

# **Voice Restoration following Laryngectomy**

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**Consultant**

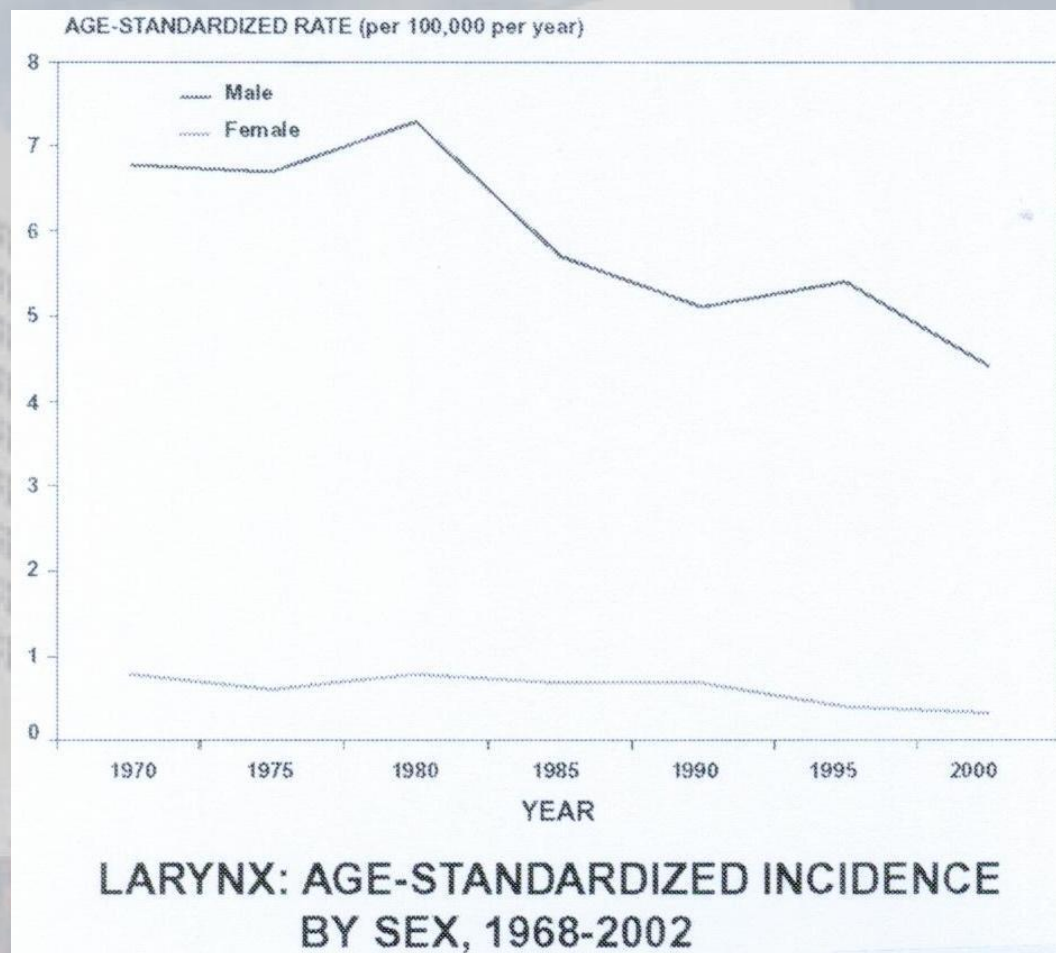
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## Laryngeal cancer in Singapore

- About 80 cases in Singapore per year
- Incidence is dropping
- Current ASR is 4.4 per 100,000





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INCIDENCE DATA (1998-2002)	Males			
	No.	% <sup>a</sup>	ASR <sup>b</sup>	RR (95% CI) <sup>c</sup>
All residents	343	1.8	4.4	-
Chinese	292	1.8	4.8	1.0
Malays	29	1.8	3.2	0.7 (0.5-1.0)
Indians	17	2.2	2.2	0.5 (0.3-0.7)

INCIDENCE DATA (1998-2002)	Females			
	No.	% <sup>a</sup>	ASR <sup>b</sup>	RR (95% CI) <sup>c</sup>
All residents	28	0.1	0.3	-
Chinese	24	0.1	0.3	1.0
Malays	2	0.1	0.2	0.8 (0.2-3.5)
Indians	2	0.2	0.4	1.6 (0.4-6.9)





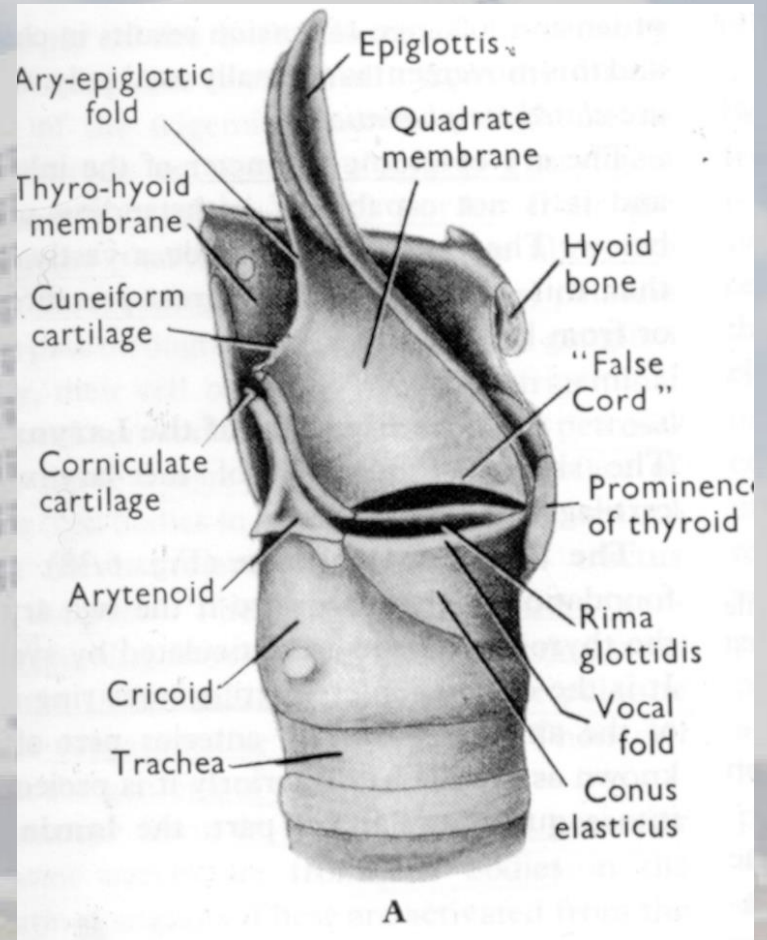
Plaque on a bed in Newham General Hospital in London's East End

