

SPR 2012 Annual Meeting – Interventional Session

Michael J. Temple, MD, Moderator

G and GJ Tubes

Els Nijs, MD

Which is an **ABSOLUTE** contraindication for percutaneous G or GJ tubes?

1. Neurologic disorders such as head trauma, encephalopathy, neoplasm, cerebral palsy, submersion injury, Sagittal sinus thrombosis, and spinal muscular dystrophy
2. Congenital cardiac anomalies
3. Portal hypertension with gastric varices with or without uncorrectable coagulopathy
4. Ventriculoperitoneal shunt
5. Anatomical variants such as malrotation states (omphalocele, gastroschisis, congenital diaphragmatic hernia) or colon/small bowel in front of the stomach

Answer: C

1. Answer A is incorrect. Neurologic disorders are a very common indication for a G or GJ tube placement, including, but not limited to, all of the above.
2. Answer B is incorrect. Children with congenital cardiac anomalies and failure to thrive often will get a G or GJ tube placed.
3. Answer C is CORRECT. If gastric varices are incidentally punctured during the procedure, this can lead to major complications. Coagulopathies are often correctable by giving fresh frozen plasma or platelet infusions resulting in a relative contraindication when NOT associated with gastric varices.
4. Answer D is incorrect. This is a relative contraindication and decisions can be made on a case by case basis.
5. Answer E is incorrect. By doing pre-procedure imaging and using US and fluoroscopic guidance, the exact location of the stomach can be defined in case of malrotation and safely accessed. If bowel is in front of the stomach, Glucagon can be administered and the stomach insufflated, pushing the overlying bowel structure downwards and make a safe access of the stomach possible.

REFERENCES:

1. Mauro M. (2001) Image-guided percutaneous gastrostomy and gastrojejunostomy. *Operative Techniques in General Surgery*, 3(4):269-282.
2. Friedman JN, Ahmed S, Connolly B, Chait P, Mahant S. (2004) Complications associated with image-guided gastrostomy and gastrojejunostomy tubes in children. *Pediatrics*, 114(2):458-461.
3. Malden ES, Hicks ME, Picus D, Darcy MD, Vesely TM, Kleinhoffer MA. (1992) Fluoroscopically guided percutaneous gastrostomy in children. *Journal of Vascular and Interventional Radiology*, 3:673-677.
4. Nijs LF, Cahill AM. (2010) Pediatric enteric feeding techniques: Insertion, maintenance, and management of problems. *Cardiovascular and Interventional Radiology*, 33:1101-1110.

Thoracic Duct Embolization

Marc S. Keller, MD

Which of the following is not a tributary of the thoracic duct?"

- A. Left lumbar trunk
- B. Right lumbar trunk
- C. Right lymphatic duct
- D. Intestinal trunk
- E. Cisterna chyli

Answer: C

REFERENCE:

1. Tewfik TL. Thoracic Duct Anatomy. Gross Anatomy. <http://emedicine.medscape.com/article/1970145-overview#aw2aab6b3>

Malignant Pleural Effusions

Michael J. Temple, MD

Concerning malignant pleural effusions, which statement is NOT correct?

- A. Only 60% of patients with pleural metastases develop a pleural effusion
- B. Most malignant pleural effusions are transudates
- C. Vascular endothelial growth factor increases vascular permeability and may play a major role in development of malignant effusion.
- D. Impaired lymphatic absorption, lymphatic obstruction, impaired protein transcytosis and decreased Starling absorption can contribute to the development of malignant effusion.

Answer: B is not correct

REFERENCES:

1. Uzbek MH, Almedia FA, Sarkiss MG, et al. Management of Malignant Pleural Effusions. *Adv Ther* 2010; 27(6):334-7.
2. Zebrowski BK, Yano S, Lui W, et al. Vascular Endothelial Growth Factor Levels and Induction of Permeability in Malignant Pleural Effusions. *Clin Can Res* 1999; 5:3364-8.
3. Balfour-Lynn IM, Abrahamson E, Cohen G, et al. BTS Guidelines for the Management of Pleural Effusions in Children. *Thorax* 2005; 60:i1-i21.

RATIONALE:

Option B is the incorrect statement. Most malignant pleural effusions are exudates not transudates despite an association with lymphatic obstruction.

