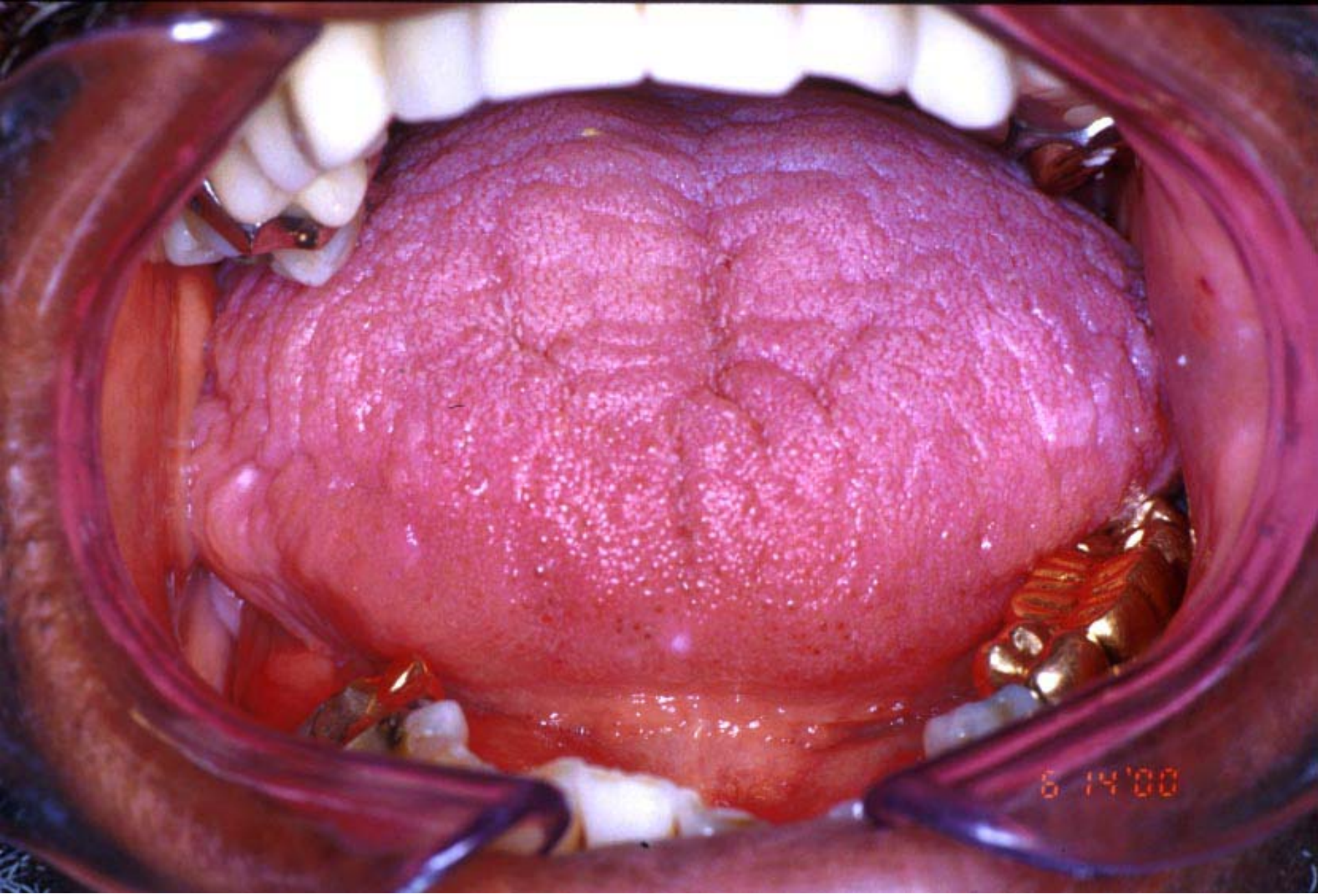
Impact of tongue size on occlusion.