# Laryngectomy ‘removes the vibrator and disconnects the power source’

Voice requires:

1. Power source (lungs)
2. Vibrator (vocal folds)
3. Articulators (tongue, lips, palate)
4. Resonators (sinuses, nose)

To restore voice, a vibrator is necessary. Ideally this should be powered by the lungs





# Options for voice restoration following laryngectomy

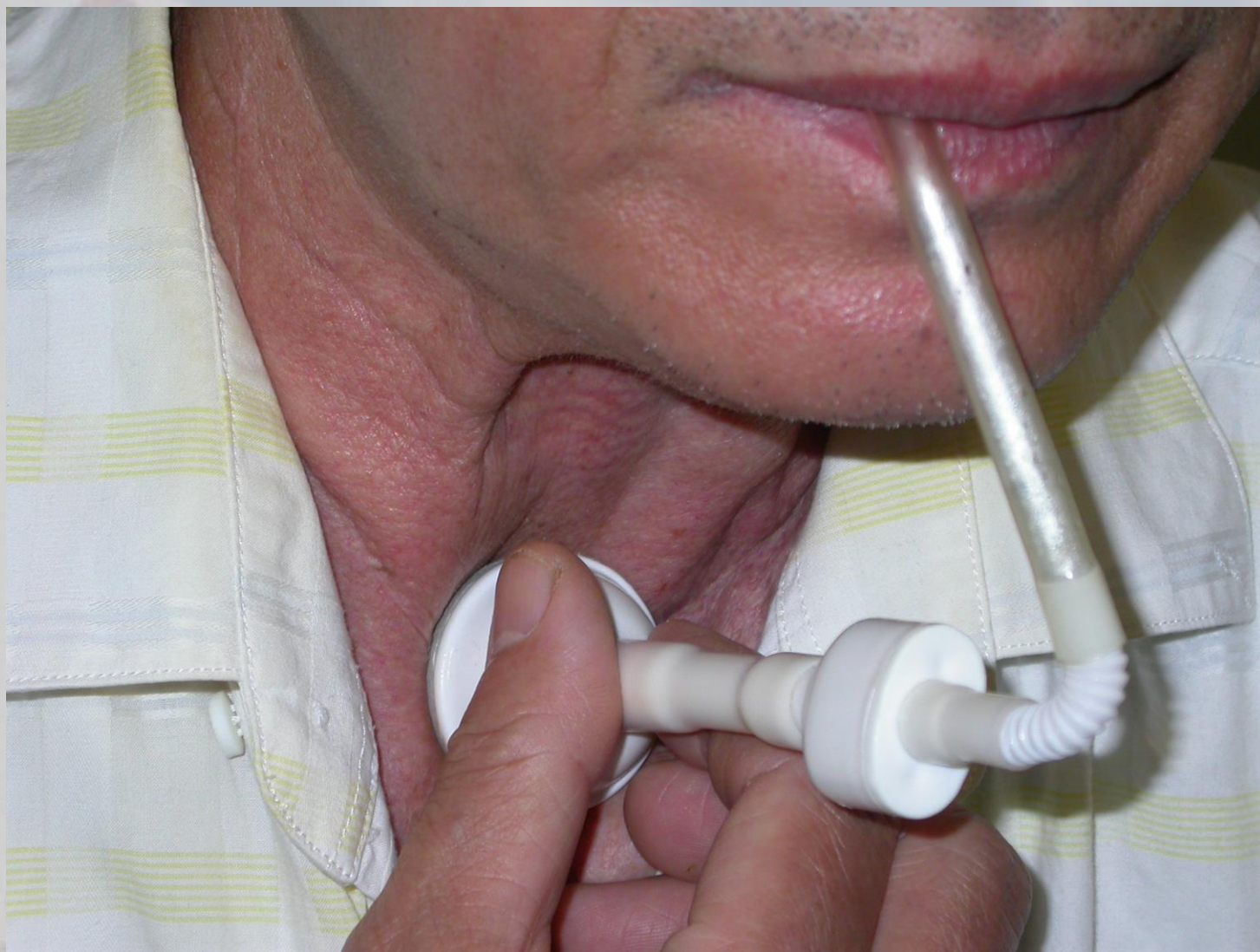
1. Oesophageal speech
2. Electrolarynx
3. Surgical Voice Restoration / Tracheo-oesophageal speech



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# Surgical Voice Restoration

(Blom and Singer, 1978)

Initial concept developed by an unknown butcher in 1931 – hot ice-pick for puncture, quill and string for prosthesis!

