

CAUSTIC INJURY TO THE ESOPHAGUS ESOPHAGEAL REPLACEMENT AND ITS COMPLICATIONS

- caustic ingestions remain major source of toxic exposure in children and suicide attempt in adults
- Severity and site of UGI injury depends on type of substance ingested, duration of contact
- Alkali agents cause liquefaction necrosis (Drano, laundry detergents, hair relaxers, batteries)
- Acid agents cause coagulation necrosis, limiting deep penetration and perforation
- Liquid agents travel more distal than powder agents
- Bleach has neutral pH, causing less long term issues for patients
- Caustic injuries develop over time - burn wound. healing, scar, stricture
 - Early (minutes) - erythema, inflammation, edema
 - 2-4 days - liquefaction necrosis, sloughing, blood vessel formation
 - 7 days - granulation tissue, greatest risk of perforation
 - 4-8 weeks - scar tissue formation

Initial management: See diagram on last page

- Dilations:
 - 60-80% success rate
 - Full thickness burns, long strictures, multiple strictures - unlikely to respond to dilation
 - Esophageal replacement procedures:
 - Colonic interposition based on middle or left colic artery most common
 - Retrosternal
 - intrathoracic
 - Gastric pull-up
 - Jejunal interposition with microvascular anastomosis

Experience with colonic interposition

- “Esophageal Replacement Using the Colon: Is it a Good Choice?” Ahmad et al., J Pediatric Surgery, 1996,31(8): 1026-1031
 - 31 year experience
 - 38 colonic interpositions between 1962-1993 for atresia (24), lye (8), reflux (5), radiation injury (1)
 - Average age at surgery - 52 months
 - Median follow-up 12 months, and available in 20 patients
 - Right colon - 61%, transverse colon 39%, retrosternal 63%, left thoracic 37%
 - Early complications:
 - Cervical leak 11 (29%) - 9/11 resolved spontaneously; 10/11 were substernal (significant); 4 developed stricture after leak
 - Pulmonary complications 9
 - Late complications
 - 5 proximal and 5 distal strictures
 - 4/5 cervical strictures had leak

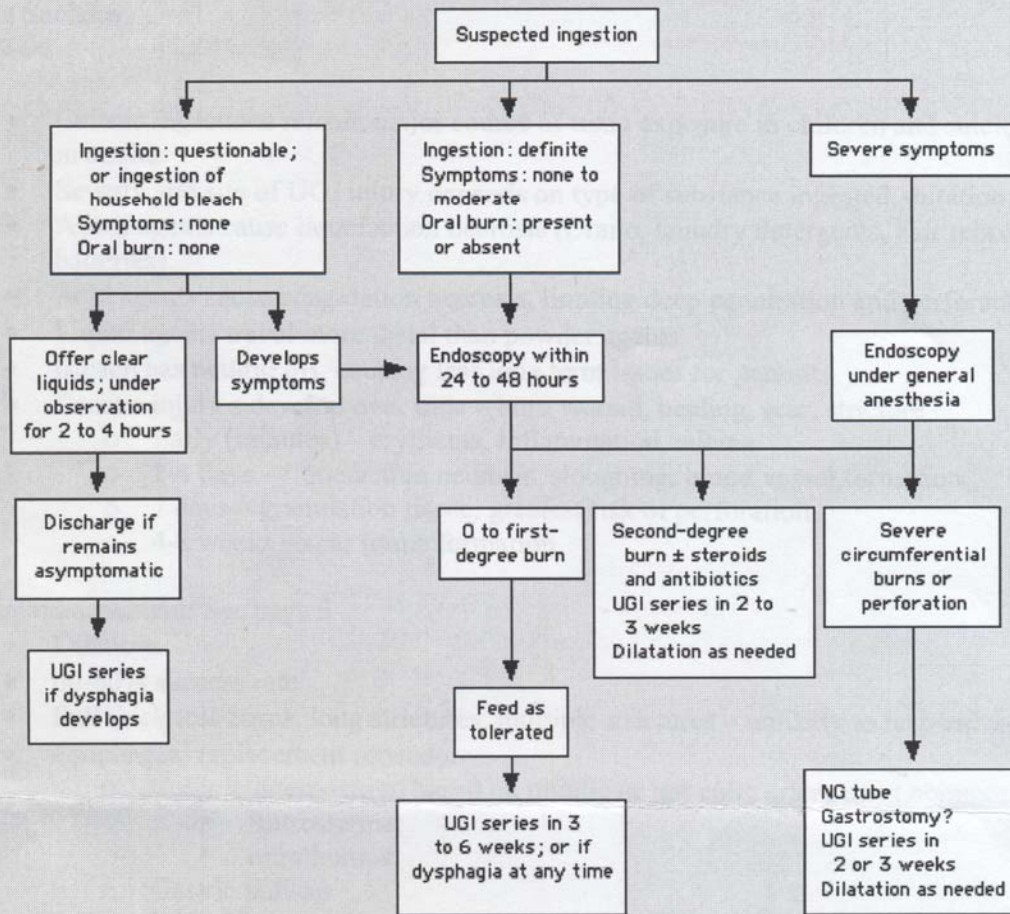
- 4/5 distal strictures transthoracic
- 4 obstructions of graft
- 4 with redundancy requiring replacement(3) or segmental resection (1)
- 7 graft failures requiring resection - redundancy, tracheocolonic fistula, ulceration and bleeding, perforation
- 14/38 required no further surgery (37%)

“Caustic Esophageal Stricture in Children: 30 Year's Experience” Hamza et al., J Pediatric Surgery, 2003; 38(6): 828-833

- High incidence of caustic injury to esophagus in children
- Repeated dilations have 60-80% success rate but can be psychologically detrimental to child
- 850 cases of esophageal replacement
 - 75 gastric pull-up
 - 550 retrosternal colonic replacement
 - 225 transhiatal esophagectomy with posterior mediastinal colon replacement
 - 475 cases done for caustic esophageal injury
 - 317 retrosternal colonic replacement
 - 158 transhiatal approach
 - 468 left colic, 3 middle colic, 5 antiperistaltic right colon on ileocolic
 - 47 cervical esophagocolic leaks
 - 25 colo-esophageal stricture (3 required revision surgically)
 - 17 redundancy
 - 15/17 retrosternal
 - 4/17 required revision

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Evaluation of Ingestion of Caustic Substances[†]



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