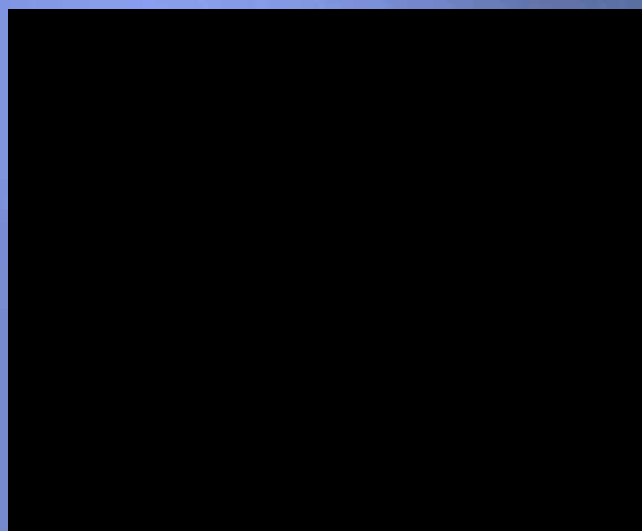




# SNORING & OSAHS SURGERY

*International Workshop*



**“Skin Lined” Tracheostomy**  
*(15 min)*

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University of Pavia  
School of Medicine  
ENT Clinic  
Ronchopathy Surgery Course

University of Parma  
School of Medicine  
Maxillo-Facial Clinic  
SDB Surgery Course

AIMS Board  
&  
ENT-MaxilloFacial  
Joint Commission



## “Skin-Lined” Tracheostomy BACKGROUND

O.S.A.H.S Patient

➤ Immediate Post-Surgical Time:  
TEMPORARY Tracheotomy

(Sun H, Lou W, Wang L, Wu Y. Clinical significance of preoperative tracheotomy in preventing perioperative OSAHS severe complications. Lin Chuang Er Bi Yan Hou Ke Za Zhi 2005; 19(9): 394-5)

➤ Lifelong Therapy:  
PERMANENT Tracheotomy

# Temporary/Permanent Tracheotomy: EFFECTIVENESS for O.S.A.H.S

## ➤ Kuhlo et al. Study:

- ❑ PERMANENT TRACHEOTOMY IN PICKWICKIAN PATIENTS

(Successful management of Pickwickian syndrome using long term tracheostomy. Dtsch Med Wochenschr, 13:94(24): 1286-90, 1969.

## ➤ Partinen et al. Study:

- ❑ 198 Patients
- ❑ 71 Pts: TRACHEOTOMY                      127 Pts: WEIGHT LOSS
- ❑ Follow-up (5 yrs): 14 deaths in CONSERVATIVE GROUP

(Partinen M, Jamieson A, Guilleminault C. Long-term outcome for obstructive sleep apnea syndrome patients. Chest 1988; 94: 1200-1204)

# Temporary/Permanent Tracheotomy: EFFECTIVENESS for O.S.A.H.S

## ➤ Ledereich et al. Study:

- ❑ 101 Patients
- ❑ 30 Pts: PERMANENT TRACHEOTOMY                      71 Pts: OTHER SURGICAL THERAPIES
- ❑ Follow-up (5 yrs)
- ❑ EDS: 3% PERMANENT TRACHEOTOMY                      35%: OTHER SURGICAL THERAPIES

(Ledereich PS, Thorpy MJ, Glovinsky PK, Burack B, McGregor P, Rozycki DL, Sher AE. Five year follow-up of daytime sleepiness and snoring after tracheotomy in patients with obstructive sleep apnea. In: Chouard CH (ed). Chronic rhonchopathy. Proceedings of the 1st International Congress on Chronic Rhonchopathy. John Libbey Eurotext, Paris, 1988; 354-357)

## ➤ Cohen et al. Study:

- ❑ 63 Pediatric Patients
- ❑ 13 Pts: TRACHEOTOMY                      50 Pts: OTHER SURGICAL THERAPIES
- ❑ Clinical Success: 100% TRACHEOTOMY                      59%: OTHER SURGICAL THERAPIES