D1



D2 Macroglossia (large tongue) in patient with severe OSA

D3

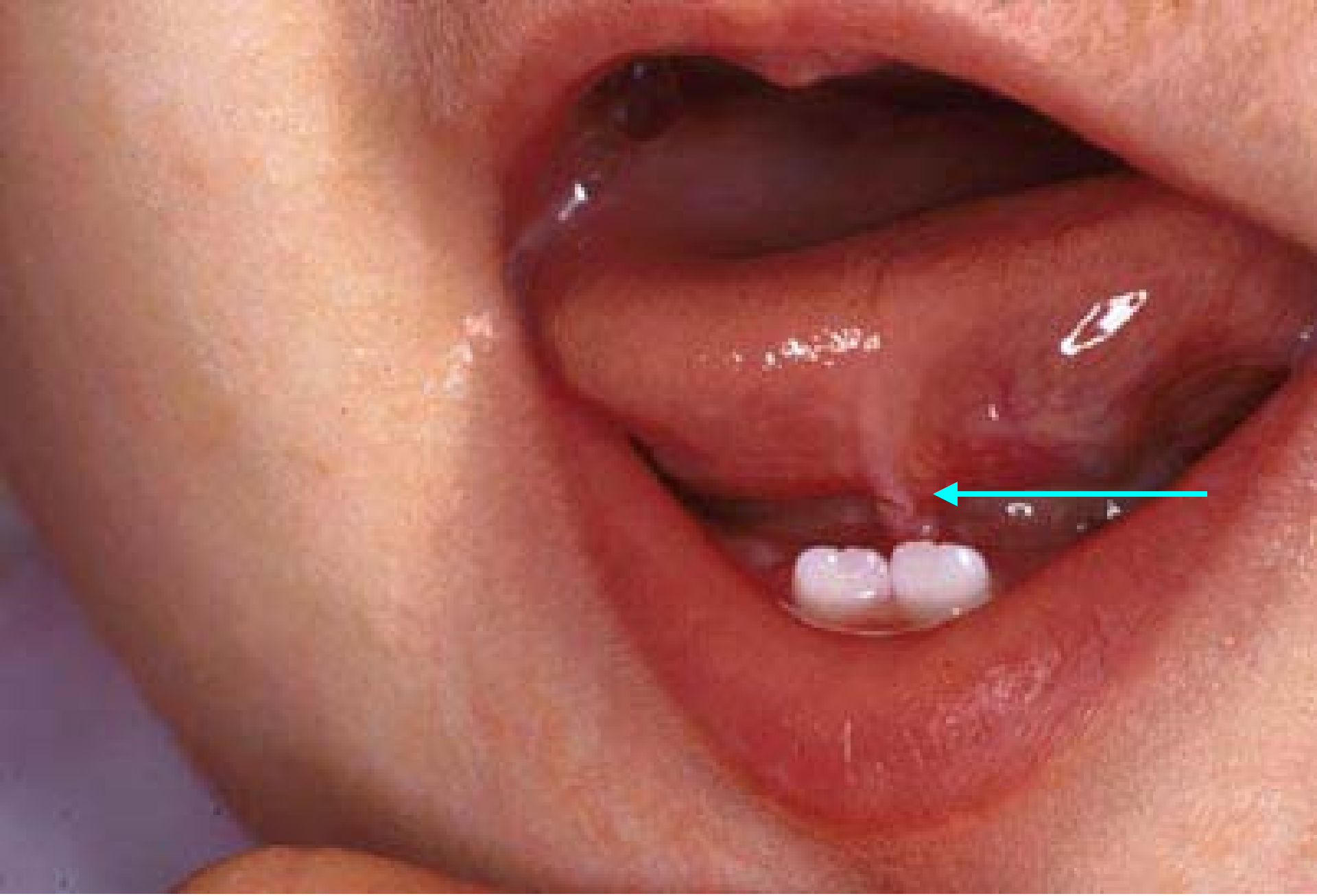
This massive tongue has contributed to Class III occlusion.

Impact of lingual frenums on occlusion.

