



## Troubleshooting & Difficult Cases

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IAL  
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## Disclosure Statement

- In compliance with the American Academy of Otolaryngology-Head and Neck Surgery Foundation and with the Accreditation Council for Continuing Medical Education's "Standards for Commercial Support of Continuing Medical Education", Byron J. Kubik, MS, CCC-SLP discloses his partnership with Eric D. Blom, Ph.D. and ownership of Kubik Medical, LLC specializing in voice prosthesis customization.



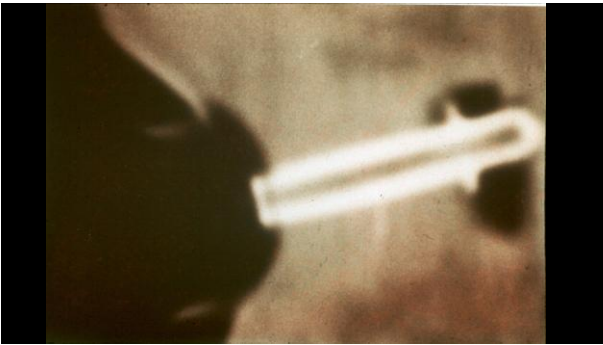
“If I had an hour to solve a problem I'd spend 55 minutes thinking about the problem and 5 minutes thinking about solutions.”

-Albert Einstein



**Problem: Leakage through voice prosthesis**

<b>Cause</b>	<b>Solution</b>
1. "Duckbill" prosthesis contact against posterior esophageal wall	



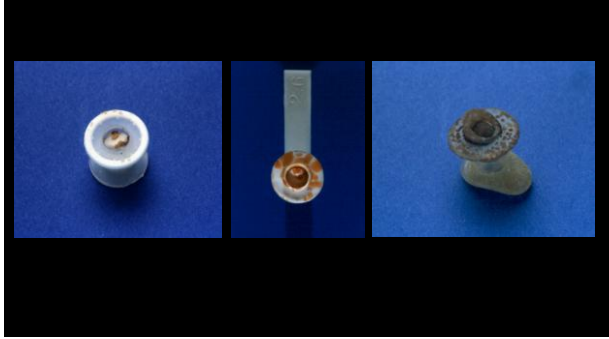
**Problem: Leakage through voice prosthesis**

Cause	Solution
1. "Duckbill" prosthesis contact against posterior esophageal wall	1. Replace with "low profile" type voice prosthesis
2. Valve deterioration	



**Problem: Leakage through voice prosthesis**

Cause	Solution
1. "Duckbill" prosthesis contact against posterior esophageal wall	1. Replace with "low pressure type voice prosthesis"
2. Valve deterioration	2. Replace voice prosthesis
3. Esophageal stenosis	3. Esophageal dilation
4. Fungal colonization of the valve	



**Problem: Leakage through voice prosthesis**

Cause	Solution
1. "Duckbill" prosthesis contact against posterior esophageal wall	1. Replace with "low pressure type voice prosthesis"
2. Valve deterioration	2. Replace voice prosthesis
3. Esophageal stenosis	3. Esophageal dilation
4. Fungal colonization of the valve	4. a) Nystatin or Mycelex topical antifungal B.I.D. b) Voice prosthesis employing a material that may deter fungal colonization.

**Problem: Leakage through voice prosthesis**

Cause	Solution
5. Valve "Flutter" due to negative esophageal pressure	5. Replace with an increased resistance valve or one that has higher cracking pressure
6. Inverted valve	



**Problem: Leakage through voice prosthesis**

- | <b>Cause</b>   | <b>Solution</b>   |
|--|---|
| 5. Valve "Flutter" due to negative esophageal pressure | 5. Replace with an increased resistance valve                     |
| 6. Inverted valve                                      | 6. Reseat the valve with the stick end of a cotton tip applicator |