Leakage of saliva and food made a one-way valve necessary

Taub developed first valved prosthesis but never took off

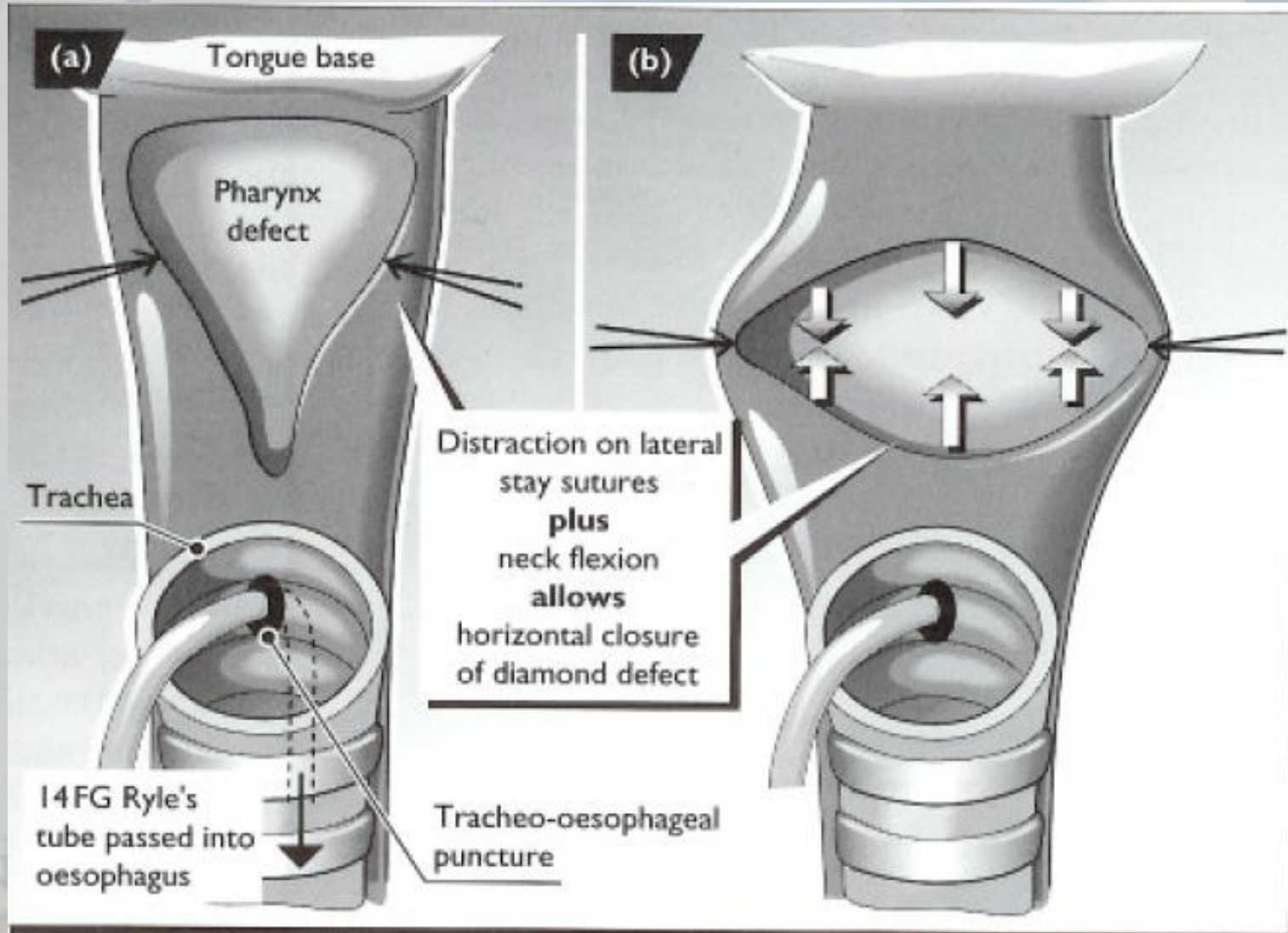
Drs Eric Blom, Mark Singer and Ronald Hamaker created TE fistula and inserted one-way valve in 1978

Initial valves were ‘duck-billed’