D5

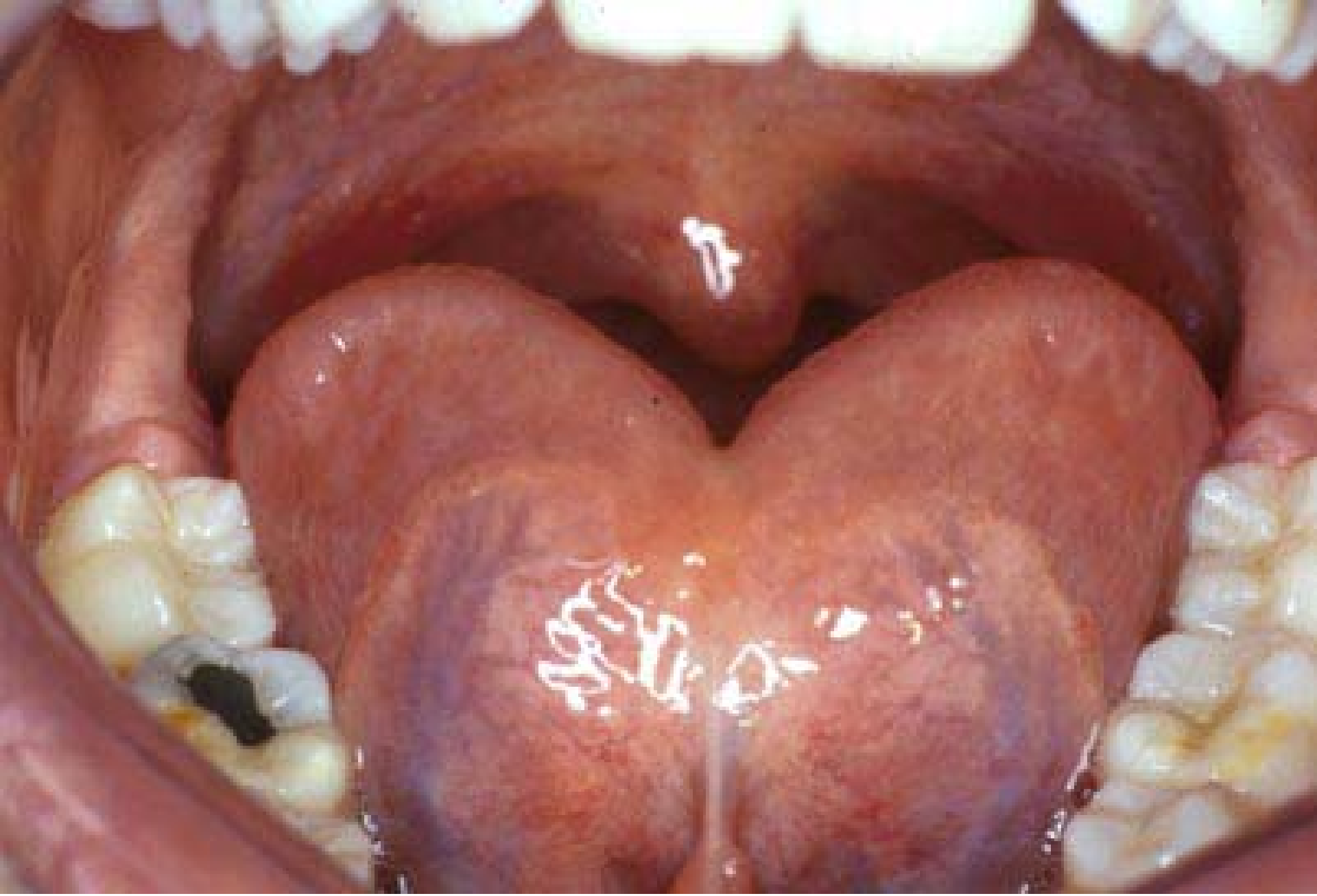
New born with tight frenum and heart shaped tongue. (Dr. Notestine)

3 month old who was weaned because of breastfeeding difficulties.

