THE SULLIVAN GROUP

TSG NEWSLETTER

SAVING LIVES - REDUCING RISK

From The Editor

Welcome to the TSG Quarterly Newsletter. This issue contains two very interesting cases involving esophageal foreign bodies. The esophageal case presentations are obviously outside of the more typical and common Failure to Diagnose MI and Thoracic Aortic Dissection type cases. However, as you will see, the cases present some very interesting issues that all health providers should be aware of.

I also want to make our readers aware that CMS is at it again and has made some significant changes to the EMTALA Regulations and Interpretive Guidelines. Next quarter we will focus on the new changes in the summer newsletter. Our IT team has put the relevant documents on the TSG web site at www.thesullivangroup.com under the "Products and Services" tab. All relevant EMTALA documents are listed there and all can be downloaded. We highly recommend that you review these latest documents:

1) a March 21, 2008, letter from Mr. Thomas Hamilton introducing the changes; 2) a "Summary of Changes"; and 3) the redrafted Interpretive Guidelines with the new changes highlighted in red. Be aware that these are 'Advanced Copies' and CMS says there may be some minor changes. There may also be some additions from TAG, the Technical Advisory Group ■

EMTALA! Always fun reading! Enjoy.

In This Issue...

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The Esophageal Foreign Body - Case 1

Day 1

The patient was a 32-year-old female who presented to an emergency department at 1138 on day 1 with a complaint of "back pain." The patient stated in her history of present illness that she had "swallowed a piece of raw carrot yesterday." She complained to the triage nurse of upper mid abdominal pain which radiated around between her shoulder blades. She denied shortness of breath. No acute distress noted.

Triage Vital Signs:
BP 190/80; Pulse 104; Resp. Rate 32; Temp. 99.5.

The physician then examined the patient. He noted that the patient had pain in the lower mid scapular region. She was in constant pain and had trouble swallowing. No respiratory distress. The HEENT exam was normal. Heart examination was normal, lungs were clear, abdomen was benign.

That is the full extent of the physical examination documented in this case. Think about what may be missing from the exam.

The physician ordered a gastrografin swallow. The radiology report reads as follows: "Under fluoroscopy there is no abnormality of the swallowing mechanism. The pharynx is normal. No foreign body in the esophagus is seen. There is a segment of the esophagus in the mid region which shows slight narrowing. The mucosa in this area is well maintained, and this possibly is on the basis of spasm. Please clinically correlate the findings."

Did this radiology report say that there was no foreign body in the esophagus? It sort of feels that way, but doesn't really rule out esophageal foreign body.

The emergency physician diagnosed a "scratch in the esophagus" and discharged the patient to home with the following instructions: 1) avoid solid food next 2 – 3 days; 2) no work today or tomorrow. He prescribed Vicodin and told the patient to follow up with her private physician if she got worse.

There are no additional nursing notes and nobody on the team re-evaluated the patient's abnormal vital signs prior to discharge.

Day 3

The patient returned to the same emergency department on day 3 around noon, 48 hours after the first emergency visit and probably 60 hours since ingestion of the carrot. Her chief complaint was vomiting and fever. She told the triage nurse that she scratched her esophagus two days ago with a raw carrot. Since then she has had pain in the lower mid scapular area. Had a "normal" x-ray during her last visit. Started vomiting last night and was unable to keep anything down.

Triage Vital Signs: BP 110/72; Pulse 112; Resp. Rate 36; Temp. 102.4.

The physician history indicates that the patient was vomiting with some question about the presence of blood in the emesis. He noted that the patient definitely relates the process to swallowing the carrot.

The HEENT exam was normal. Heart and lung exams unremarkable. Abdominal examination benign.

The emergency physician ordered another gastrografin swallow which demonstrated significant narrowing of the esophagus at the level of T4 extending to approximately the mid-portion of T6. There was edema and thickening of the mucosa and there was a negative defect suggesting the possibility of a foreign body lodged in this narrowing. There was no leak of contrast noted into the mediastinum or the surrounding structures.

The chest x-ray revealed a left lower lobe infiltrate. The emergency physician considered an aspiration pneumonia. The CBC was within normal limits except for a white count of 27.2 with a left shift. Glucose non-fasting was 170.