(Cohen SR, Suzman K, Simms C, Burstein FD, Riski J, Montgomery G. Sleep apnea surgery versus tracheostomy in children: an exploratory study of the comparative effects on quality of life. Plast Reconstr Surg 1998; 102: 1855-1864)

# Temporary/Permanent Tracheotomy: EFFECTIVENESS for O.S.A.H.S

Author	Pts	Follow-up (months)	Age (yrs)	AHI Pre	AHI Post	Success %	Definition of Success	EBM Grade
Guilleminault et al. (1981)	50	<u>9-72</u>	12-66	No data	No data	100	AI <5	Retro
Haapaniemi et al. (2001)	7	<u>30-108</u>	41-64	56.3% (LOS)	82.9% (LOS)	100	No data	Retro
Kim et al. (1998)	23	<u>No data</u>	22-77	58,20	19,80	73,90	AHI <20	II-3
Thatcher et al. (2003)	79	<u>3-240</u>	25-70	81	No data	100	No data	Retro
<b>All</b>	<b>159</b>	<b>3-240</b>	<b>12-77</b>			<b>96,20</b>		<b>IV</b>

Senders CW, Strong EB. The Surgical Treatment of Obstructive Sleep Apnea. Clinical Review in Allergy and Immunology 2003; 25: 213-220  
 Hörmann K, Verse T. Surgery for sleep disordered breathing. Springer: Marion/Philipp, Heidelberg, 2005

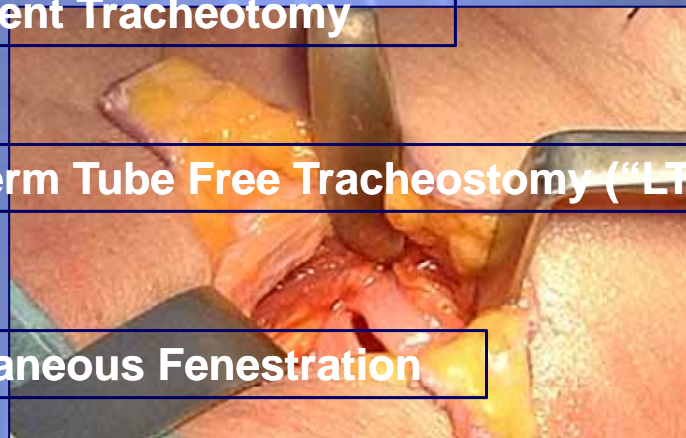
## “Skin-Lined” Tracheostomy SKLT

○ Permanent Tracheotomy

○ Long Term Tube Free Tracheostomy (“LTTFFT”)

○ Myocutaneous Fenestration

○ Tracheal Permanent Fenestration



# “Skin-Lined” Tracheostomy Surgical Procedures

Author	Skin Flaps	Tracheal Flaps	Stiches	Valve Function
Fee & Ward, (1977)	R. + L.	Up. + Dw.	Up. + Dw.	∅
Borowiecki & Sassin (1983)	Up. + Up.	Dw.	Dw.	∅
Eliachar & Coll. (1984)	Ω Up. + Dw.	Dw.	Up.	SCM Flap
O’Leary & Farrell, (1986)	R. + L.	∅	∅	∅