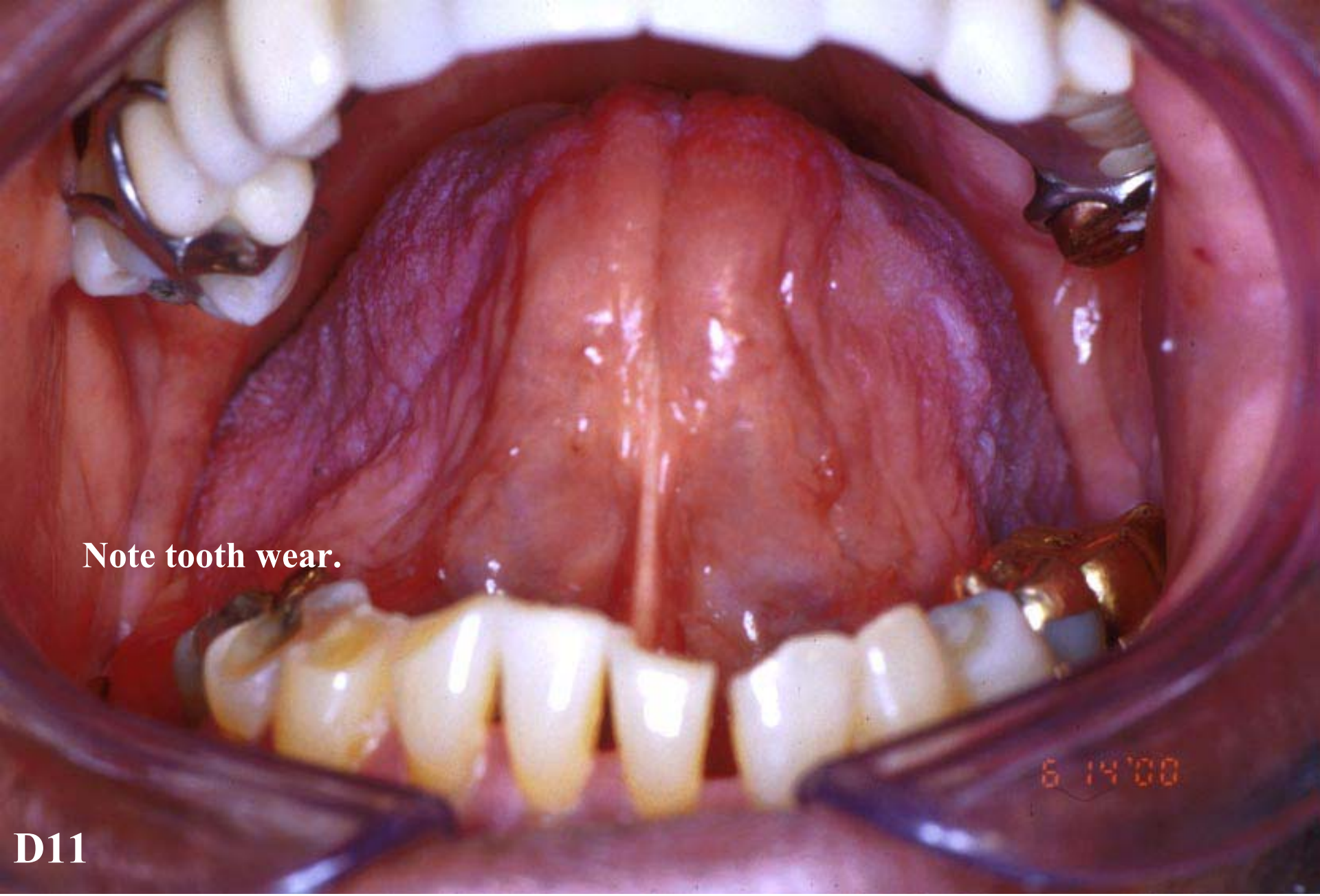


D8 Age 4 months. Note lesion on frenum caused by teeth.

D9 Age 3 years. Frenum already causing teeth to rotate. (1976)