**Problem: Leakage Around Voice Prosthesis**

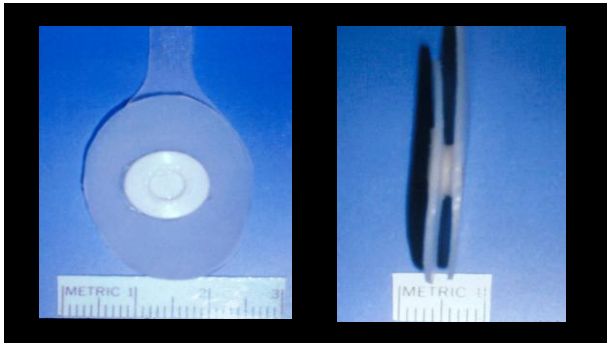
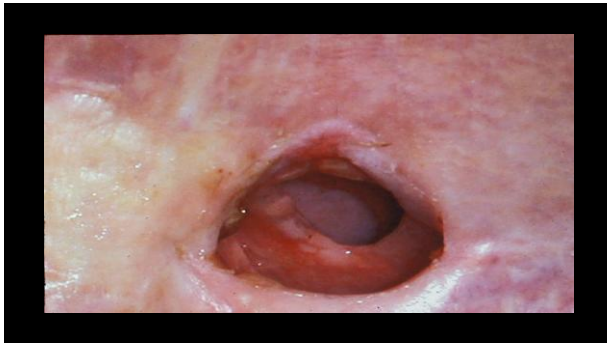
- | <b>Cause</b>  | <b>Solution</b> |
|---|-----------------|
| 1. Voice Prosthesis is too long resulting in piston movement/tract dilation |                 |

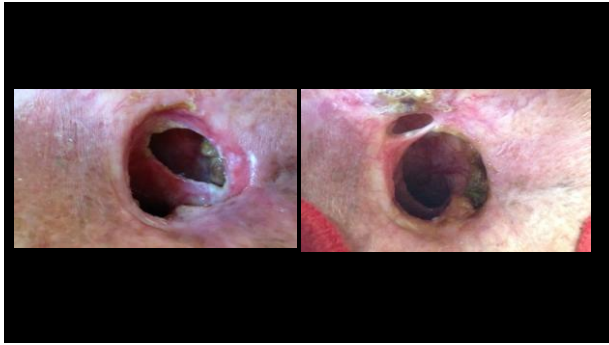


**Problem: Leakage Around Voice Prosthesis**

- | <b>Cause</b>  | <b>Solution</b>   |
|---|---|
| 1. Voice Prosthesis is too long resulting in piston movement/tract dilation                                     | 1. Resize to a shorter voice prosthesis   |
| 2. Dilated puncture caused by radiation, chemotherapy, uncontrolled diabetes, new primary cancer or recurrence. | 2. a) Medical diagnosis<br>b) Snug flange-to-flange voice prosthesis fit such that the esophageal flange provides a "seal". |

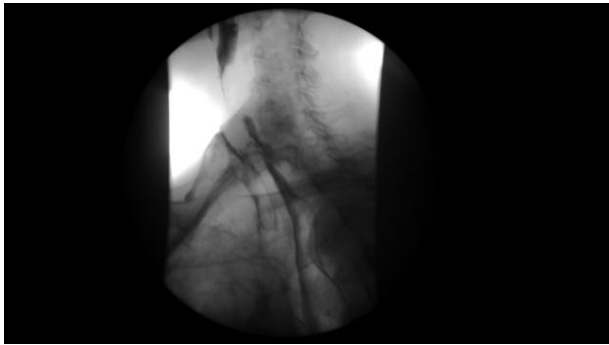
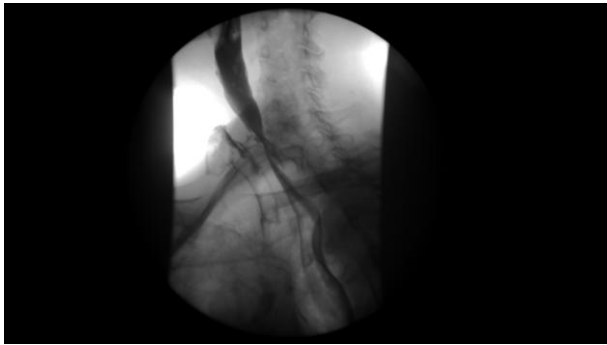
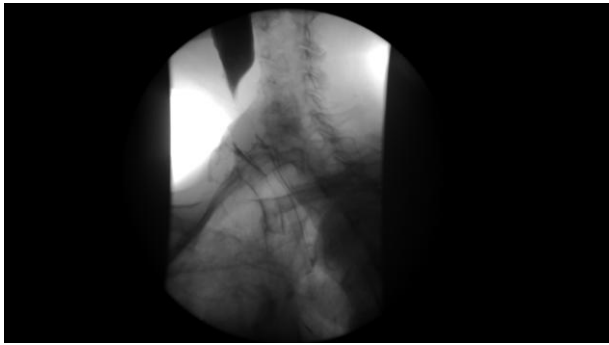