# “Skin-Lined” Tracheostomy Selecting Criteria

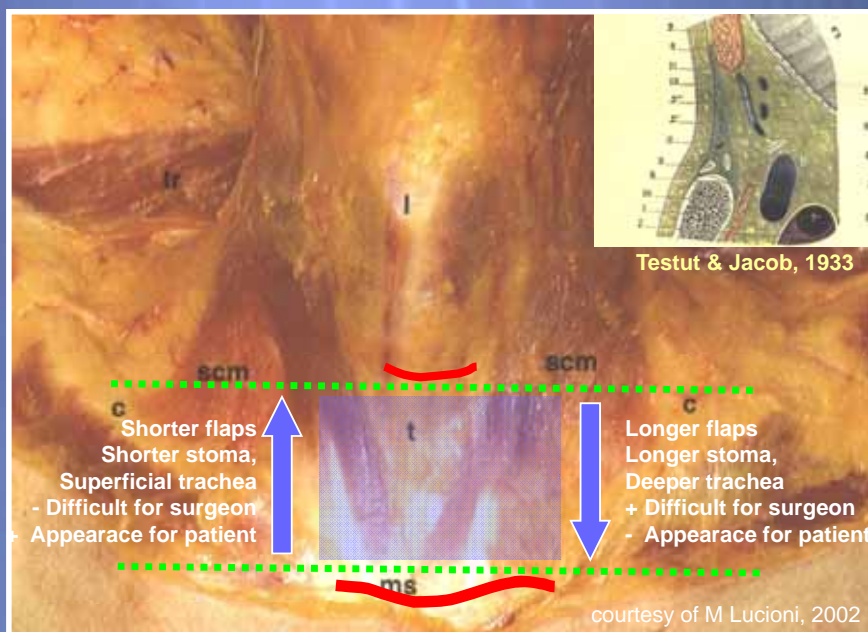
Temporary Tracheotomy	Permanent Tracheotomy
<p><b><u>FOR THE POST-OPERATIVE SECURING OF THE AIRWAYS</u></b> <b><u>AFTER:</u></b></p> <p>Laryngeal surgery</p> <p>Tongue Base surgery</p> <p>Surgery on upper and lower Jaw</p>	<p><b><u>AS ULTIMA RATIO FOR:</u></b></p> <p>Therapy <b>failures</b> with CPAP or BIPAP (RDI&gt;30; LOS&lt;60%; BMI&gt; 30 Kg/m<sup>2</sup>)</p> <p>Surgically not curable <b>Pharyngeal Obstruction</b></p> <p>Patients who cannot receive <b>Intubation</b></p> <p><b>M.S.A.</b> <b>L.A.S.</b> INVETERATE <b>TRACHEAL STENOSIS</b></p> <p><b><u>OR FOR CHILDREN WITH:</u></b></p> <p>Congenital malformations, which cannot be surgically corrected, or can be surgically corrected only after puberty</p>

# “Skin-Lined” Tracheostomy SURGICAL STEPS



Fee We, Ward Ph. Permanent tracheostomy. Ann Otol Rhinol Laryngol 1977; 86:635-8.

# “Skin-Lined” Tracheostomy SURGICAL STEPS



Fee We, Ward Ph. Permanent tracheostomy. Ann Otol Rhinol Laryngol 1977; 86:635-8.

# “Skin-Lined” Tracheostomy SURGICAL STEPS



courtesy of DNF FAIRBANKS, 1994

Fee We, Ward Ph. Permanent tracheostomy. Ann Otol Rhinol Laryngol 1977; 86:635-8.

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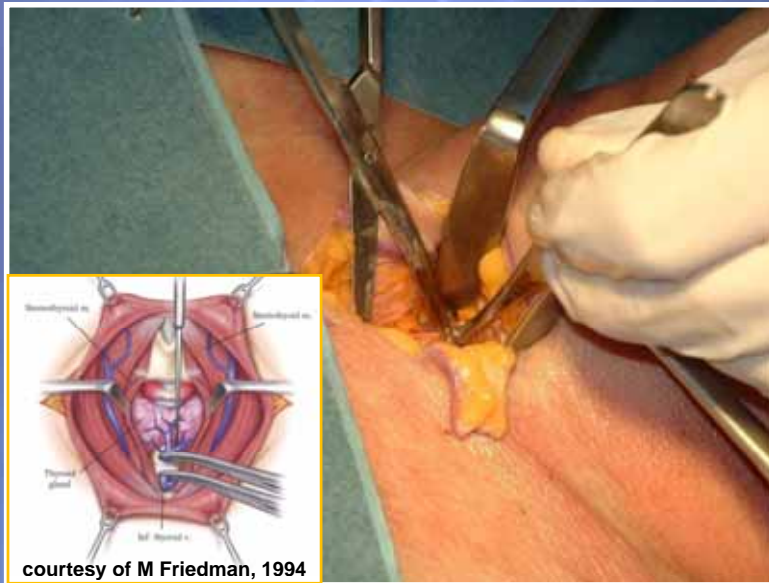
# “Skin-Lined” Tracheostomy SURGICAL STEPS



