Zenker’s Diverticulum

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“Eating makes you feel human”
Friedrich Albert von Zenker
1877
Symptoms of a Zenker’s Diverticulum

- Difficulty swallowing
- Regurgitation of foods
- “Lump in the throat” sensation
- Coughing on foods
- Pills getting stuck
- Regurgitation of undigested foods
Other symptoms

- Pill dysphagia
  - Pills getting “stuck”
  - Burning of pills in throat

- Excess saliva

- Coughing while eating

- Gurgling in throat
What about this?
Who?

- 60-80 year old
- Males > females
- Related to GERD
Why?

Hypertonic muscle

Natural area of pharyngeal weakness
Killian’s dehiscence

Between inferior constrictors & cricopharyngeus
Killian’s dehiscence

http://www.elsevierimages.com/image/24594.htm
Killian-Jamieson area

*Between fibers of cricopharyngeus*

http://drkamaldeep.files.wordpress.com/2010/06/phary_pouch5b175d.jpg
Laterality of Zenker’s Diverticulum

- Left sided predominance
Diagnosis

Laryngoscopy

Endoscopy – EGD

Esophagogram – gold standard
Laryngoscopy
Management options

- Observation
- Dilation
- Botulinum toxin
- Open resection
- Endoscopic cricopharyngeal myotomy
Observation

★ How best to counsel patients?
★ Is it really necessary to treat?
★ Consider age and comorbidities
Risks of Zenker’s Diverticulum

- Weight loss
- Malnutrition
- Aspiration
Patient counseling

- Dysphagia exacerbated when weak
- Size of pouch increases with time
- Easier to manage when small

http://www.elsevierimages.com/image/24594.htm
Increase in size over time

Will I feel better?
Will I feel better?

- 80-90% success rate
- Quality of life improves
How do patients do?

- Reduced food avoidance
- Less regurgitation
- Less pill dysphagia
- Less choking episodes
- Less coughing
- Less difficulty finishing meals
- Less heartburn
- Less halitosis
Intervention

Cricopharyngeus
Intervention

- CP overactivity causes diverticulum

- Disable the cricopharyngeus muscle

- Treat the muscle, treat the condition
Temporary measures

- Upper esophageal sphincter dilation
- Balloon dilators
- Bougie catheter
- Temporary procedure
  - Results last ~ months
Dilation

- Perform esophagoscopy
- Pass dilators through esophagus
- Stretching the upper esophageal sphincter
- Less resistance for food to enter esophagus
Botulinum toxin

- Cricopharyngeus muscle
- Performed in-office or in O.R.
- Temporary relief
Local anesthesia

- Transcervical route
- EMG guidance
- Pass needle behind cricoid cartilage
- Ask patient to swallow
- Deposit botulinum toxin
Botox under general anesthesia

- Transoral approach
- Diverticuloscope
- Ridge of tissue at cricopharyngues muscle
- Place botox with long straight needle
Definitive management

- Open cricopharyngeal (CP) myotomy
- Open CP myotomy and resection of sac
- Endoscopic CP myotomy
Endoscopic treatment

- Endoscopic management first described in 1917
- Knife used to cut the party wall
- Seventh patient died of mediastinitis

Endoscopic treatment

- Sac is not removed
- Mucosa is cut
- Cricopharyngeal myotomy
- Sac is “connected” to the esophagus”
Endoscopic Diverticulotomy

- Patient intubated
- Diverticuloscope exposes party wall
- Mucosa divided
- Cricopharyngeus muscle lysed
- Feeding tube placed
Endoscopic treatment

- Stapler
- Laser
- "Bovie"
Diverticuloscope use

- Weerda Bivalved Diverticuloscope
- Not the only option
- Holinger-Benjamin diverticuloscope
- Laser diverticulotomy
Preliminary Experience by A Thoracic Service with Endoscopic Transoral Stapling of Cervical (Zenker’s) Diverticulum
Carbon Dioxide Laser
Stapler versus laser

Which is better?

Both efficacious

Longer hospital stay?
**Modified stapler**

- Cuts and staples the same length
Endostitch

• Assists in exposure

• Provides tension on party wall
Retraction stitch

Preliminary Experience by A Thoracic Service with Endoscopic Transoral Stapling of Cervical (Zenker’s) Diverticulum
Endostitch in party wall

Mucosal closure

• Biggest fear is mediastinitis

• Will it limit these occurrences?
Open CP myotomy

- General anesthesia
- Transcervical approach
- Cut muscle
- Remove pouch
Open CP myotomy

- Examine film to ensure sac is midline/leftward
- Typically use left sided incision
- In the room during intubation
Step 1: Esophagoscopy

- Identify the entrance to the esophagus & sac
- Pack the sac with gauze transorally
- Pass a large bougie into esophagus
Step 1: Esophagoscopy

- Suction all debris
- Irrigate sac
- Often difficult to introduce into esophagus
Step 2: Open approach

- Horizontal incision at level of cricoid cartilage
- Left side
- Identify the SCM
- Lateralize the great vessels
- Medialize the strap muscles and larynx
Step 3: Identify omohyoid
Step 4: Identify sac
Step 4: Identify sac

Palpate

Feel for larynx

Feel for esophagus with bougie

Feel for strip gauze
Step 5: Free sac
Recurrence laryngeal nerve travels in tracheoesophageal groove
Step 5: CP Myotomy

Stay posterior to avoid the RLN
Open treatment
Step 6: Cut sac

Remove gauze

Staple or sew...or both

http://cdn.medgadget.com/img/BlackReload_highres.jpg