing the different subgroups of the type of purge (high or low volume PEG solutions, sodium phosphate or Mg citrate), with the difference ranging from 11.6% to 30.0%, $p < 0.001$. Such a superiority of the split schedule was lost with increasing time between the last dose of purge intake and the beginning of the colonoscopy session ("runaway time" > 4 –6 hrs).

Conclusions: Independently of the type and dose of laxative, the split regimen is the best colon cleansing method for patients who need to undergo a colonoscopy. This advantage is lost with increasing time interval between the last dose of purge intake and the performance of colonoscopy.

P.15.4

CLEAN COLON SOFTWARE PROGRAM (CCSP): A MULTICENTER STUDY

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Background and aim: Colorectal cancer screening programs heavily rely on the use of colonoscopies for the detection of lesions and adequate colon cleansing prior to the exam is indispensable for reliable test results. "Interval cancer" is every endoscopist's worst nightmare. Lesions can, nevertheless, be missed during colonoscopy especially when cleansing is inadequate, which is particularly frequent in the right colon. No objective method currently exists to establish colon cleanliness during colonoscopy. Aim: to validate a software algorithm that analyzes bowel cleansing during colonoscopies.

Material and methods: A software application (the Clean Colon Software Program, CCSP) compatible with all recording systems was developed. 50 colonoscopies were carried out and recorded. Each colonoscopy was divided into 3 segments: the cecum-hepatic flexure (1st Segment), the hepatic flexure-descending colon (2nd Segment) and the rectosigmoidal segment (3rd Segment), and each segment was recorded twice both before and after careful cleansing of the intestinal wall. All the recordings were assessed by the CCSP that divided the video into more than 20 frames per minute and analyzed the pixel colour of each frame. Using the RGB colour function, the pixel colour values were defined: red, pink, violet were considered clean pixels while colours such as yellow, brown or green were considered dirty ones. A score (DRRI) from 0 (dirty) to 3 (clean) was then assigned by CCSP. All the videos are available on the: www.youtube.com/user/PadovaCCSP website. Student's t test for paired data was used.

Results: The overall average \pm SD DRRI score of the prelavage colonoscopies was 1.56 ± 0.52 and the postlavage one was 2.08 ± 0.59 ($p < 0.001$) showing an approximate 33.3% improvement in cleansing after lavage. As expected the right colon segment prelavage (0.99 ± 0.69) was dirtier vs left colon segment prelavage (2.07 ± 0.71).

Conclusions: With this study we demonstrated that the software is able to detect clean from non clean colon tracts with high significance. CCSP seems to be a reliable method to objectively assess colon cleanliness leading to improved quality of endoscopic procedures and fewer cases of undetected lesions.

P.15.5

SPLIT DOSAGE AND OTHER PREDICTORS OF QUALITY OF BOWEL CLEANSING IN PATIENTS ASSUMING A "VERY LOW VOLUME" PREPARATION FOR COLONOSCOPY: AN ITALIAN MULTICENTER STUDY USING THE ASSOCIATION OF SODIUM PICOSULPHATE AND MAGNESIUM CITRATE

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Background and aim: Two-liter PEG products are gaining attention as low-volume colon preparations for their higher acceptability. The association of sodium picosulphate/magnesium citrate (SPS-MgCi) is likely to achieve as good results as 2 liter PEG in terms of efficacy and safety with ever higher acceptability due to its "very low volume". Data on SPS-MgCi are lacking with regards to efficacy and acceptability of split doses as well as other predictors of poor preparation.

Material and methods: This is a multicenter, randomized, single-blind study involving 15 centers in Italy.

Adult outpatients undergoing colonoscopy were randomized to receive SPS-MgCi with either split or non-split dosage. Bowel cleansing was assessed using the Boston Scale (BBPS) and rated as adequate if ≥ 2 in each colon segment. Patient acceptance, satisfaction, and related symptoms were recorded. Moreover, predictors of poor preparation were identified.

Results: 824 patients were included. Overall, preparation was adequate in 620 (75.2%) patients, 85.9% in the split and 70.6% in the non-split group ($p < 0.0001$, OR 2.5, 95% CI 1.7–3.8). Mean BBPS scores for whole and right colon were significantly higher in the split group. Overall, 92.5% patients reported no discomfort related to product intake with no differences between the groups and 96% expressed their willingness to repeat the preparation in a future endoscopy. Predictors of poor cleansing were obesity (OR 1.8, 95% CI 1–3.8), constipation (1.5, 95% CI 1.1–2.1), discomfort during preparation (2.1, 95% CI 1.2–3.5) and incomplete (<75%) intake of cleansing product (10.3, 95% CI 5.1–20.8).

Conclusions: SPS-MgCi is a highly accepted and tolerable colon preparation. Similarly to other large and low volume products, a split-dosage schedule is the most effective bowel cleansing method also for a very low volume product. Among the different factors affecting quality of preparation incomplete intake of the product is likely to represent the most important.

P.15.6

ULCERATIVE COLITIS AND BOWEL CLEANSING: NEED FOR INTENSIVE PREPARATION REGIMEN FOR DISTAL COLITIS?

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Background and aim: Ulcerative Colitis (UC) patients need periodic colonoscopies for disease activity evaluation and cancer surveillance, a particularly challenging issue due to the possible presentation as flat lesions. Bowel cleansing quality is crucial in this setting, although specific studies are lacking. Patients with distal colitis may present colonic motility imbalance possibly affecting bowel preparation. This study aims at evaluating bowel cleansing quality in patients with distal colitis in comparison with patients with extensive colitis.

