Anti-Reflux Surgery in Cerebral Palsy Patients

Cecostomy for Bowel Management

Surgery for Prenatally Identified Congenital Lung Lesions

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G. E. Reflux in Cerebral Palsy
vs.
Question of G. E. Reflux
G. E. Reflux associated with:
  – Dental disease
  – Laryngeal disease
  – Respiratory Disease
Modern Proton Pump Inhibitors (PPI’s)
– So effective, if problem not resolved with PPI’s, question the diagnosis
Fundoplication in children:
– Complication rate > 50% in:
  • Neurologically injured
  • Infants < one year of age
Failure rate of Nissen Fundoplication:
– JAMA 2001 May 9;285(18):2331-8

Spechler, S. J. et al:
• Medical vs surgical treatment for GERD
  – No difference in antacid use after 10 years
    (> 50% in both groups)
Incidence of gagging and question of ongoing reflux unchanged in CP patients following fundoplication
Esophago-Gastric Dissociation
No impact on gagging or question of reflux
A Cautionary Tale

- Infant < one year of age, CP
- Difficulty feeding; significant gagging
- Question of GE reflux
- Request for G tube and Fundoplication
Chest and abdomen at birth
Upper GI series 30/01/09
Gastroesophageal Reflux Scan
• Had fundoplication and G Tube
  – Gag persists
  – Question of GE reflux persists

• Had esophago-gastric dissociation
• Gag persists
• Question of reflux persists
UGI- 13/11/12
Had repair of paraesophageal hernia
• Gag persists
• Question of reflux persists
Coronal CT - 12/08/14
Outcome:

– Gag and question of reflux unchanged
Observations:

– Neurologically injured children often have:
  – Incoordination of swallowing with or without:
    » Food aversion
    » Pooled oropharyngeal secretions
    » aspiration
  – Exaggerated gag reflex

– The combination of gagging, pooled secretions and aspiration commonly interpreted as caused by GE reflux
Recommendations:

– If feeding tube required:
  • G-tube (PEG) if no concern about reflux
  • J-tube (Roux en Y) plus anti-reflux medication if reflux a concern
  • G-J tube plus anti-reflux medication if seemingly intolerant of any gastric secretions
Bowel Management
Bowel Management for:
  – Spina Bifida
  – Imperforate Anus
  – Severe “functional” constipation
Severe Functional Constipation:

– Subtle innervation abnormality
  • e.g. Intestinal neuronal dysplasia

– Anal achalasia (formerly ultra-short segment Hirschsprung’s Disease)
NEURAL CONTROL
Problem:
– Compromise of autonomic and/or somatic function

Result:
– Compromise of control of evacuation
  • Both inadequate evacuation (constipation)
  • And inadequate control of evacuation (incontinence)
Management:

– Proportional to degree of compromise
  • Behavioral modification
  • Suppository (degrees of stimulation)
  • Enemas (increasing volumes)
• Pragmatic goal of management:
  – Controlled timing of evacuation
  – Sufficient evacuation to allow predictable period of freedom from soiling

i.e., social continence
Cecostomy to allow antegrade colonic enema (ACE)
Benefits of Antegrade Colonic Enema

- Allows for washout of whole colon
- Produces a bowel movement at a convenient time and place
- Allows an extended, predictable time without soiling
MACE procedure

Malone
Antegrade
Continence
Enema

- Appendicostomy - described in 1990

Dr. P Malone
MACE
Disadvantages of the MACE procedure

- Appendix may not be available - appendicitis, neurogenic bladder, previous Mitrofanoff
- 30% stricture at skin level - ACE stopper
- Permanent, definitive
Percutaneous Cecostomy: A New Technique in the Management of Fecal Incontinence

By Barry Shandling, Peter Graham Chait, and Helen Forrest Richards

Toronto, Ontario

- 1996
- Performed by interventional radiology
- Chait trapdoor
Percutaneous cecostomy placement steps

- Rectum/colon inflated with air
- Cecum accessed with needle/wire under US and fluoroscopic guidance
- T-bars
Percutaneous cecostomy placement steps