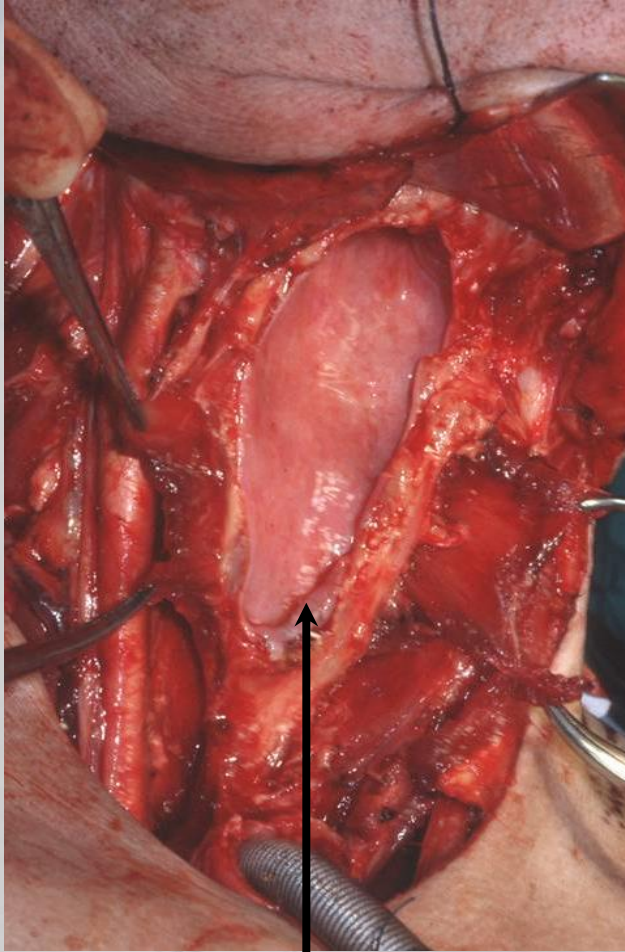




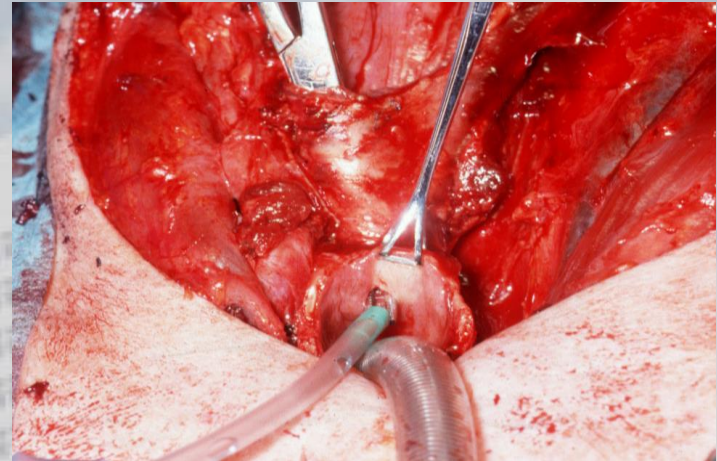
# Primary TEP



# Tracheo-oesophageal puncture (TEP)



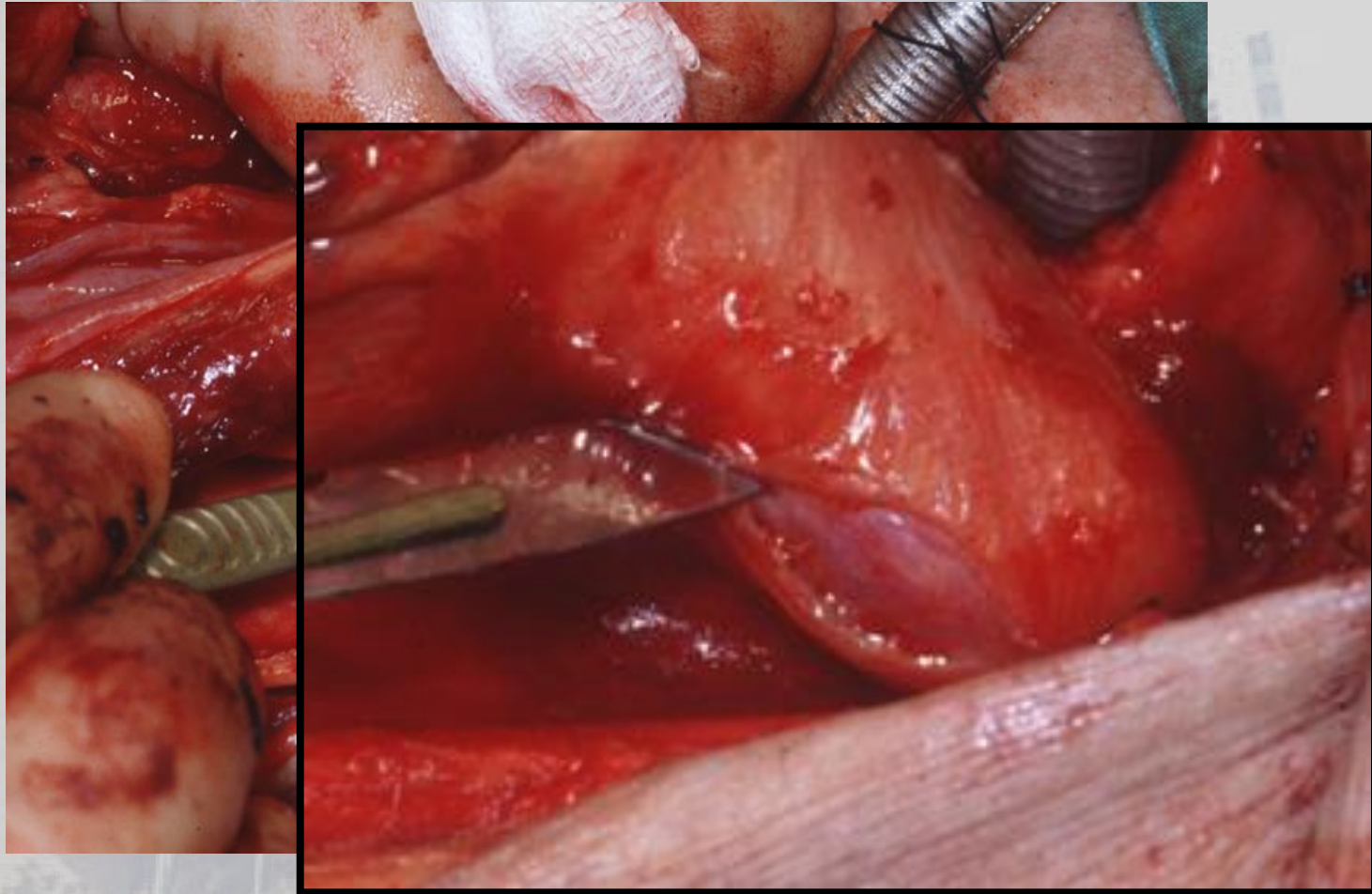
**Pharyngeal defect following laryngectomy**