The patient was admitted with the following diagnoses: 1) R/O perforated esophagus; 2) left lower lobe pneumonia; 3) R/O aspiration; 4) R/O esophageal trauma.

Repeat Vital Signs Prior To Admission: BP 88/60; Pulse 124; Resp. Rate 26; Temp. 100.4.

Day 3 - Private Physician Evaluation

Upon admission, the patient was seen by the private physician. He recounted all of the findings of the emergency physician. There was no significant past medical history. On physical exam,

the private physician found a normal HEENT exam, decreased breath sounds at the left base, and normal heart, abdomen, and extremities.

He noted that there was the "possibility of an obstructing lesion in the esophagus and it was elected to perform an elective esophagoscopy with possible esophageal dilatation and removal of any foreign body on an elective basis the following day with fluoroscopic control. As the patient was having no difficulty handling her own secretions by her own admission and she had no difficulty swallowing the gastrografin, there was no urgency for performing the procedure."

As you will see in retrospect, this note is a little heavy on "elective".

The following morning, the patient was taken to Radiology for endoscopy. The relevant part of the gastroenterologist's note reads as follows: "At approximately the 20 to 25 cm level of the esophagus a high grade esophageal obstruction was appreciated. Some retained food contents were noted. The surrounding mucosa was extremely edematous and friable. Several biopsies were taken, but the biopsies were terminated because of lack of cooperation on the part of the patient necessitating termination of the procedure.

"Throughout the procedure, the distal lumen could not be adequately identified even with gentle probing under fluoroscopy with blunt forces, and as such, no dilatation was undertaken, and the procedure was terminated."

Following the procedure, she was returned to her room. After returning to her room and being placed back into bed, she experienced an apparent cardiorespiratory arrest. Despite multiple resuscitative efforts including intubation, defibrillation, and multiple cardiac medications, she could not be resuscitated and she expired.

Autopsy Report

Esophagus: There is a perforation of the left anterior esophageal wall. The perforation is approximately 3 mm in diameter, has ragged hemorrhagic margins and is surrounded by an ovoid, longitudinal 6 X 2.4 cm area of mucosal erosion… Projecting from the perforation and extending into the mediastinal

soft tissue anterior to the esophagus is a thin, sharp foreign body, triangular in shape and measuring 23 X 6 mm and 1 mm thick. It lies partially in a probe patent tract extending from the perforation to and through the posterior aortic wall…

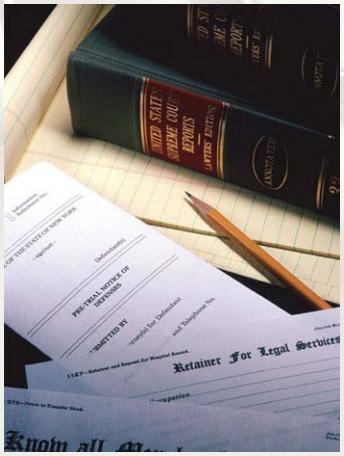
Aorta: … at a point 0.5 cm past the origin of the left subclavian artery and on the right posterior lateral wall, there is a slightly irregular transmural tear of the aortic wall. It is approximately 1 cm maximum length with…

Autopsy Summary:

1. Esophageal foreign body with obstruction, acute esophagitis and perforation;
2. Acute necrotizing mediastinitis;
3. Acute aortitis with rupture of the aorta and hemorrhage into the mediastinum and both pleural spaces.

Legal Outcome

The family sued both emergency physicians, the private physician, the endoscopist, and the hospital for medical malpractice. They alleged a failure to diagnose an esophageal foreign body, failure to diagnose mediastinitis, and malpractice in the performance of the endoscopic procedure. The second emergency physician settled out of the case for the cost of defense; the remainder of the defendants entered into a settlement with the family for an unknown amount.



Case Discussion

There are many learning points in this case; several are addressed below. However, the overwhelming issue is that a foreign body in the esophagus will, in a relatively short time frame, destroy the integrity of the esophageal mucosa and surrounding tissues. This is a set-up for perforation. Time is of the essence when considering the possibility of food stuck in the esophagus, and it is apparent in this case that the physicians involved simply did not 'get it.' Even when the patient presented with signs of apparent mediastinitis, the private physician's plan was an elective procedure the following day. His documented thought process was that the patient was able to pass fluids and was having no problems with her secretions. The ability to pass solids or liquids is simply not the critical issue in this case.

