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Optimization of Pediatric Bowel Management Using an Antegrade Enema Troubleshooting Protocol

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Describe role of Submitting/Presenting Trainee in this project:
Submitting Trainee: Pediatric Surgical Scholar (research fellow in department of surgery) and primary author
Presenting Trainee: Pediatric Surgical Scholar (research fellow in department of surgery) and third author

Background: Appendicostomy and cecostomy are antegrade enema access routes. A successful flush is defined by ability to flush through the channel, empty the flush through the colon, and achieve fecal cleanliness. We sought to evaluate our experience with patients who were having difficulties with flushes based on a designed protocol.

Objectives/Goal: To evaluate our experience with patients who were having difficulties with flushes based on a designed protocol.

Methods/Design: A protocol focusing on the optimization of bowel management therapy (BMT) was devised. For all patients a KUB was first obtained to evaluate for retained fecal material. The algorithm then divided flush issues into before flushing, during, and after flushing. Further clinical or imaging evaluations were performed based on the presenting complaint with management changes based on the results. For instance, patients with anatomic abnormalities (ie. stenosis or prolapse) underwent revision; BMT changes was first-line therapy for all other patients. The full algorithm is depicted in Figure 1.

Results: A total of 36 patients were evaluated for flush therapy issues using the protocol. The median age at first visit was 8.5 years [IQR 6, 14]; 67% (n=24) were male. Diagnoses included anorectal malformation (n=21), functional constipation (n=8), Hirschsprung's disease (n=4), spina bifida (n=2), and prune belly (n=1). Over 182 visits, 14 problems occurred before the flush (difficulty catheterizing in 7, leakage at the skin in 7), 7 problems occurred during the flush

(difficulty/prolonged forward flush in 3, and bloating/cramping/pain with the flush in 4), and 22 had accidents after flushing. Seven patients had no complaints; 13 had multiple problems. A majority of patients [86% (6/7) with problems during the flush and 86% (19/22) after flush] had improvement with changes in BMT. The other four patients (14%, 4/29) required surgical intervention: three required an ileostomy, and one an anal stricture revision. In patients with problems before flushing, 29% (4/14) required a Chait tube to improve management and 50% (7/14) required appendicostomy/cecostomy revision for either stenosis or leakage.

Conclusions: Most patients requiring antegrade continence enemas that experience problems during or after flushing respond to changes in bowel management. An efficient evaluation of symptoms and anatomy can appropriately determine those who may benefit from surgical revision or BMT when a flush is not going well by utilizing our proposed algorithm.