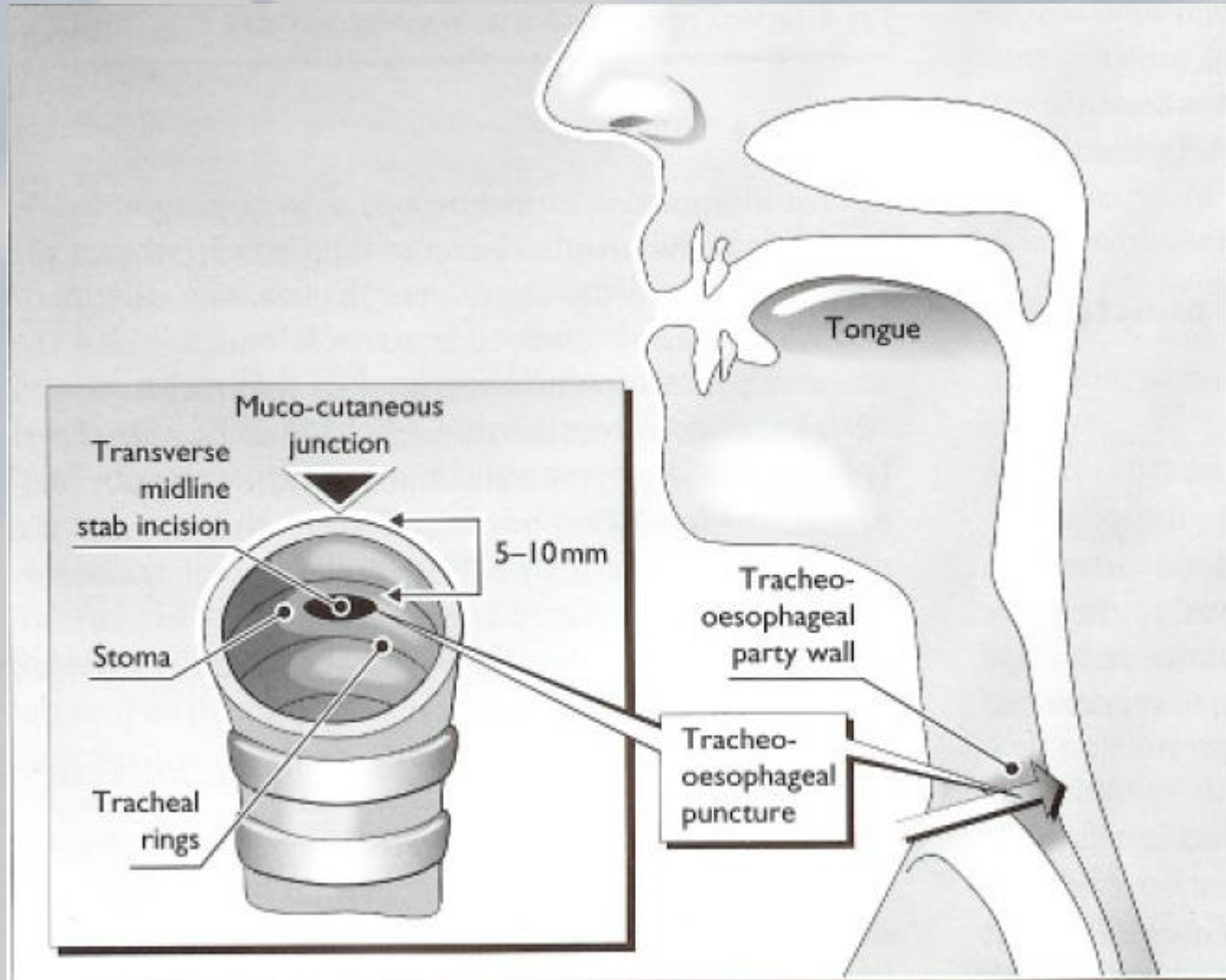
**Ryle's tube passed through the puncture**