Food impaction in the esophagus is not a common presentation, and it is easy to forget some of the key points in patient management. There is no evidence-

based recommendation from reviews of large numbers of patients. It would be difficult, if not impossible, to develop a double-blind, randomized trial on the subject. The recommendations simply come from the apparent time frame for pressure necrosis of the esophageal wall.

Review of the literature indicates that esophagoscopy is the preferred method for removal of impacted objects or sharp or pointed objects such as bones, open safety pins, and razors. Esophagoscopy is also indicated for a foreign body retained for more than 24 to 48 hours, both to remove it and to examine for esophageal wall erosion or perforation. Esophagoscopy is the only appropriate removal technique for multiple or large esophageal foreign bodies.

Ingested foreign bodies carry little likelihood of causing pressure necrosis, perforation, or other significant injury. However, 24 to 48 hours duration of impaction should be the upper limit for consideration of this technique.[1 2 3]

Other important points in the case:

1. On day 1 the patient presented with abdominal and mid back pain. There was no apparent mechanism of injury for the back pain. There was no examination of the back, which was the exact site of the patient's complaint, nor was there a neurologic exam. The patient had back pain with no mechanism of injury. It could have been a scratch in the esophagus or it could have been a perispinal process such as an abscess or a bleed. The physician should have performed and documented a back and neurologic exam.
2. On day 1 the patient had significantly abnormal vital signs which were never repeated or explained by the emergency physician. This was a team medical error. This emergency department needs a hard-wired system solution to avoid patient discharge with abnormal vital signs.
3. On day 1 the patient thought she had a food bolus stuck in her esophagus. With the awareness that the clock is ticking as esophageal tissue breaks down quickly over time, a mandatory and timed referral to the private physician would represent high-quality and risk-managed care.
4. On day 3 it was clear that the patient had a