Options A, C and D are correct statements. Not all patients with pleural metastases develop effusions. A number of factors are thought to contribute to their development. Vascular

Endothelial Growth Factor (VEGF) or vascular permeability factor levels are increased in malignancy and thought to contribute to effusion development.

IVC Filters

João G. Amaral, MD and Kamlesh U. Kukreja, MD

All of the following are indications for IVC filter insertion in adults/children, EXCEPT?

- A. Recurrent Venous Thrombembolism (VTE) despite adequate anticoagulation
- B. Documented DVT with a contraindication to anticoagulation (e.g. intra-cranial hemorrhage, hemorrhagic stroke, acute or active internal hemorrhage, recent major surgery)
- C. Cerebral venous thrombosis
- D. Thrombolysis or mechanical thrombectomy of DVT with risk of PE
- E. Free floating iliofemoral or inferior vena cava thrombus.

Answer: C

REFERENCE:

http://www.acr.org/SecondaryMainMenuCategories/quality_safety/guidelines/iv/ivc_pulmonary.aspx

Thrombectomy

Anne Marie Cahill, MD, MBBCh

In regards to pediatric venous thrombosis the following are true EXCEPT:

- A. Pediatric venous thrombosis is most commonly seen in the neonatal and teenage population
- B. The majority of children who present with venous thrombosis have an inherited pro-thrombotic state
- C. An underlying compression syndrome should be considered when the presentation is a left iliofemoral thrombosis
- D. The inability to maintain a fibrinogen level >100 is a major contra-indication to thrombolysis
- E. Bradycardia encountered during mechanical thrombolysis is secondary to adenosine release and usually self limited

Answer: B

REFERENCES:

1. Andrew M, David M, Adams M, Ali K, Anderson R, Barnard D, Bernstein M, Brisson L, Cairney B, DeSai D, et al. Venous thromboembolic complications (VTE) in children: First analyses of the Canadian Registry VTE. *Blood*. 1994 Mar 1;83(5):1251-7
2. Raffini L. Thrombolysis for intravascular thrombosis in neonates and children. *Curr Opin Pediatr*. 2009 Feb;21(1):9-14. Review
3. Raffini L, Raybagkar D, Cahill AM, Kaye R, Blumenstein M, Manno C. May-Thurner Syndrome (iliac vein compression) and thrombosis in adolescents. *Pediatr Blood Cancer*. 2006 Nov;47(6):834-8

4. Leslie Raffini, Yuan-Shung Huang, Char Witmer, Chris Feudtner
Dramatic Increase in Venous Thromboembolism in Children's Hospitals in the United States From 2001 to 2007. *Pediatrics* 2009;124;1001-1008

Rationale:

A - True - In two large series, both Canadian and USA there were two peaks for venous thrombosis identified in the pediatric population, <1 yr age and mid teens.

B - False - In a large Canadian study, central venous catheters were associated with 1/3 of all DVT's and the presence of co-existent morbidities such as malignancy, congenital heart disease and trauma occurred in 96%. The presence of a central venous catheter was the single most important predisposing factor for DVT in this pediatric study (32.8%).

C - True - May Thurner syndrome is an anatomic variant in which chronic compression of the left common iliac vein occurs by the crossing right common iliac artery leading to endothelial vascular changes such as webs, spurs and stenosis. Angioplasty +/- stenting is the treatment of choice. It must be considered when a left iliofemoral thrombosis is the presenting pathology.

D - True - Major contra-indications to thrombolysis include:

- (1) Major surgery within 7–10 days
- (2) Active bleeding
- (3) Central nervous system (CNS) surgery/ischemia/trauma/hemorrhage within 30 days;
- (4) Seizures within 48 h
- (5) Inability to maintain platelet count >75 000/ml
- (6) Inability to maintain fibrinogen >100 mg/dl
- (7) Uncontrolled hypertension

E - True - The Angiojet system is based on the Bernoulli principle and the creation of a vacuum extraction phenomenon utilizing rapidly flowing saline jets. Disadvantages include potential issues with volume overload, hemolytic anemia and bradycardia from adenosine release. The bradycardia is usually self limiting once the Angiojet device is ceased for 1-2 minutes and may be more profound in young athletes with a low resting heart rate. One maneuver to decrease the risk of this systemic phenomenon is to leave "cap" of clot intact until the end of thrombolysis session. Care must also be taken to closely monitor the effluent to ensure that fragmented clot and not fresh blood is being extracted particularly in younger children.