**Problem: Leakage Around Voice Prosthesis**

<b>Cause</b>	<b>Solution</b>
1. Voice Prosthesis is too long resulting in piston movement/tract dilation	1. Resize to a shorter voice prosthesis
2. Dilated puncture caused by radiation, chemotherapy, uncontrolled diabetes, new primary cancer or recurrence.	2. a) Medical diagnosis b) Snug flange-to-flange voice prosthesis fit such that the esophageal flange provides a "seal".
3. Esophageal stenosis	



**Problem: Leakage Around Voice Prosthesis**

Cause	Solution
1. Voice Prosthesis is too long resulting in piston movement/tract dilation	1. Resize to a shorter voice prosthesis
2. Dilated puncture caused by radiation, chemotherapy, uncontrolled diabetes, new primary cancer or recurrence.	2. a) Medical diagnosis b) Snug flange-to-flange voice prosthesis fit such that the esophageal flange provides a "seal".
3. Esophageal stenosis	3. Esophageal dilation

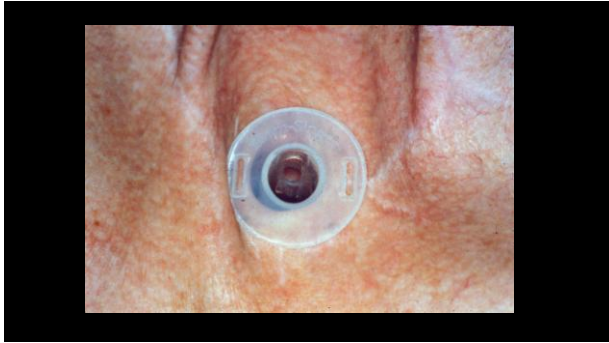
**Problem: Small Tracheostoma**

Cause	Solution
1. Stenosis	



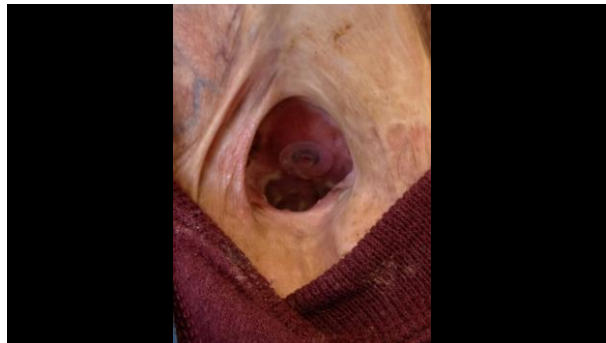
**Problem: Small Tracheostoma**

Cause	Solution
1. Stenosis	1. a) Fenestrated silicone laryngectomy tube. b) Surgical revision of tracheostoma (enlargement)



## Problem: Large Tracheostoma

- | Cause                                  | Solution   |
|--|--|
| 1. Natural trachea size/tracheomalacia | 1. a) Surgical revision of tracheostoma (reduction)<br>b) Adapter attached in/over tracheostoma to reduce occlusion diameter i.e. tracheostoma valve housing with or without HME, Barton Button, silicone laryngectomy tube. |



## Problem: Flatulence

- | Cause  | Solution  |
|--|---|
| 1. Increased negative pressure in the esophagus during inhalation opens the voice prosthesis valve | 1. "Increased resistance" style voice prosthesis. |
| 2. Pharyngeal constrictor muscle hypertonicity   | 2. Botulinum neurotoxin injection.                |