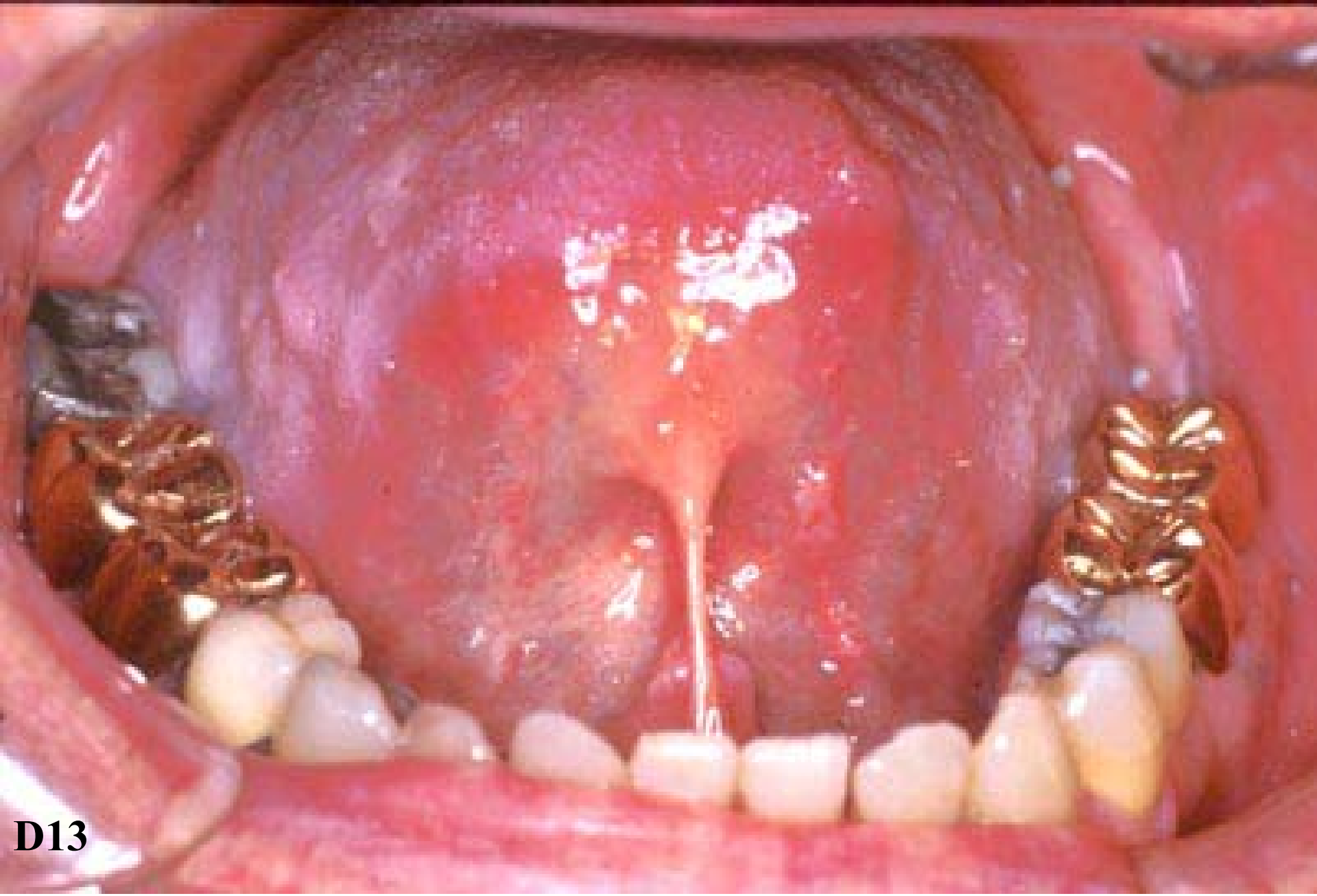


D10 Teenager - Very classical heart shape of tongue. (1996)



Inherited ankyloglossia is a contributing factor to tongue thrusting.

Tight frenulum on patient in 60s with severe sleep apnea.



Same patient trying to elevate tongue as high as possible.
Demonstrates tight frenum and large tongue (macroglossia).

Labial frenums.

Age 9 - Diastema (gap) due to thick high frenum.

Thick frenum causing diastema. Probably interfered with breastfeeding.

70 year old. When is he going to outgrow his frenum?

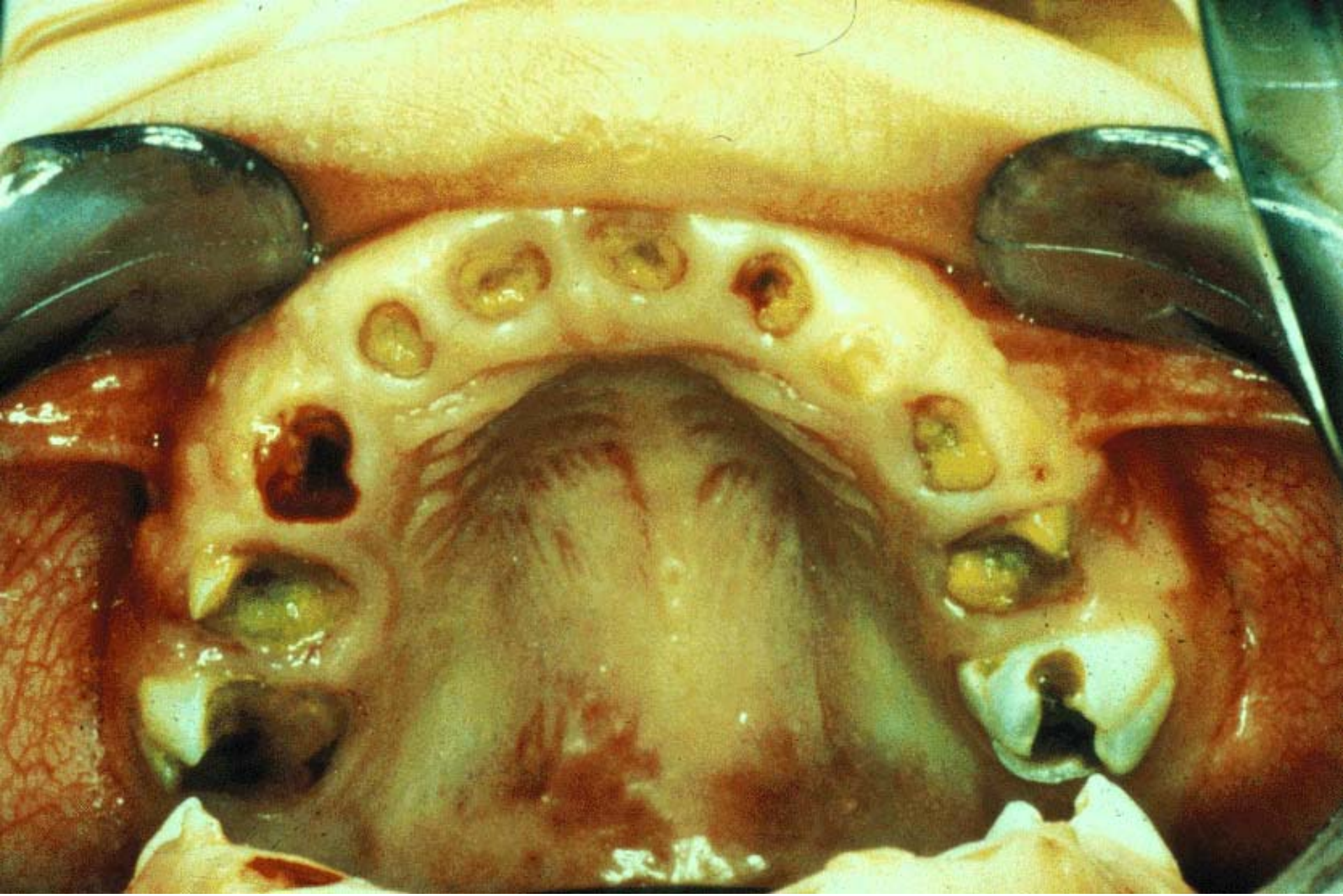
See 2 presentation on frenums elsewhere on this website.