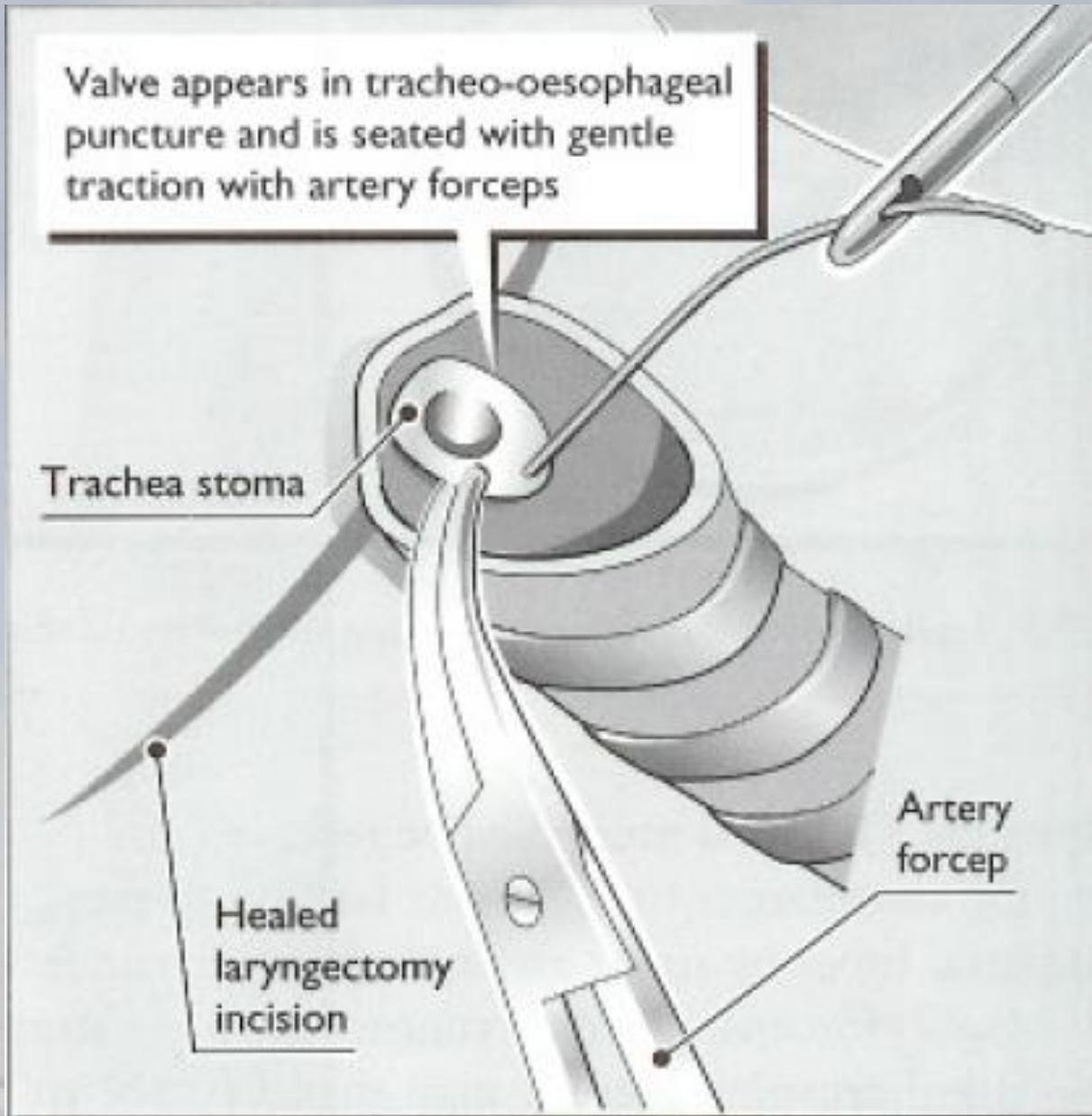
# Cricopharyngeal myotomy



# Secondary TEP







# Secondary TEP

Actor: Ng Yuk Hui

Supporting Actor & Producer: Me

Camera person: Liu JiaYing





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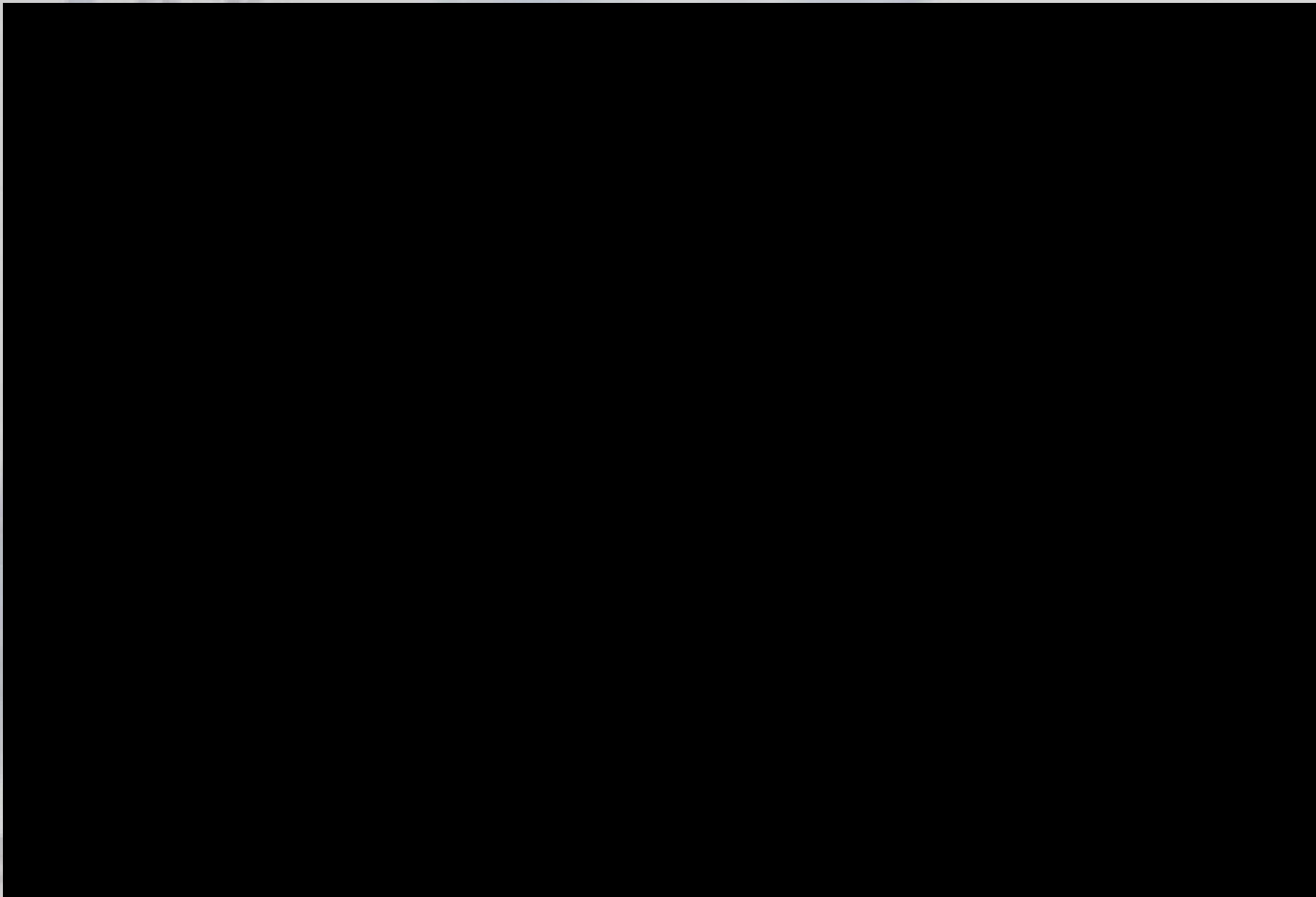
National  
Healthcare  
Group  
Adding years of healthy life