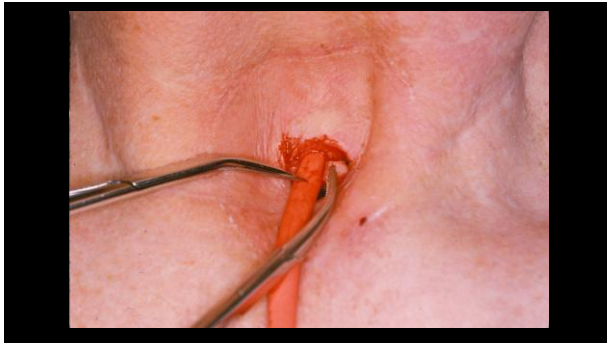
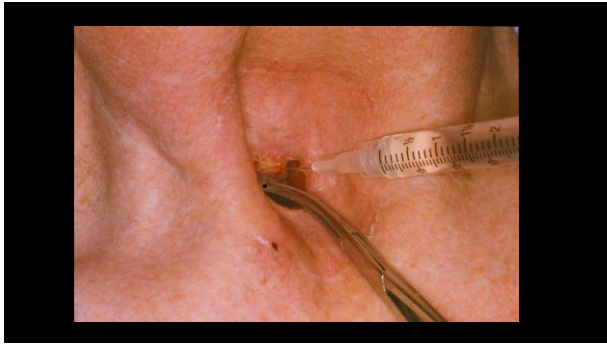
## Problem: Granulation Tissue Formation

- | Cause   | Solution |
|---|----------|
| 1. Irritation / inflammation / tissue thickness (circumferential "donut") associated with presence of foreign body i.e. voice prosthesis. |          |



## Problem: Granulation Tissue Formation

- | Cause   | Solution   |
|---|--|
| 1. Irritation / inflammation / tissue thickness (circumferential "donut") associated with presence of foreign body i.e. voice prosthesis. | 1. Surgical removal of granulation tissue i.e. circumferential "donut" |



**Problem: "Wet" Voice Quality**

<b>Cause</b>	<b>Solution</b>
1. Accumulated secretions in the pharyngoesophagus.	1. "Clear the voice" using tracheoesophageal airflow.

**Problem: Hypotonic Voice**

<b>Cause</b>	<b>Solution</b>
1. Hypotonic P-E segment	1. a) Digital pressure b) Elastic neckband



**Problem: Hypertonic Voice**

Cause	Solution
1. Excessive digital pressure against the tracheostoma	1. Patient education
2. Increased voice prosthesis flap valve resistance caused by fungal colonization.	2. Replace voice prosthesis and start antifungal strategies
3. Tracheoesophageal tract stenosis	



**Problem: Hypertonic Voice**

Cause	Solution
1. Excessive digital pressure against the tracheostoma	1. Patient education
2. Increased voice prosthesis flap valve resistance caused by fungal colonization.	2. Replace voice prosthesis and start antifungal strategies
3. Tracheoesophageal tract stenosis	3. Carefully dilate and remeasure the tracheoesophageal tract length
4. Pharyngeal constrictor muscle hypertonicity	4. Botulinum neurotoxin injection

**Problem: Aphonia**

Cause	Solution
1. Voice prosthesis occluded with mucus	1. Clean the voice prosthesis
2. Excessive digital pressure against the tracheostoma	2. Patient education
3. Pharyngeal constrictor muscle spasm	



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Cause	Solution
1. Voice prosthesis occluded with mucus	1. Clean the voice prosthesis
2. Excessive digital pressure against the tracheostoma	2. Patient education
3. Pharyngeal constrictor muscle spasm	3. Botulinum neurotoxin injection

## Botox Protocol

Hamaker, R.C., Blom, E.D., Botulinum Neurotoxin for Pharyngeal Constrictor Muscle Spasm in Tracheoesophageal Voice Restoration.

Laryngoscope. 113: 1479-1482, 2003.

## Problem: Aphonia

Cause	Solution
1. Voice prosthesis occluded with mucus	1. Clean the voice prosthesis
2. Excessive digital pressure against the tracheostoma	2. Patient education
3. Pharyngeal constrictor muscle spasm	3. Botulinum neurotoxin injection
4. Complete tracheoesophageal tract closure	4. Re-puncture in 4-6 weeks

## Contact Information

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