Impact of decay on occlusion.

D20 Note abscess above upper deciduous front tooth.

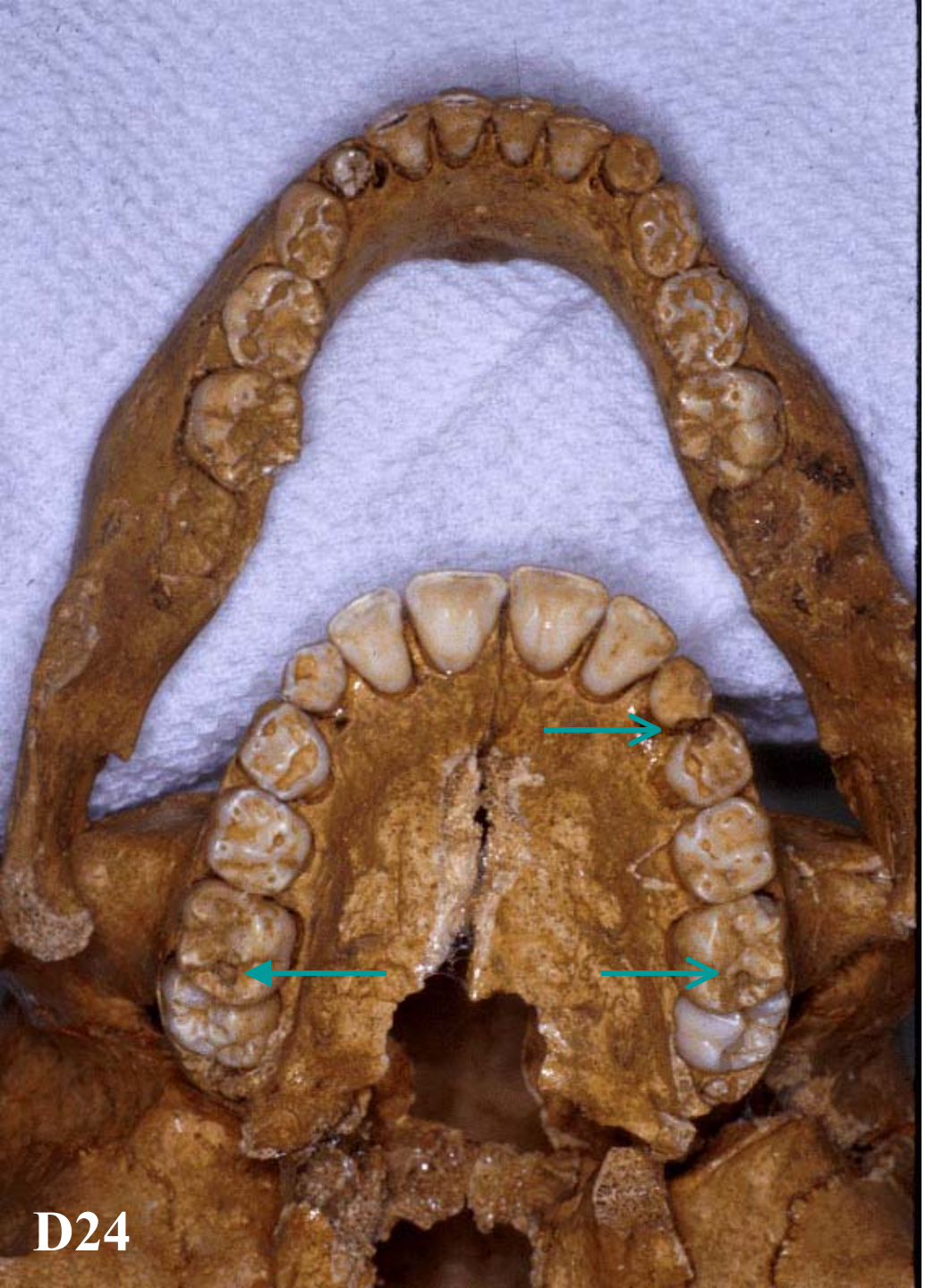
D21 Note decay on lower deciduous (baby) teeth.