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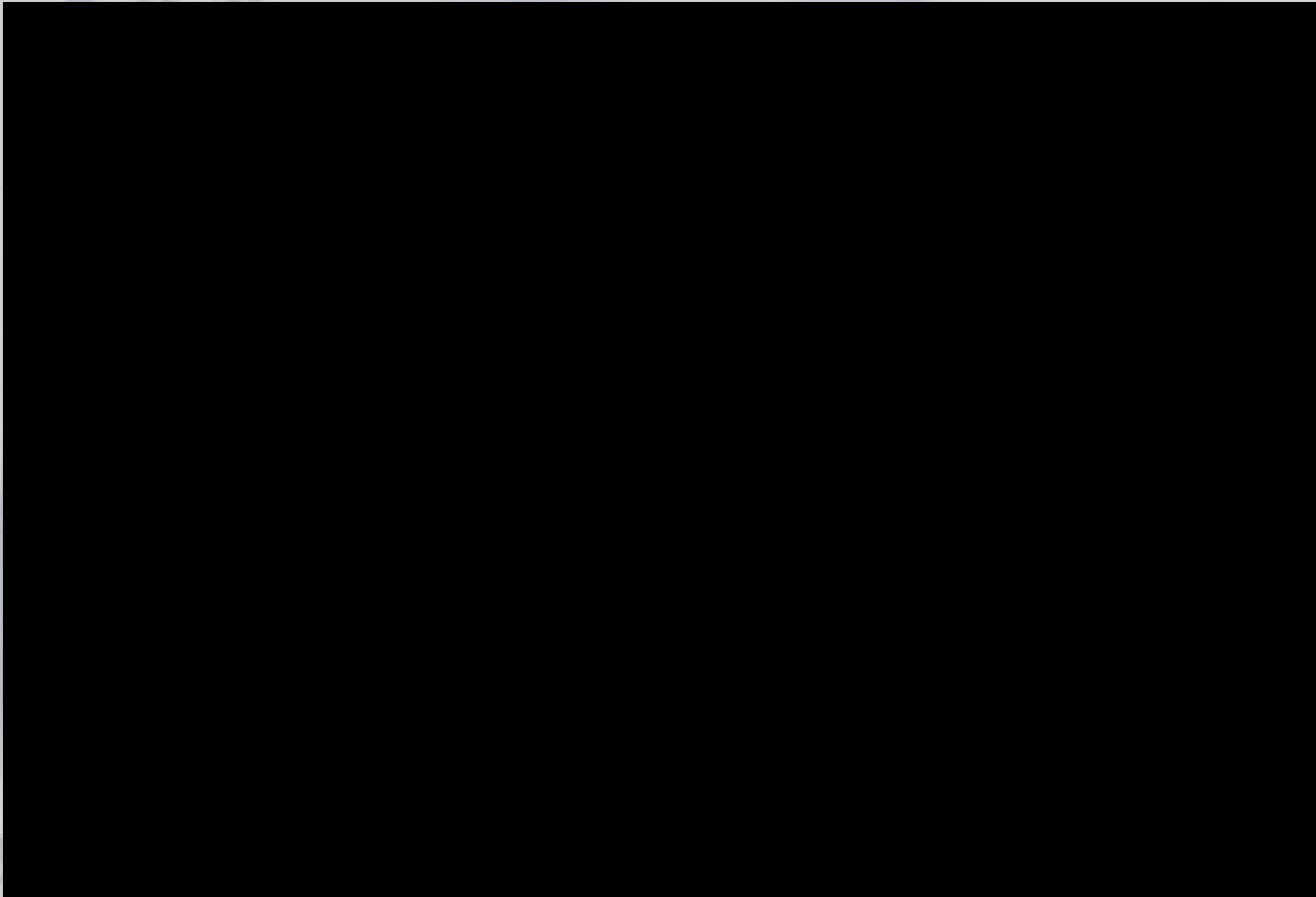




# Vibrating P-E segment is assessed by Videofluoroscopy



# Vibrating P-E segment is assessed by Videofluoroscopy







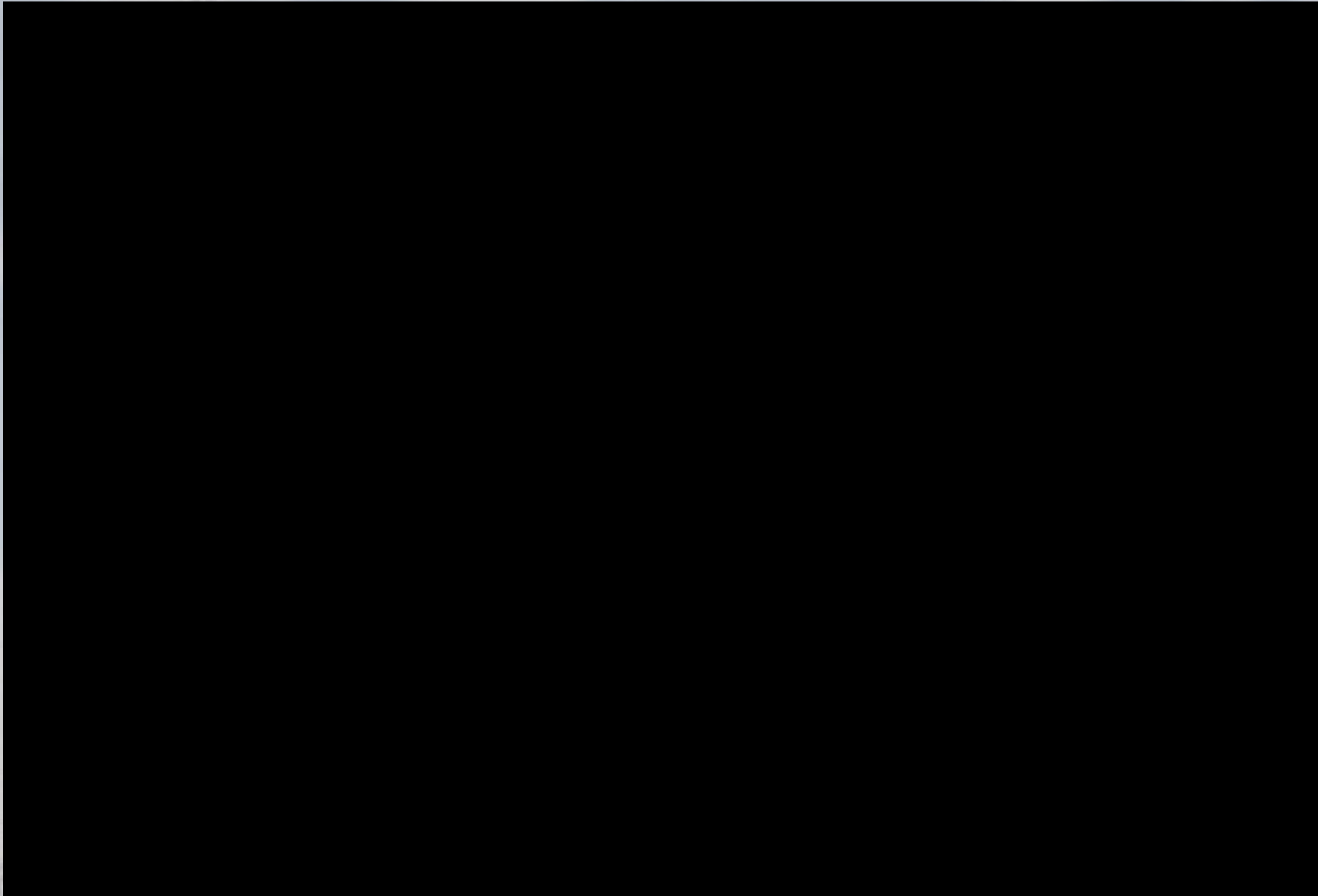
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## Problems with SVR