Material and methods: Data of 126 consecutive UC patients (distal colitis $n=72$, extensive $n=54$) undergoing colonoscopy, between January 2011 and September 2012, were retrospectively analyzed from a specific database. All patients performed standard bowel cleansing protocol with 4Liters of polyethylene glycol (4L PEG, $n=89$) or 2 Liters of PEG+Ascorbic Acid (2L PEG+ASC, $n=37$) the day before examination. Every colonoscopy was scheduled in the morning. None of the patients presented constipation defined by Rome III criteria. Bowel cleansing quality was evaluated by a simplified Boston bowel preparation scale (Inadequate < 6 points of total score or a single colonic segment with partial score ≤ 1 , Adequate ≥ 6 of total score). Age, sex, BMI, disease activity, type of preparation (4L PEG or 2L PEG+ASC) and compliance to bowel cleansing protocol were also recorded. Differences between the two groups were evaluated by Chi-squared Test. Multivariate analysis was performed with bowel cleansing quality as dependent variable.

Results: Inadequate bowel cleansing was detected in a significant higher rate in the group of distal colitis compared to extensive colitis group [22/72 (31%) vs. 7/54 (13%), respectively, $p < 0.05$]. No difference between the two groups was found for the other variables tested (age, sex, BMI, disease activity, type of preparation and compliance). In multivariate analysis, the only two variables independently associated to inadequate bowel cleansing were distal colitis and lack of compliance to the bowel cleansing protocol ($p < 0.01$ for both).

Conclusions: UC patients with distal colitis showed higher rate of inadequate bowel cleansing at endoscopic examination, compared to patients with extensive colitis. Since effective bowel cleansing represents a fundamental factor for the quality of the colonoscopy, this subset of UC patients may be considered for specific intensive preparation regimen.

P.15.7

BOWEL CLEANSING FOR COLONOSCOPY: COMPARISON BETWEEN A SAME DAY LOW-VOLUME PREPARATION AND A CONVENTIONAL SPLIT ONE

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Background and aim: Time between the the last dose of bowel preparation and colonoscopy has been reported to affect quality of colon cleansing. Split-dose preparation based on polyethylene glycol (PEG) has been found to significantly improve cleansing and patients' compliance. The split-dose can be considered the standard but it still represents a burden for many patients. To date, there are few data on the low-volume preparation given early in the morning for same day colonoscopy. The aims were evaluate the effectiveness, tolerability, compliance and feasibility of bisacodyl 3–4 tablets (Lovel-dyl[®]) taken at bedtime, the day before colonoscopy followed by PEG with citrate and simeticone 2L (PEG-CS) (LoVOL[®]-esse) given on the morning, compared with PEG-electrolytes split-dose 4L (SELG[®]1000) as reference.

Material and methods: A multicenter, randomised, comparative study with two-arm parallel group was performed. Endoscopists were blinded about bowel preparation, while a physician enrolled patients and assessed feasibility, tolerability and compliance. We included out-patients of both sexes, aged between 18 and 85 years, undergoing colonoscopy for clinical indications, screening or surveillance.

Results: A total of 164 subjects were recruited and 154 completed the study; 78 in the low-volume group (test group) and 76 in the split-dose group (reference group). No difference was observed in bowel cleansing score according to Ottawa scale: 3.09 ± 2.40 vs 2.39 ± 2.55 in the test and reference group respectively. The bowel cleansing success rate difference between groups was -2.4% in favour of the split-dose (92.1% vs. 89.7%). The rate of optimum visibility was better in the test group (86% vs. 72%, $p=0.042$). Moreover, adenoma detection rate (ADR) was similar (43.6% vs. 44.7%). Compliance was equal in both groups: $>90\%$ of subjects drunk the whole solution. Willingness to repeat both bowel preparations was about 90%. No serious adverse events occurred.

Conclusions: Same day low-volume PEG-CS preparation plus bisacodyl has shown equivalent rates in terms of effectiveness, tolerability, compliance and ADR as the split-dose. Same day preparation proved to be a feasible alternative to the split-dose preparation, especially for late morning and afternoon colonoscopy, with the advantage of no interference with daily activities the day before colonoscopy.

P.15.8

ASSESSMENT OF BOWEL PREPARATION FOR COLONOSCOPY: COMPARISON BETWEEN DIFFERENT TOOLS AND DIFFERENT HEALTHCARE PROFESSIONALS

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Background and aim: Optimal bowel preparation is essential for an appropriate endoscopic examination of the colon. Different schemes and formulations have been developed in order to identify safe and efficient preparations, however the low acceptability in terms of taste and/or volume plays a significant role in bowel cleansing completion. Few complex and time consuming tools have been proposed to evaluate bowel cleansing and all of them required the endoscopist's assessment.

In order to simplify further research on bowel preparation efficacy, it could be useful to identify new tools equally valid and reliable but more user friendly. It may be also interesting to explore the ability of nurses to assess gut cleansing as compared to endoscopists. The aims of the study are: to assess the concordance of the Ottawa Bowel Preparation Scale (OBPS) with a visual analogic scale (VAS) in measuring bowel cleansing; to measure the agreement on the assessment of bowel cleansing performed by nurses and physicians.