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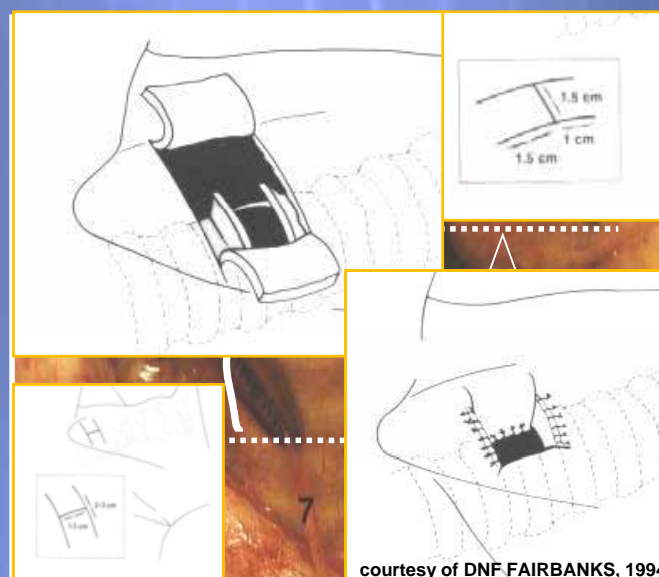


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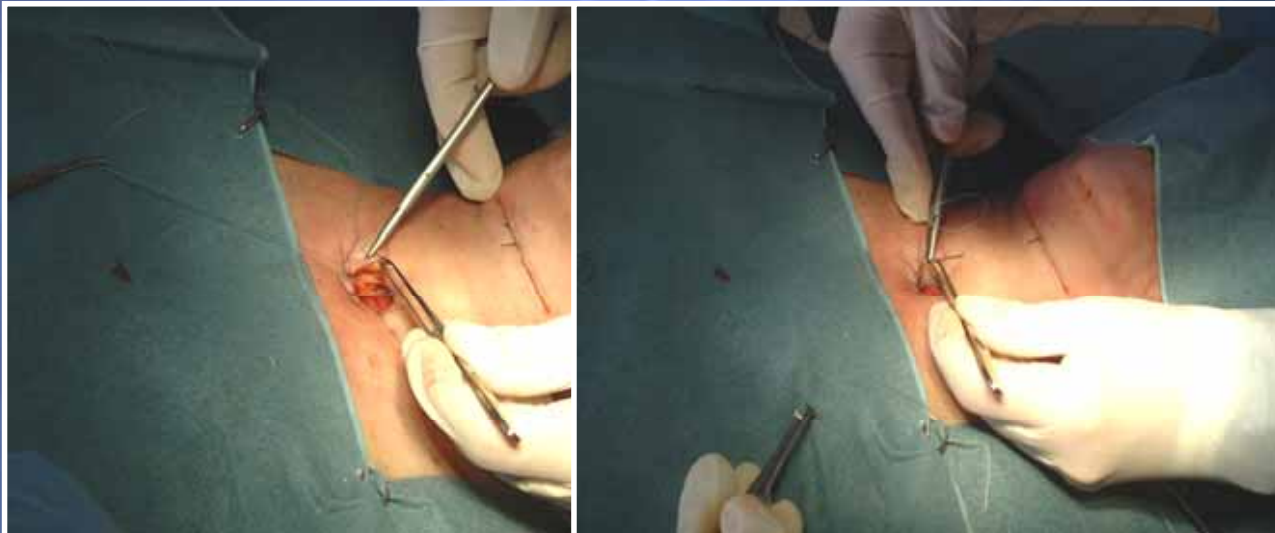
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# Permanent Skin Lined Tracheostomy

Not yet completely useless ...

Acta Otorhinolaryngol Ital. 2004 Apr;24(2):68-74.

