

Outcome of Gastrostomy Tube (GT) in Neonates and Infants: Can GT Be Avoided? A Pilot Study

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INTRODUCTION AND OBJECTIVES:

Neonatal care advancements have increased the survival of premature babies, who often have morbidities requiring feedings via nasogastric (NG) or G tube (Figure 1). The reason for feeding problems may be multifactorial, leading to different outcomes for NG and G tube use. An NG tube is preferred for short-term use to prevent complications from GT placement. For long-term assistance, GT is recommended for its stability, lower potential for respiratory complications, and superior anthropometric outcomes. However, in many cases it is not possible to anticipate how long a feeding tube may be needed. We reviewed charts of NICU patients with GT placement regarding length of time of GT use to identify patients who could have been discharged with NG tube and avoided surgery.

The aim of this pilot study of NICU babies was to predict the need for tube feedings of a duration >2 months so that patients with a requirement of <2 months can be discharged with an NG tube, thereby decreasing the risks of GT placement and decreasing the cost of health care. A larger study can identify clinical characteristics that may help determine the duration of feeding assistance needed in NICU babies.

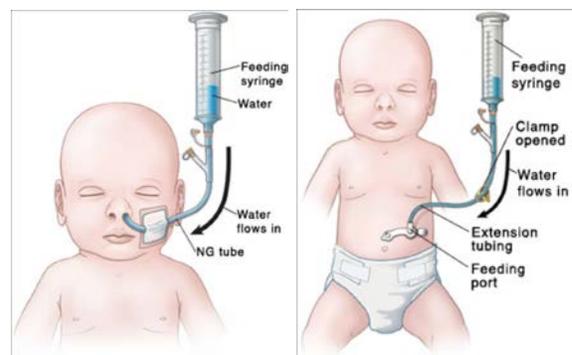


Figure 1. Nasogastric (NG) tube feeding (left) and gastrostomy tube (GT) feeding in an infant

METHODS: A retrospective chart review was done for patients (n=156) with GT in NICU from January 2011 to May 2015. Patients were followed up regarding GT use until GT removal or for >1 year. Clinical parameters were compared between patients requiring GT for <2 months (n=29) vs. >2 months (n=124). Logistic regression statistical analysis was used to identify parameters that can predict short-term GT need.

RESULTS: Of 156 patients, 3 were excluded (lost to follow up). There were 29 patients who used the GT for <2 months and 124 patients who used the GT for >2 months. Model 1 factored in the effects of birth weight, percent PO intake at time of GT placement, presence of chromosomal abnormality, and presence of CNS disease (Figure 2). There was an interaction between birth weight and presence of chromosomal

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abnormality. A 1-unit increase in percent PO intake at time of GT placement had a 3% significant decrease in odds of having the GT for >2 months ($P=0.005$). Among babies with a chromosome abnormality, there was a 0.2%

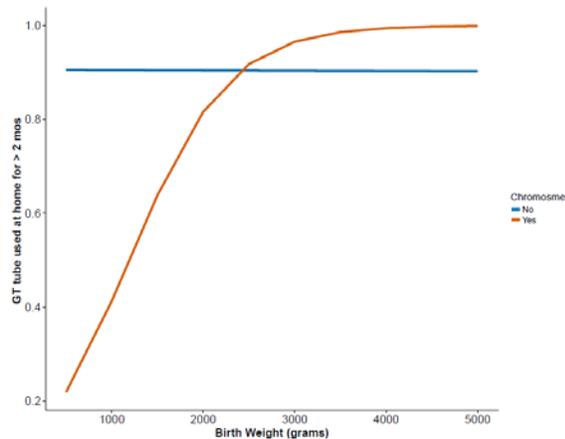


Figure 2. As birth weight increases, the probability of GT use for >2 months increases in the presence of a chromosome abnormality and stays the same in the absence of a chromosome abnormality.

significant increase in odds of having the GT for >2 months for every 1-gram increase in weight compared to babies that do not have a chromosome abnormality ($P=0.049$).

Model 2 factored in the effects of gender, gestational age, delivery method, presence of CNS disease, presence of GI disease, presence of lung disease, and presence of other disease (Figure 3). There was an interaction between the presence of CNS disease and gestational age. Among babies with a CNS disease, there was an 18% significant increase in odds of having the GT for >2 months for every 1-unit increase in gestational age compared to babies that do not have a CNS disease ($P=0.048$).

The following parameters were not significantly different between the two groups of patients: cardiovascular disease, cleft palate, renal disease, infant of diabetic mother, intrauterine growth restriction, other disease, GI consult obtained before

procedure, postoperative complications, and GT removal (data not shown).

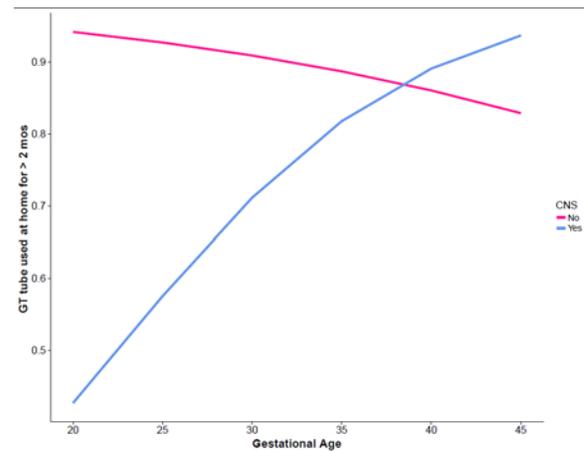


Figure 3. As gestational age increases, the probability of GT use for >2 months increases in the presence of CNS disease and decreases in the absence of CNS disease.

CONCLUSIONS:

1. Higher percentage PO intake at time of GT placement was associated with short-term GT use.
2. Longer-term GT need may be predicted by presence of chromosome abnormality for babies with higher birth weights.
3. Longer-term GT need may be predicted by presence of CNS disease for higher gestational age babies.
4. Statistical analysis was limited by the number of patients. Future research including a larger number of patients who used a GT for <2 months can yield more insight into clinical parameters that may be used to determine the need for NG vs. G tube in NICU babies to minimize risks and optimize outcomes.