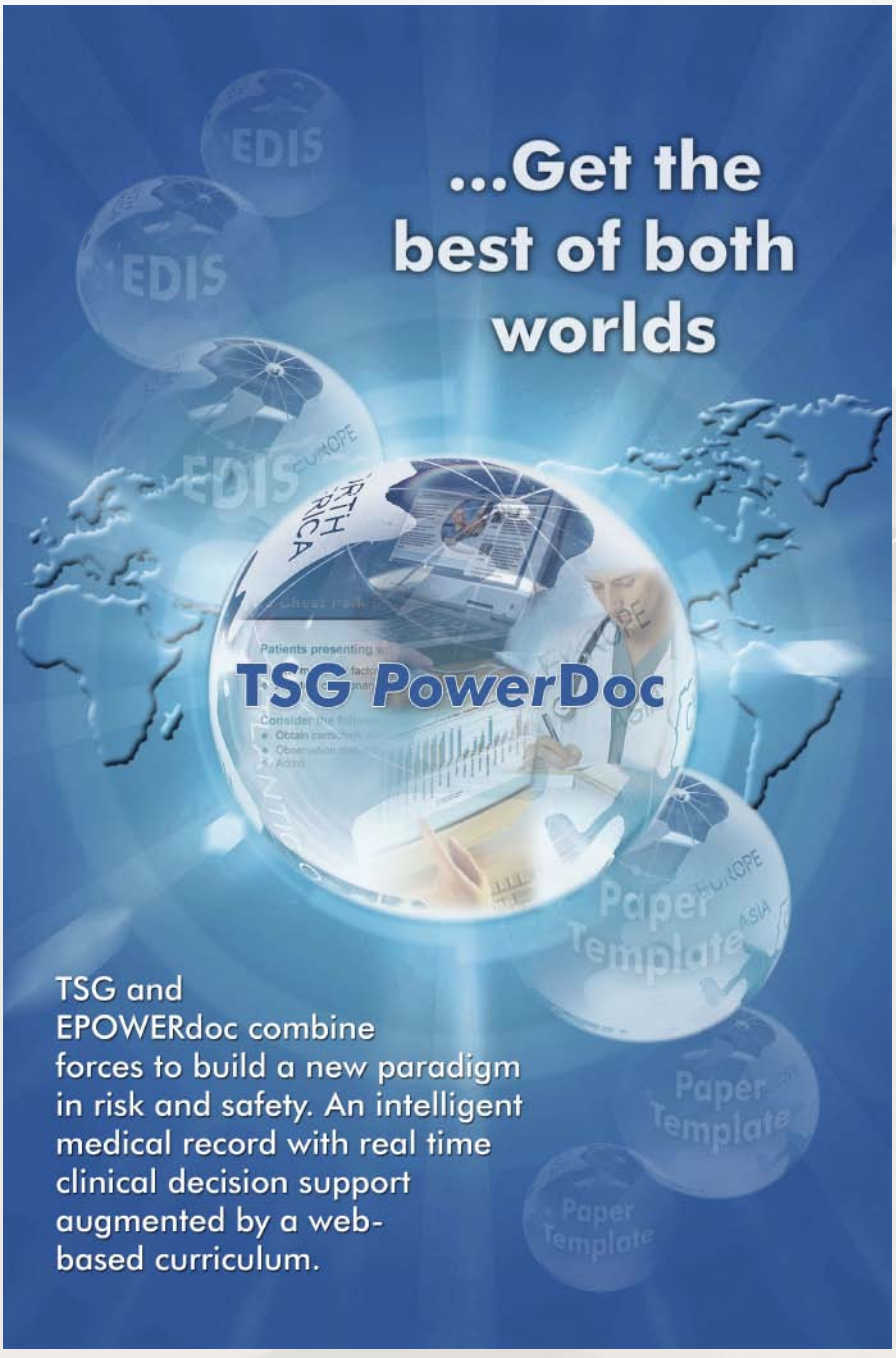
significant problem. There was one diagnosis which should have been apparent that did not make it onto anyone's list. With a possible esophageal foreign body, a pulse of 112, and a body temperature of 102.3, the emergency and primary care physicians should have considered a perforation with mediastinitis and sepsis. This diagnosis must be entertained and managed as early as possible. More importantly, consideration of that diagnosis would have inevitably led down the path to an obvious esophageal perforation. The failure to consider mediastinitis at this point was a medical error. That error caused a significant delay in management.

5. The primary physician made quite a point of management being "elective." This was the third day since presentation to the ED, and the fourth since the patient ingested the carrot. The patient was past the time limit for elective surgery. She needed emergent intervention to gain any chance of survival.
6. The endoscopy note together with the autopsy report is interesting. What happened here? It appears that one of two things must have occurred, and both are related to the fact that the carrot had turned the esophageal wall into a soft, friable mass. The gastroenterologist either pushed the carrot through the esophageal wall and through the aorta, or he took a biopsy bite of the aortic wall. No wonder the patient became uncooperative.

Key Point

There are several strategies available for moving a foreign body out of the esophagus. In most cases, the object moves through the GI tract without difficulty. In general, patients know when there is an object stuck in the esophagus, particularly the upper third. A wait-and-see approach may be extremely dangerous for the patient. If a patient is discharged home from the office or emergency department following the initial visit, carefully follow the patient or make an appropriate referral. Keep the 24 to 48 hour time frame in mind. Beyond that, if the object remains in place, the esophageal wall will break down resulting in significant morbidity and mortality.

The aortic tear in this case is highly unusual, but it dramatically emphasizes the point ■



Case 2

With this information about esophageal foreign bodies, let's take a look at another case.

Nurse Triage

In this case, a 61-year-old male presented to an emergency department with the following chief complaint: "I have a chicken bone caught in my throat since 10:30 AM today." Time of arrival was 2200 hours. The triage assessment indicates that the patient states it hurts when he swallows. Able to swallow water. Patient says he is speaking normally, no hoarseness or salivating. Denies dyspnea.

Triage Vital Signs:
BP 160/100; Pulse 110; Resp. Rate 28; Temp. 96.

