



## Why wait: early enteral feeding after pediatric gastrostomy tube placement<sup>☆,☆☆</sup>



Amanda R. Jensen<sup>a</sup>, Elizabeth Renaud<sup>b</sup>, Natalie A. Drucker<sup>a</sup>, Jessica Staszak<sup>c</sup>, Ayla Senay<sup>b</sup>, Vaibhavi Umesh<sup>b</sup>, Regan F. Williams<sup>c</sup>, Troy A. Markel<sup>a,\*</sup>

<sup>a</sup> Department of Surgery, Division of Pediatric Surgery, Riley Hospital for Children at Indiana University Health, Indianapolis, IN

<sup>b</sup> Department of Surgery, Division of Pediatric Surgery, Albany Medical Center, Albany, NY

<sup>c</sup> Division of Pediatric Surgery, Le Bonheur Children's Hospital, University of Tennessee Health Science Center, Memphis, TN

### ARTICLE INFO

#### Article history:

Received 14 March 2017

Received in revised form 22 May 2017

Accepted 15 June 2017

#### Key words:

Gastrostomy tube placement

Early feedings

Outcomes

Pediatric

### ABSTRACT

**Purpose:** Early initiation of feedings after gastrostomy tube (GT) placement may reduce associated hospital costs, but many surgeons fear complications could result from earlier feeds. We hypothesized that, irrespective of placement method, starting feedings within the first 6 h following GT placement would not result in a greater number of post-operative complications.

**Methods:** An IRB-approved retrospective review of all GTs placed between January 2012 and December 2014 at three academic institutions was undertaken. Data was stratified by placement method and whether the patient was initiated on feeds at less than 6 h or after. Baseline demographics, operative variables, post-operative management and complications were analyzed. Descriptive statistics were used and  $P$ -values  $<0.05$  were considered significant.

**Results:** One thousand and forty-eight patients met inclusion criteria. GTs were inserted endoscopically (48.9%), laparoscopically (44.9%), or via an open approach (6.2%). Demographics were similar in early and late fed groups. When controlling for method of placement, those patients who were fed within the first 6 h after gastrostomy placement had shorter lengths of stay compared to those fed greater than 6 h after placement ( $P < 0.05$ ). Total post-operative outcomes were equivalent between feeding groups for all methods of placement (laparoscopic ( $P = 0.87$ ), PEG ( $P = 0.94$ ), open ( $P = 0.81$ )).

**Conclusions:** Early initiation of feedings following GT placement was not associated with an increase in complications. Feeds initiated earlier may shorten hospital stays and decrease overall hospital costs.

**Type of study:** Multi-institutional retrospective.

**Level of evidence:** III

© 2017 Elsevier Inc. All rights reserved.

Gastrostomy tube (GT) placement is one of the most commonly performed procedures in pediatric surgical practice [1]. GTs are placed for a variety of indications including significant neurologic disability preventing oral feeding, congenital heart disease, renal failure, metabolic disorders, and for nutritional supplementation in children with failure to thrive or feeding dysfunction [2,3]. The timing of initiation of feedings following GT placement continues to be non-standardized and dependent on both institutional practices and surgeon preferences [4]. This

lack of standardization can result in variability in the average length of hospital stay, which secondarily can increase overall acquired hospital costs.

Previous literature demonstrated that early feeding (i.e. within 1–6 h) is safe following percutaneous endoscopic gastrostomy (PEG) placement [5–8]. Additionally, a randomized prospective trial of early feeding after PEG found that starting feedings as early as the first hour after placement does not increase short-term or long-term complication rates [9]. Prior studies have focused only on PEG placement with no reports in the literature describing the safety of early feeding after laparoscopic or open placement of gastrostomy tubes.

The laparoscopic technique is currently one of the most common methods for gastrostomy tube placement in pediatric patients. Comparisons of PEG and laparoscopic placement methods have demonstrated the techniques have similar outcomes, with some studies reporting lower complication rates with laparoscopically placed tubes [10–12]. In keeping with recent national efforts to improve standardization of

<sup>☆</sup> ER, RFW and TAM were responsible for study conception and design. ARJ, NAD, JS, AS and VU were responsible for acquisition of data. ARJ and TAM performed analysis and interpretation of data. ARJ drafted the manuscript. All authors were responsible for critical revisions to the manuscript and assisted with its final preparation.

<sup>☆☆</sup> No disclosures to report

\* Corresponding author at: Indiana University School of Medicine, Riley Hospital for Children at IU Health, 705 Riley Hospital Dr., RI 2500, Indianapolis, IN 46202. Tel.: +1 317 437 2506; fax: +1 317 274 4491.

E-mail address: [tmarkel@iupui.edu](mailto:tmarkel@iupui.edu) (T.A. Markel).

care, which can maintain quality care while decreasing hospital costs, we identified post-operative practices after GT placement as a target for improvement. We hypothesized that: 1) regardless of placement technique, initiation of feedings early (at or prior to 6 h) in the post-operative period would not be associated with an increase in the frequency of post-operative complications when compared to later (after 6 h) initiation of feedings, and 2) earlier initiation of feedings would be associated with shorter length of hospital stay.

## 1. Methods

### 1.1. Study design

After individual Institutional Review Board approval, three individual academic institutions reviewed patient electronic medical records for pediatric patients (age <18 years) who underwent gastrostomy tube/button placement during a 3-year period from January 2012 to December 2014. Patients with gastrojejunostomy placement were excluded. In addition, patients whose records lacked information regarding feeding data in the immediate post-operative period were excluded. Patients who underwent gastrostomy tube placement were identified by the Current Procedural Terminology (CPT) codes for open placement, PEG placement, and laparoscopic placement.

