Treatment of caustic esophageal injury: The source of knowledge is experience

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Quotation on knowledge, frequently attributed to Albert Einstein.

Central Message

Cervicosternolaparotomy provides safe and effective exposure for revision procedures in patients with caustic ingestions.

See Article page 1378.

Caustic ingestions may cause widespread injury to the aerodigestive tract, including the lips, oral cavity, pharynx, upper airway, esophagus, and stomach. Multiple caustic substances can cause esophageal injury (Table 1). The effect of ingestion of these toxic substances on the esophagus accounts for most of the serious injuries and adverse long-term sequelae. The signs and symptoms of ingestion of caustic substances do not adequately predict the presence or severity of esophageal injury.^{1,2} The patient age at occurrence of these ingestions shows a bimodal pattern. The first peak occurs in young children, with most of these ingestions being accidental. The other peak age for caustic ingestion occurs in young adults, mostly related to suicide attempts. In children, caustic ingestions translate into esophageal burns in fewer than 50% of patients, whereas adults usually have a much higher rate of esophageal injury because of the ingestion of larger amounts of concentrated toxic substances and prolonged exposure time.³ Caustic ingestions in elderly patients are particularly bad, with mortality and morbidity rates 3 to 4 times greater than those in younger patients.⁴ There is some indication that accidental caustic ingestions in children are decreasing in developed countries, but caustic ingestion injuries remain a prevalent problem in developing countries.⁵

Clinical management of caustic ingestions includes early endoscopy, chest and abdomen computed tomography, possibly early bougienage with or without early stent placement, and, in extreme situations, esophagogastrectomy with delayed reconstruction. Early computed tomographic findings may facilitate the decision to perform emergency esophagectomy for endoscopic high-grade corrosive esophageal injury.⁶ Under certain circumstances, conservative management of caustic injuries is feasible, avoids the need for esophagogastric resection, and may provide better long-term nutritional benefit and improved quality of life.⁷ Nonoperative management often results in esophageal stricture, necessitating long-term interventions.^{8,9} Caustic

ingestions that cause severe pharyngeal and esophageal injury requiring colopharyngoplasty are among the most debilitating injuries with the poorest long-term results.¹⁰

In the most severe caustic ingestion injuries, esophageal resection and reconstruction with colon is the most reliable procedure, with long-term proven benefit.¹¹ Because of the relative rarity of esophageal caustic injuries requiring esophagectomy, there are very few studies that address the complications of surgical treatment of corrosive esophageal injuries. In this issue of the *Journal*, Voron and coauthors¹² present a truly remarkable series of 100 patients who required revision procedures to the esophagus injured by caustic ingestion, with primary emphasis on the use of cervicosternolaparotomy for exposure to perform these complicated operations. These authors have a broad experience in dealing with caustic ingestion injuries and have published widely on this subject.^{2,6,10,13} It helps to understand that this impressive experience comes from the Hôpital Saint-Louis in Paris. This hospital was founded by King Henry IV in 1607 to decongest the Hôtel-Dieu de Paris during the plague. The King named it Saint-Louis in memory of King Louis IX, who died of the plague that devastated Tunis in 1270. This hospital is part of the Assistance Publique-Hôpitaux de Paris, which is the public hospital system of the city of Paris and its suburbs. It is the largest hospital system in Europe and employs more than 90,000 people (including 15,800 physicians) in 44 hospitals and receives more than 5.8 million annual patient visits. As a public hospital that is part of the Assistance Publique-Hôpitaux de Paris, the Hôpital Saint-Louis is

TABLE 1. Commonly ingested caustic and corrosive agents³

Type	Example
Alkali	Sodium hydroxide, potassium hydroxide, (oven cleaners, liquid agents, liquid drain cleaners, disk batteries), calcium and lithium hydroxide (hair relaxers), ammonia (household cleaners), dishwasher detergents
Acid	Sulfuric acid, hydrochloric acid, nitric acid (toilet bowl cleaners, swimming pool cleaners, rust removers)
Bleaches and other caustics	Hypochlorous acid (bleach—generally neutral pH commercially), peroxide (mildew remover)

situated in the northeast of Paris and can serve as entry point for all types of trauma. Surgeons there treated the recent terrorist attack at the Bataclan concert hall in Paris (<http://www.dailymail.co.uk/news/article-3320843/Stretched-breaking-point-surgeons-pictured-crammed-Paris-hospital-fought-save-lives-terror-attack-victims.html>). Paris is a city of more than 15 million people, and the diversity of the patients that seek care at the Hôpital Saint-Louis undoubtedly accounts for the broad experience with caustic ingestions and the unusually large number of revision procedures described in the article by Voron and coauthors.¹²

One thing that comes across in reading the article by Voron and coauthors¹² is the frequent need for revision procedures in patients with caustic injury. The authors serve as a referral source for these complicated procedures. The article does not provide an estimate of the total population affected by caustic ingestion; however, the reader cannot help but be amazed at how many total patients must have had a caustic ingestion to provide a population of 100 patients in need of some form of revision. Voron and coauthors¹² clearly have the benefit of a large referral population and vast medical infrastructure in the Assistance Publique–Hôpitaux de Paris. I wonder about the factors that translate into this robust experience in rescue procedures for caustic ingestions. Whatever contributes to this experience, it is clear that the abundant practice dealing with this uncommon problem has taught these surgeons how to obtain very good outcomes. This seems to be an argument in favor of localization of resources to a single center. Voron and coauthors¹² have translated their experience into knowledge that can help other surgeons deal with this difficult problem. Albert Einstein is frequently given credit for

the quote, “The only source of knowledge is experience.” This seems to apply to the work of Voron and coauthors.¹²

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