

Percutaneous endoscopic gastrostomy placement during pregnancy in the critical care setting

A 37-year-old woman with a past medical history of untreated hypertension presented with unresponsiveness at 28 weeks of gestation. Computed tomography (CT) revealed a pontine hemorrhage with massive edema. After 2 weeks of nasogastric feeding, the patient received a percutaneous endoscopic gastrostomy (PEG) tube. At 31 weeks, cesarean section was performed and a 1660-g preterm infant was delivered. The patient continued on PEG feeding and slight neurological improvement was seen.

Optimal nutritional requirements are critical in the intensive care unit as evidenced by the critical care and pancreatitis guidelines [1]. During pregnancy, optimal nutrition is essential in order to minimize maternal and neonatal morbidity [2]. Long-term nasogastric feeding is limited by patient tolerability and nasal septal necrosis. The long-term side effects of total parenteral nutrition limit its usage during pregnancy [3]. Thus, PEG becomes an impor-

tant option for long-term enteral feeding [4]. However, concerns about uterine damage, fetal injury, premature labor, and infections have restricted the application of PEG tube placement in pregnant women. Our study reviews the safety and feasibility of PEG tube placement in pregnancy in the critical care setting.

There were no major complications with PEG tube placement in the 11 reported cases in the literature [4–11], as well as in our case (Table 1). PEG enteral nutritional support was provided for an average of 14 weeks in the literature. During pregnancy, PEG tube placement is a feasible procedure for optimal enteral nutrition in the critical care setting. It is also feasible to perform PEG tube placement in the third trimester of pregnancy. Special precautions (Table 2) are critical for PEG tube placement during pregnancy, and knowledge of these precautions is essential.

In conclusion, a review of the literature clearly shows that the risk of malnutrition in pregnancy greatly exceeds the risk of PEG placement.

Competing interests: None

Endoscopy_UCTN_Code_TTT_1A0_2AC

V. Senadhi¹, J. Chaudhary¹, S. Dutta²

¹ Johns Hopkins University/Sinai Hospital Program in Internal Medicine, Department of Internal Medicine, Sinai Hospital, Baltimore, Maryland, USA

² Johns Hopkins University/Sinai Hospital Program and the University of Maryland School of Medicine, Division of Gastroenterology, Sinai Hospital, Baltimore, Maryland, USA

References

- Zarbock SD, Steinke D, Hatton J et al. Successful enteral nutritional support in the neurocritical care unit. *Neurocrit Care* 2008; 9: 210–216
- Villar J, Meraldi M, Gülmezoglu AM et al. Nutritional interventions during pregnancy for the prevention or treatment of maternal morbidity and preterm delivery: an overview of randomized controlled trials. *J Nutr* 2003; 133: 1606S–1625S
- Wong M, Apodaca CC, Markenson MG, Yancey M. Nutrition management in a pregnant

Table 1 Features of cases where a percutaneous endoscopic gastrostomy (PEG) tube was placed during pregnancy.

Reference	Patient's age, years	Gestational age at presentation, weeks	Indication for PEG tube	Duration of nutritional support, weeks	Delivery type/gestational age, weeks	Birth weight, g	Maternal and fetal outcome	Special precautions taken
Koh & Lipkin 1993	24	13	Motor vehicle accident with coma	24	Cesarean section/37	3680	Mother improved; baby well	n. a.
Shaheen et al. 1997	19	17	Anorexia and odynophagia due to esophagitis	5	Natural vaginal delivery/24	2440	Mother improved; baby well	– Ultrasound guidance to define the dome of the uterus – Repeated adjustments were required to avoid pressure necrosis
	34	24	Congenital myotonic dystrophy and mental retardation	n. a.	Cesarean section/30	1080	Both mother and baby well	– Same as above – Abdominal binder over PEG tube to guard against accidental dislodgement
Godil & Chen 1998	18	16	Anorexia nervosa	10	Natural vaginal delivery/39	2782	Both mother and baby well	– Antibiotic prophylaxis
	14	29	Hyperemesis gravidarum	10	Natural vaginal delivery/39	3000	Both mother and baby well	– Sedation with midazolam and intravenous meperidine

Continuation see following page

Table 1 Features of cases where a percutaneous endoscopic gastrostomy (PEG) tube was placed during pregnancy.