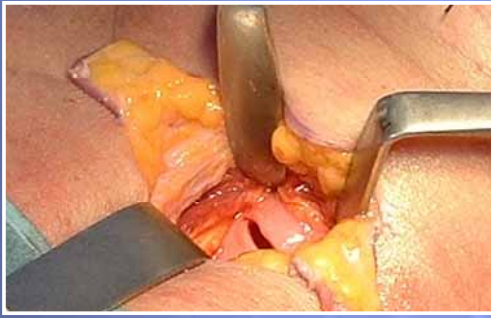
## Role of skin-lined tracheotomy in obstructive sleep apnoea syndrome: personal experience

Campanini A, De Vito A, Frassinetti S, Vicini C.

ENT and Head and Neck Surgery Unit, G.B. Morgagni-L. Pierantoni Hospital, Forlì, Italy. otorino@ausl.fo.it

Permanent tracheotomy was the first surgical procedure proposed for the treatment of severe obstructive sleep apnoea syndrome and is still the only surgical option that ensures, even in very severe cases, complete elimination of apnoea and, in turn, clinical remission. Improved knowledge of the causes of obstructive sleep apnoea syndromes and the increasing therapeutic options (instrumental, medical and surgical) have resulted in cases requiring tracheotomy as the only indispensable therapeutic option becoming more rare. At present, the only indications are in very occasional conditions of life-threatening obstructive sleep apnoea syndromes and in patients on whom continuous positive airway pressure is not tolerated or is not effective (severe deoxygenation or hypercapnia, severe respiratory disorder index, severe obstructive sleep apnoea syndrome-related arrhythmias, severe excessive daytime sleepiness, heart diseases or ischaemic encephalopathy exacerbated by obstructive sleep apnoea syndromes, obstructive pneumopathy exacerbated by obstructive sleep apnoea syndromes, severe obstructive sleep apnoea syndromes with few chances of resolution with other surgical procedures or failure of the latter). Moreover, it is the only therapeutic solution in rare nocturnal laryngeal stridor due to multisystemic atrophy (in which obstructive sleep apnoea syndrome is due to nocturnal laryngospasm of neurologic origin). Therapeutic tracheotomy must be permanent (tracheostomy) and, therefore, preferably carried out with a specific technique (skin-lined tracheotomy), able to guarantee greater stability, less risk of granulation tissue, wider opening of the tracheostomy, sufficient reversibility. In our experience, very few patients (10 cases) with sleep disorder breathing have been submitted to skin-lined tracheotomy. Of these, the majority were submitted to surgery for severe apnoea due to nocturnal laryngospasm on account of multisystemic atrophy ( $n = 7$ ), while only 3 cases of obstructive sleep apnoea syndromes were submitted to skin-lined tracheotomy, i.e., 0.7% of the 424 patients operated on for obstructive sleep apnoea syndrome and 1.7% of the 175 operated on for severe, or very severe, obstructive sleep apnoea syndromes ( $RDI > 40$ ). Skin-lined tracheotomy was not followed by important complications and expected results were achieved with immediate disappearance of daytime symptoms and considerable improvement in nocturnal apnoea. Besides sleep-related disorders, numerous clinical situations with indications for a permanent tracheotomy may benefit from the skinlined technique, such as severe laryngeal or tracheal stenoses, laryngeal diplegias, miasthenia gravis, lateral amyotrophic sclerosis, intractable aspiration, severe emphysema.

# “Skin-Lined” Tracheostomy



## OUR EXPERIENCE

**4** OSAS ( 0,4% of 925 SDB patients)

( 1,3% of 305 patients suffering from severe OSAHS - mean  
AHI: 67,3 mean BMI: 37,3 – CPAP failure )

**12** Nocturnal Laryngeal Stridor in MSA

*Lateral Amyotrophic Sclerosis*

21

**37 overall**

# “Skin-Lined” Tracheostomy Conclusions

- Greater Stability
- Wider Opening Shunt
- Lower Risk of Granulation Tissue
- Quick Procedure
- Reversibility