- Small catheter inserted over wire (Cooke pigtail catheter)
- T-bar anchor sutures cut at 14 days
- Replaced by Chait Trapdoor after 6-8 weeks
Complications with Cecostomies

- Anchors loosened $\rightarrow$ peritonitis $\rightarrow$ laparotomy
- Significant peritonitis successfully treated with IV antibiotics
- Site infections treated by family doctors
- Accidental removal of pigtail catheter $\rightarrow$ replaced with foley
- Coil not evacuated $\rightarrow$ obstruction
- Hypergranulation tissue treated with silver nitrate (occasional excision during anaesthetic)
Laparoscopic Cecostomy

**PROS**

- More control
- Direct vision
- Chait inserted primarily - spares one anesthetic in young children

**CONS**

- Abdominal surgery
- More invasive
Cecostomy irrigations/enemas

- Frequency of irrigations – daily to three times weekly

- Irrigation solutions:
  - Glycerin used in combinations with saline or saline and sodium phosphate followed by saline
  - sodium phosphate followed by saline in varying amounts.
  - Co-lyte/Go-lytely/Peg-lyte followed by saline

May still require oral medications (eg. PEG 3350)
Follow-up

- Individualized; can be daily, weekly, monthly or yearly
- Can access members of Bowel Management Team at any point in time
- Cecostomy trapdoors changed about every 12 months (interventional radiology)
Cecostomy Procedures to date at IWK:

- First 3 done open - catheters replaced with Bard buttons 1997
- April 2001 – first percutaneous procedure
- May 2014 – first laparoscopic procedure
- Age range when done – 3 years to 33 years
- Spina Bifida 26
- Spina Bifida/Imperforate Anus 2
- Imperforate Anus 23
- Hirschsprung’s Disease 2
- Caudal Regression 1
- Cerebral Palsy 3
- Chronic Constipation 10

Total 67
Prenatally Identified Congenital Lung Lesions
Screening Obstetrical US
Echogenic Mass Left Lung
• Initial differential:
  – Congenital cystadenomatoid malformation (CCAM)
  – Pulmonary sequestration
Observation:

10 X incidence of prenatally identified lung lesions than historical surgical experience
• Operate or not operate?
  – 2 opposing camps
• Surgical findings:
  – Frequent unremarkable findings

Defence:

Risk of missed lesions:
  » CCAM
  » Sequestration
  » Pleuro-pulmonary blastoma (new speculation)
• Findings with conservative approach:
  – Clinical and imaging follow-up:
    • Some disappear
    • Bronchial atresia
    • Congenital lobar emphysema (CLE)
    • Congenital segmental emphysema
    • Sequestration
    • Congenital cystadenomatoid malformation (CCAM)
  
  • No congenital pleuropulmonary blastoma (reported by anyone)
Bronchial Atresia
Congenital Lobar Emphysema
Congenital Segmental Emphysema
CPAM with fluid levels
CT at 11 months of age
Hybrid lesion (ILS, cysts, segmental emphysema)
Clinical consequence of conservative management:

- Rare infection before age 2 years
- Overall surgical incidence approximately 1 in 10 prenatal lesions
• Protocol for prenatally identified pulmonary lesions:
  – Symptomatic
  – Asymptomatic
• Symptomatic:
  – Hydrops
  – Fetal intervention
  – Termination
Case 4: Large CPAM before and after stent
• Asymptomatic:
  – Clinical assessment at birth
  – Chest X-ray at birth
  – Chest X-ray at 3-6 months
  – CT Scan at 6-12 months
If potentially surgical lesion discuss Pros and Cons of surgery:

– Cons:
  • Avoid surgery in > 50% of cases

– Pros:
  • Eliminate risk of infection
  • Eliminate concerns regards flying, insurance, etc.
  • Surgical risks very low (?<5%)
Acknowledgement:
Ms. Gail Creelman
Dr. Kathy O’Brien
Dr. Mike VandenHof