### 1.2. Outcomes

Charts were reviewed and the following data was extracted: patient demographics, indication for procedure, operative time, antibiotic administration, placement method, concurrent procedures, post-operative management including feeding initiation of enteral feeds and time to full feeds, post-operative narcotic use, and post-operative complications.

### 1.3. Definitions

“Early feeding” was defined as initiation of gastrostomy feeds at less than or equal to 6 h following placement while “late feeding” was defined as initiation of gastrostomy feedings later than 6 h after placement. Six hours was defined as the cutoff for “early feedings” based on a literature search for studies examining early feedings following PEG placement [6,7]. Included post-operative complications were restricted to those occurring within 2 weeks following surgery in order to ensure that identified complications were related to the procedure itself. “Stoma site infection” was defined as cellulitis or abscess requiring antibiotic therapy. “GT leak” was defined as an extra-abdominal leak requiring intervention. “Vomiting” was defined as any emesis within the first 24 h after GT placement. “Delay in advancement of feeds” was defined as any discontinuation of feeds following initiation. “Aspiration” was defined as entry of feeds from the GI tract into lower respiratory tract following GT placement as documented in physician notes. “Need for the operating room” (OR) was defined as any unexpected trip to the OR for an unplanned intervention related to the GT. “Hemorrhage” was defined as bleeding related to the gastrostomy tube site and requiring intervention for treatment, such as transfusion or operative procedure. “Tube dislodgement” was defined as any unintentional extrusion of the GT. “Peritonitis” was defined as an exam consistent with progressive intra-abdominal inflammation as documented in physician notes. “Death” was defined as a death related to the GT as opposed to other underlying medical conditions.

### 1.4. Statistical analysis

All statistical analyses were performed using IBM SPSS 24 statistical software (Chicago, IL). Data was stratified by procedure type (laparoscopic, PEG or open) along with early or late feedings (before 6 h or after 6 h). All baseline demographics, operative details, peri-operative

management and post-operative complications were summarized using medians with interquartile ranges (quartile 1–quartile 3) for continuous variables and frequencies with percentages for categorical variables (none of the data was normally distributed). To compare patient characteristics and post-operative outcomes between patients with early and late initiation of feeds, Pearson chi-square or Fisher exact tests were used for categorical variables and Mann–Whitney *U* tests were used for continuous variables. *P*-values <0.05 were considered statistically significant.

## 2. Results

### 2.1. Patient characteristics

From 2012 to 2014, 1086 pediatric patients underwent gastrostomy tube or button placement. Procedures were performed by 28 individual surgeons with  $39 \pm 8$  (mean  $\pm$  SEM) cases performed per surgeon. Regarding surgical preferences, 10 of the surgeons preferred the laparoscopic method, 10 preferred PEG placement, 2 preferred open placement, 2 had an equal mixture of both LAP and PEG, and 4 of them did not express a defined preference. Of these gastrostomy placements, 38 patients were excluded for missing data regarding initiation of feeds (13 (1.2%) laparoscopic, 20 (1.8%) PEG, and 5 (0.5%) open). Excluded patients did not differ from the included patients with regards to demographic data, surgical management and post-operative complications. Of the 1048 included patients, 490 (46.8%) started feedings within 6 h post-operatively while 558 (53.2%) started feedings more than 6 h after surgery. There were no significant differences between laparoscopic and open groups for age, gender, and weight at time of procedure (Table 1). In the PEG group, patients who started on feedings after 6 h tended to be older and had higher weights. When these three placement groups were combined there were no significant differences between the early and late feeding groups with regards to age, gender and weight ( $P = 0.21, 0.86, \text{ and } 0.33$  respectively). Patients underwent GT placement for a variety of indications within all groups.

### 2.2. Operative variables

Operative time for all gastrostomy tube placements had a median of 40.5 (21–69) minutes. Interestingly, when this was stratified by type, the patients in the laparoscopic group who were fed early had statistically significantly longer operative times compared to those fed late ( $P < 0.01$ ; Table 2). In the PEG group, patients who were fed late had longer operative times ( $P < 0.01$ ). There was no difference with regards to initiation of feeds and operative time in the open group ( $P = 0.61$ ). Most patients were given cefazolin (89.1%) peri-operatively. Patients in the PEG group who were started on feeds at or before 6 h were more likely to undergo a concurrent procedure (13.5%) compared to those patients who were started on feeds later (8.8%,  $P = 0.02$ ). There was no significant difference between patients who underwent a concurrent procedure with GT placement with regards to initiation of feeding in the laparoscopic and open groups ( $P = 0.2$  and  $0.43$ , respectively).

### 2.3. Post-operative care

A total of 101 (9.6%) patients went to the PICU and 189 (18.1%) went to the NICU post-operatively. A total of 181 (17.3%) patients remained intubated post-operatively. When analyzed as a group and not respective of procedure, patients in the PICU, patients in the NICU, and those remaining intubated were more likely to start feedings later than 6 h post-operatively ( $P < 0.1, P < 0.01, P < 0.01$  respectively; Table 2). When stratified by gastrostomy type, PEG patients in the PICU or remaining intubated were more likely to start late feeds. Similarly, in the laparoscopic group, those in the NICU or intubated post-operatively were more likely start feeds after 6 h ( $P = <0.01, P = <0.01$  respectively; Table 2). In the open group, there was no statistically significant

Download English Version:

<https://daneshyari.com/en/article/8810367>

Download Persian Version:

<https://daneshyari.com/article/8810367>

[Daneshyari.com](https://daneshyari.com)