- Yeast overgrowth of valve
- Reduces life span
- Can be managed with Nystatin / Fungilin lozenges





## Compromised 'party wall'

- Late complication
- Leakage around prosthesis
- Thinning of party wall causes 'pistoning'
- Difficult to manage
- May require closure and re-puncture





# Literature review



# Effectiveness of voice rehabilitation in postlaryngectomy patients

## Findings

### 22 papers reviewed

1. At present, oesophageal speech, electrolarynx and tracheoesophageal were the commonly used voice rehabilitation methods with total laryngectomy patients
2. Among these three methods, the success rate of electrolarynx and tracheoesophageal is much higher than oesophageal speech
3. The intelligibility and speech quality of electrolarynx was lower than tracheoesophageal
4. Patient satisfaction and self-assessed quality of life was better in tracheoesophageal group
5. The objective index was similar between excellent tracheoesophageal and oesophageal speech patients

## Conclusion

1. Electrolarynx is the easiest vocal rehabilitation method as it requires little training and does not limit the patients. But patients' satisfaction was lower because of the mechanical voice and noise
2. Oesophageal speech is the hardest vocal rehabilitation method to learn. It needs a long period of time to practise and requires the patient to be in good physical condition and to be relatively young. The success rate was relatively lower; however, it is the most commonly used in developing countries because of cost.
3. Tracheoesophageal is the most commonly used voice rehabilitation method in developed countries. Reported patient quality of life and satisfaction following tracheoesophageal were the best; however, there are complications and the frequent replacement of the prostheses is an important problem yet to be solved



# ‘Nevill’ – the first patient to die in my care...



Born – 30 September 1905

Died – 8 August 1996

Milton Keynes, Buckinghamshire

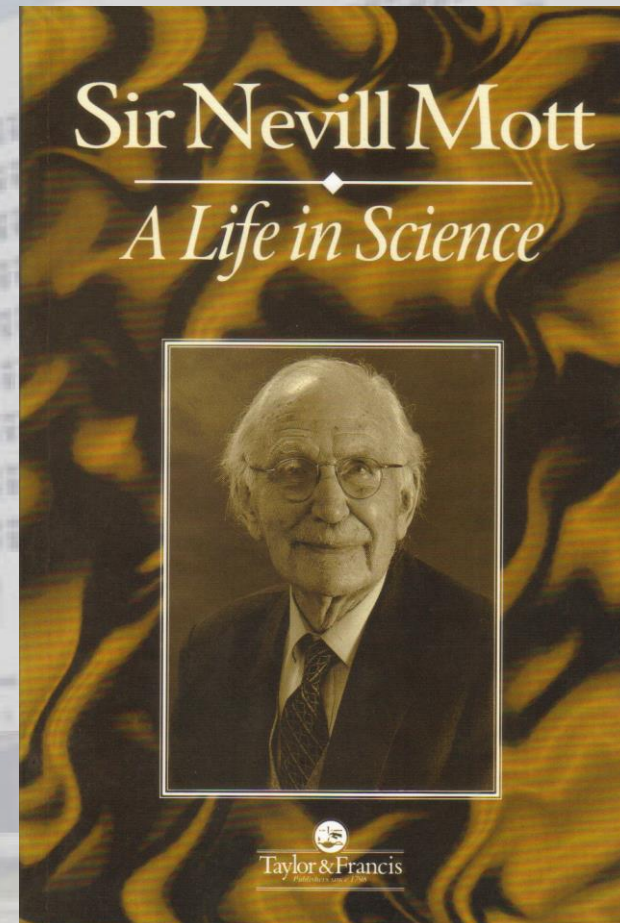


## Sir Nevill Francis Mott, FRS

Cavendish Professor of Physics at University of Cambridge in 1954

Nobel Laureate in Physics 1977

Explained the effect of light on a photographic emulsion and outlined the transition of substances from metallic to non-metallic states (Mott transition)





Thank you