Reference	Patient's age, years	Gestational age at presentation, weeks	Indication for PEG tube	Duration of nutritional support, weeks	Delivery type/gestational age, weeks	Birth weight, g	Maternal and fetal outcome	Special precautions taken
Serrano et al. 1998	25	11	Hyperemesis gravidarum	18	Natural vaginal delivery/40	4000	Both mother and baby well	– Radiograph with pelvic shielding to verify the position of jejunal tube
	25	15	Hyperemesis gravidarum	20	Natural vaginal delivery/36	2750	Both mother and baby well	
O'Connell et al. 2000	24	11	Chronic malnutrition		Cesarean section/33	1620	Both mother and baby well	n. a.
Wejda et al. 2003	41	8	Apallic syndrome	19	Cesarean section/27	820	Mother continued on nutrition therapy; baby well	n. a.
Irving 2004	32	17	Severe hyperemesis gravidarum	18	Cesarean section/35	2300	Both mother and baby well	– Generalized anesthesia with antibiotic – Continuous ultrasound guidance and monitoring of fetus
Fedorka 2004	34	10	Motor vehicle accident	24	Cesarean section/34	2608	Mother continued on vegetative state support; baby well	n. a.
Senadhi, Chaudhary & Dutta 2010 (current report)	37	27	Intracranial bleed (pontine hemorrhage)	2	Cesarean section/31	1660	Mother continued on nutrition therapy with slight neurological improvement; baby well	– Ultrasound guidance with fundal monitoring before the procedure – Continuous fetal monitoring by an obstetric nurse – Operating room ready for precipitated labor

n. a., not applicable.

Table 2 Recommendations for percutaneous endoscopic gastrostomy (PEG) tube placement during pregnancy.

Recommendations during pregnancy
Ultrasound to define the dome of the uterus before the procedure
Ultrasound indentation and transillumination displaying PEG can be separated from the rib cage and the uterus
Continuous fetal monitoring by an obstetric nurse throughout the procedure
Operating room ready for precipitated labor during PEG placement
Monitor fetal growth and development through ultrasound, especially in second and third trimester
Careful monitoring of the tension on the external bumper of the PEG to avoid excess external bumper pressure as the uterus enlarges
Repeated adjustments are needed to avoid pressure necrosis from the tension in the area from the internal and external bumpers
Procedural sedation can be safely achieved with propofol (pregnancy category B)

comatose patient. *Nutr Clin Pract* 1997; 12: 63–67

- Koh ML, Lipkin EW. Nutrition support of a pregnant comatose patient via percutaneous endoscopic gastrostomy. *JPEN J Parenter Enteral Nutr* 1993; 17: 384–387
- Shaheen NJ, Crosby MA, Grimm IS, Isaacs K. The use of percutaneous endoscopic gastrostomy in pregnancy. *Gastrointest Endosc* 1997; 46: 564–565
- Godil A, Chen YK. Percutaneous endoscopic gastrostomy for nutrition support in pregnancy associated with hyperemesis gravi-

darum and anorexia nervosa. *JPEN J Parenter Enteral Nutr* 1998; 22: 238–241

- Serrano P, Velloso A, García-Luna PP et al. Enteral nutrition by percutaneous endoscopic gastrojejunostomy in severe hyperemesis gravidarum: a report of two cases. *Clin Nutr* 1998; 17: 135–139
- O'Connell M, Wilson O, Masson E, Lindau S. Pregnancy outcome in a patient with chronic malnutrition. *Hum Reprod* 2000; 15: 2443–2445
- Wejda BU, Soennichsen B, Huchzermeyer H et al. Successful jejunal nutrition therapy in a

pregnant patient with apallic syndrome. *Clin Nutr* 2003; 22: 209–211

- Irving PM, Howell RJ, Shidrawi RG. Percutaneous endoscopic gastrostomy with a jejunal port for severe hyperemesis gravidarum. *Eur J Gastroenterol Hepatol* 2004; 16: 937–939
- Fedorka P, Sullivan J. Case report: persistent vegetative state in pregnancy. *Top Emerg Med* 2004; 26: 49–51

Bibliography

DOI 10.1055/s-0030-1256052

Endoscopy 2010; 42: E358–E359

© Georg Thieme Verlag KG Stuttgart · New York · ISSN 0013-726X

Corresponding author

Dr. Viplove Senadhi

Johns Hopkins University/Sinai Hospital Program in Internal Medicine, Sinai Hospital
2401 West Belvedere Avenue
Baltimore, Maryland 21215, USA
Fax: +1-678-623-5999
vsenadhi@hotmail.com