

# Bowel Preparation in Children: Is Polyethylene Glycol an Answer?

Mohini G. Patel and Dinesh S. Pashankar

See “Polyethylene Glycol Powder Solution Versus Senna for Bowel Preparation for Colonoscopy in Children” by Terry et al on page 215, and “Prospective Evaluation of 1-day Polyethylene Glycol-3350 Bowel Preparation Regimen in Children” by Abbas et al on page 220.

Colonoscopy is an important diagnostic and therapeutic procedure to evaluate the colon and terminal ileum in children. An adequate bowel preparation is necessary for complete visualization of both the colon and terminal ileum. Inadequate bowel preparation can lead to poor colonic visualization, missed lesions, increased procedure time, and possibly a repeat procedure. From the patient’s perspective, taking a complete bowel preparation is often the most difficult part of the procedure. Over the years, there have been many bowel preparations used in children (1). Medications that have been used include polyethylene glycol electrolyte lavage solution, magnesium citrate, sodium phosphate, senna, bisacodyl, phosphate enemas, and, recently, polyethylene glycol without electrolytes (PEG). The protocols also vary regarding the length of preparation, length of duration of clear liquid diet, and doses of medications.

There have been extremely few head-to-head comparison studies of different bowel preparations in children. In this issue of the *Journal of Pediatric Gastroenterology and Nutrition*, Terry et al (2) evaluated the efficacy of PEG versus senna for bowel preparation in children. The study was a well-designed blinded, prospective randomized trial. The authors aimed to recruit 166 children. Patients were randomly assigned to receive PEG  $1.5 \text{ g} \cdot \text{kg}^{-1} \cdot \text{day}^{-1}$  or senna (15–30 mL/day) for 2 days before the colonoscopy. The interim analysis of 30 patients showed clear superiority of PEG preparation compared with senna, and the study was terminated. Good/excellent scores of colon cleanliness were seen in 88% of patients in the PEG group compared with 29% in the senna group. Both regimens were generally well tolerated without any significant clinical adverse effects or electrolyte changes. Despite the small sample size, the results of the PEG preparations were impressive compared with senna.

PEG has revolutionized the treatment of constipation in children. It has been shown to be an effective and safe therapy long term (3). It is palatable, as it can be mixed in any beverage, and therefore the compliance with PEG therapy is excellent. Because of these properties, PEG is a good “candidate” for a bowel preparation regimen. In the first reported prospective study, our group gave PEG at a dose  $1.5 \text{ g} \cdot \text{kg}^{-1} \cdot \text{day}^{-1}$  for 4 days and documented satisfactory bowel preparation in 92% of the children (4). The obvious drawback of this regimen was the long duration. We

subsequently tested PEG given at a dose of  $2 \text{ g} \cdot \text{kg}^{-1} \cdot \text{day}^{-1}$  for 2 days with added bisacodyl and found similar efficacy (5). No major clinical adverse effects were observed in either study.

Following these promising studies, the next logical question is whether we could shorten the duration of the PEG therapy and still achieve good results. The shorter duration of preparation is obviously more likely to appeal to children and parents. In this issue of the *Journal of Pediatric Gastroenterology and Nutrition*, Abbas et al (6) report results of a prospective open-label study evaluating only 1-day PEG preparation in children. In the study, 46 children were given 238 g of PEG mixed with 1.9 L of Gatorade over a few hours on the evening before the colonoscopy. Although 43 children (93%) took >75% of the preparation, only 37 children (82%) were able to take the full preparation. Despite low acceptance rate of the preparation, all of the colonoscopies were completed to the cecum, and 77% had “effective” bowel preparation according to their scale. There were no clinically significant electrolyte changes. Clinical adverse effects were common and included nausea/vomiting (60%) and abdominal pain (44%). These adverse effects and low acceptance rate are the price to pay for a large volume bowel preparation in a limited time period. The major advantage of this preparation is a short duration over a few hours so that children do not have to miss school. It is also useful for “emergency” colonoscopies and for children who will not comply with a longer preparation.

The ideal bowel preparation should be effective, safe, and easily accepted by children. Presently, no bowel preparation will serve the needs of all children. PEG has been shown to be safe and is well accepted by children. The efficacy of PEG preparations is high depending on the duration and dosage. The higher dose and longer preparations are likely to yield better cleansing but may cause more inconvenience to patients. When it comes to bowel preparation for children, it is not “one size fits all.” For example, the requirements for bowel preparations are different for children with diarrhea caused by colitis compared with children with abdominal pain without diarrhea. Physicians should adjust the duration and doses of bowel preparations depending on each child’s condition. Recent studies, including the 2 studies in this issue of the *Journal of Pediatric Gastroenterology and Nutrition*, provide us with choices of dose and duration of PEG preparations that will be useful for successful colonoscopy in our patients.

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From the Section of Pediatric Gastroenterology, Yale School of Medicine, New Haven, CT.

Address correspondence and reprint requests to Dinesh S. Pashankar, MD, Section of Pediatric Gastroenterology, Yale School of Medicine, New Haven, CT 06510 (e-mail: dinesh.pashankar@yale.edu).

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