D22 Gross decay on deciduous teeth.



D23

Infant with gross decay.



One of prehistoric infant skulls that did have a little decay - but infant was close to 11 years old.

Decay on deciduous teeth probably developed long after infant was weaned.

See full presentation and article on infant caries elsewhere on this website.

The oropharynx (throat).

Impact on occlusion and our ability to breathe.

D27 Throat of a healthy 90 year old gentleman.

KEY COMPARISON

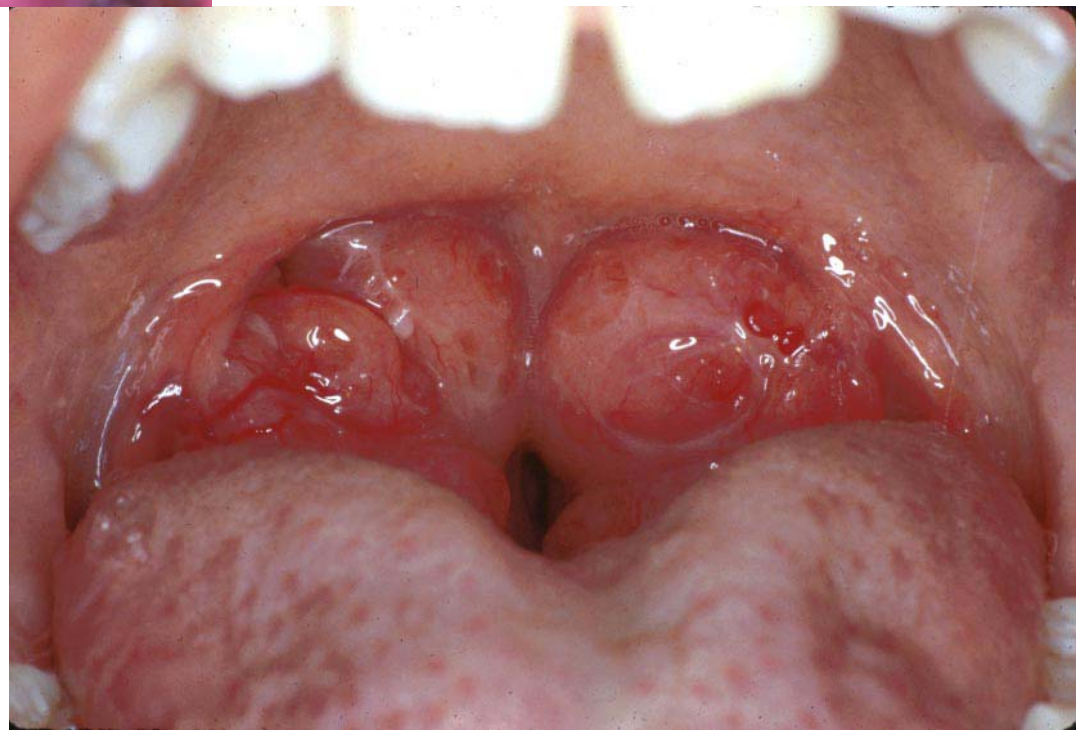
The ONLY way to have an open oropharynx as above, is to have a wide palate - which allows for a large PNA.