Physician Evaluation

States was eating chicken while in his car and felt something like a chicken bone in his throat. Swallowed some bread after

that and drank some water without difficulty, but complains of irritation in throat and feels like chicken bone still stuck. Denies any shortness of breath.

On physical exam, patient was alert and in no apparent distress. HEENT, posterior pharynx was unremarkable. Patient unable to cooperate for indirect larnyngoscopy (gags). No drooling, no trismus. Neck exam, trachea in midline, nontender. Lungs clear, no wheezing, no stridor.

Soft tissue x-ray of the neck was negative for foreign body.

Plan: Discharge to home with soft foods for 24 hours, avoid acids and drinks. Follow up with private physician if not better tomorrow.

Discussion

1. In retrospect, the patient thought that the foreign body was still present on discharge from the emergency department.
2. The emergency physician did a good job demonstrating that there was no airway compromise. He did not address the possibility of a retained esophageal foreign body.
3. Given these facts, what would have been the best management approach?
   a. The conservative approach is to assume that the foreign body is still present in the esophagus. There is no way at this point to say that the foreign body has passed.
   b. Perhaps a non-invasive imaging technique or CT of the esophagus should have been ordered either during this ED visit or planned for the following day through the private physician unless the patient was completely asymptomatic.
4. Considering that an esophageal foreign body could have been present, think through the time frame. The patient presented 12 hours post ingestion. Remember, if a foreign body is stuck or impacted, the literature indicates endoscopic removal within 48 hours. After that, the area becomes so friable that manipulation may lead to perforation or perforation may occur spontaneously. The plan was discharge to home. Best-case scenario, he follows up with his private physician at around 36 hours.
5. It seems that a more aggressive approach was warranted.

Outcome

The chicken bone was lodged in the upper third of the esophagus. The patient was symptomatic the following day, but did not contact his private physician as directed. He waited one more day and then returned to the emergency department. At that point, he was in severe pain, was febrile, and had developed an esophageal perforation. The gastroenterologist identified a very sharp piece of chicken bone that had embedded itself into the esophagus and had perforated the esophageal wall. The patient developed and recovered from mild mediastinitis.

Conclusion and Recommendations

Perforation of the esophagus related to food or some other impacted object is uncommon. It is likely that many physicians are not aware of the consequences of a delay in removal. Therefore, review of esophageal foreign body cases may serve to create a front-of-mind awareness of the need for rapid action.

The literature is clear that most esophageal foreign bodies pass independently through the GI tract. In addition, there are a number of medical and other maneuvers that may assist in resolving the obstruction. However, the practitioner must keep in mind that if conservative measures fail, aggressive management is the key to reducing morbidity and mortality.

If you are aware of similar cases, we would appreciate a call or an e-mail. If we accumulate enough cases we will prepare a full web-based course on the subject. Thank you ■

1 Kelley JE, Leech MH, Carr MG: 'A safe and cost-effective protocol for the management of esophageal coins in children.' *J Pediatr Surg*. 1993; 28:898.

2 Stack LB, Munter DW: 'Foreign bodies in the gastrointestinal tract.' *Emerg Med Clin North Am*. 1996; 14:493.

3 Soprano JV, Mandl KD: 'Four strategies for the management of esophageal coins in children.' *Pediatrics*. 2000; 105:5.

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Clinical Risk Executive (CRE) Position Available

TSG is currently recruiting a Nurse Practitioner to fill a new position in our Oakbrook Terrace, IL office as a Clinical Risk Executive. This is a great opportunity for an experienced allied health practitioner (6 plus years) to bring risk management, patient safety, and quality improvement programs to hospitals all over the United States. There are no weekend shifts, nights, or holidays! TSG has grown rapidly over the last 18 months and there is a strong need for this critical role to support our client base. The CRE will be working directly with emergency medicine practices, insurers, and hospitals to implement the TSG cycle of risk and safety. There are many opportunities for growth and development in this organization. The CRE will need strong communication skills, be comfortable with live and web-based presentations, and have a better than average familiarity with the Microsoft Office suite of products. Knowledge of informatics would be particularly welcome as we develop cutting edge solutions in risk and safety in the electronic medical record marketplace.

To be considered for the CRE position, please e-mail your CV to clientservices@thesullivangroup.com