D28

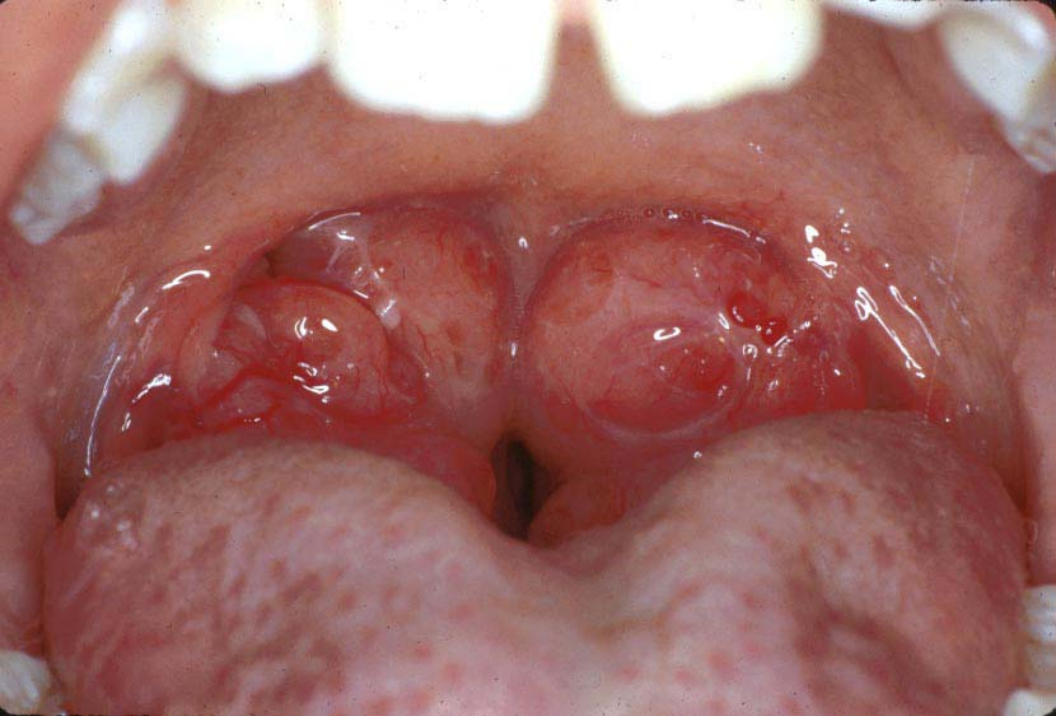
Throat of a very healthy 90-year-old.

Which airway would you prefer?

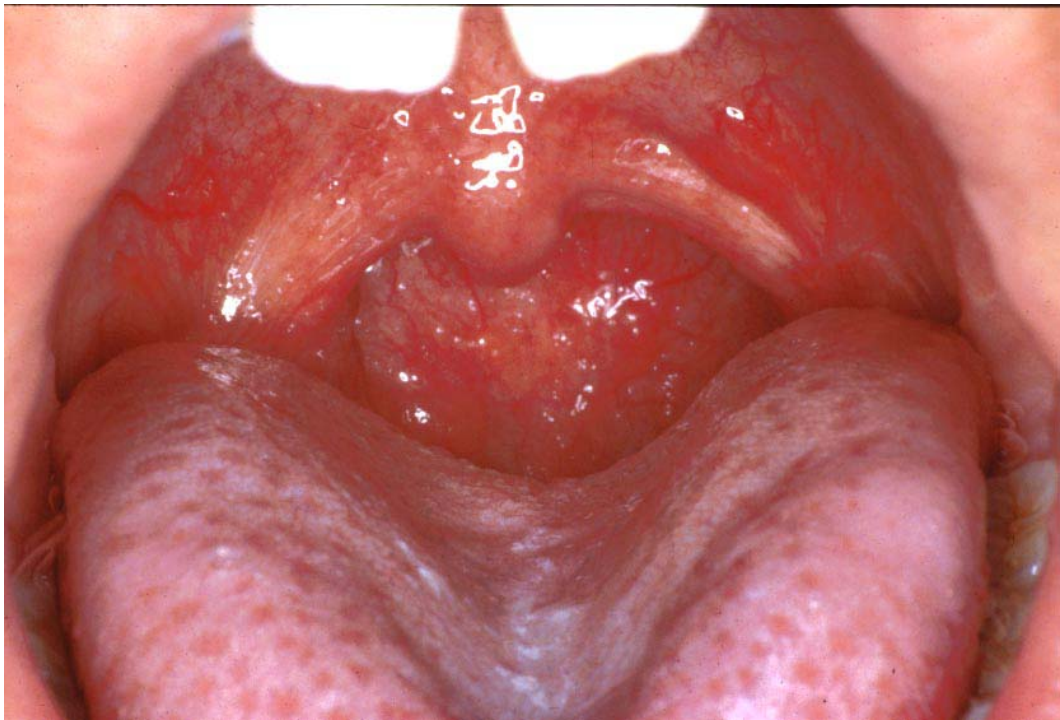
Throat of a sickly 12-year-old with many symptoms of OSA.



D29



Twelve-year-old with massive tonsils.



Oropharynx after tonsils removed.

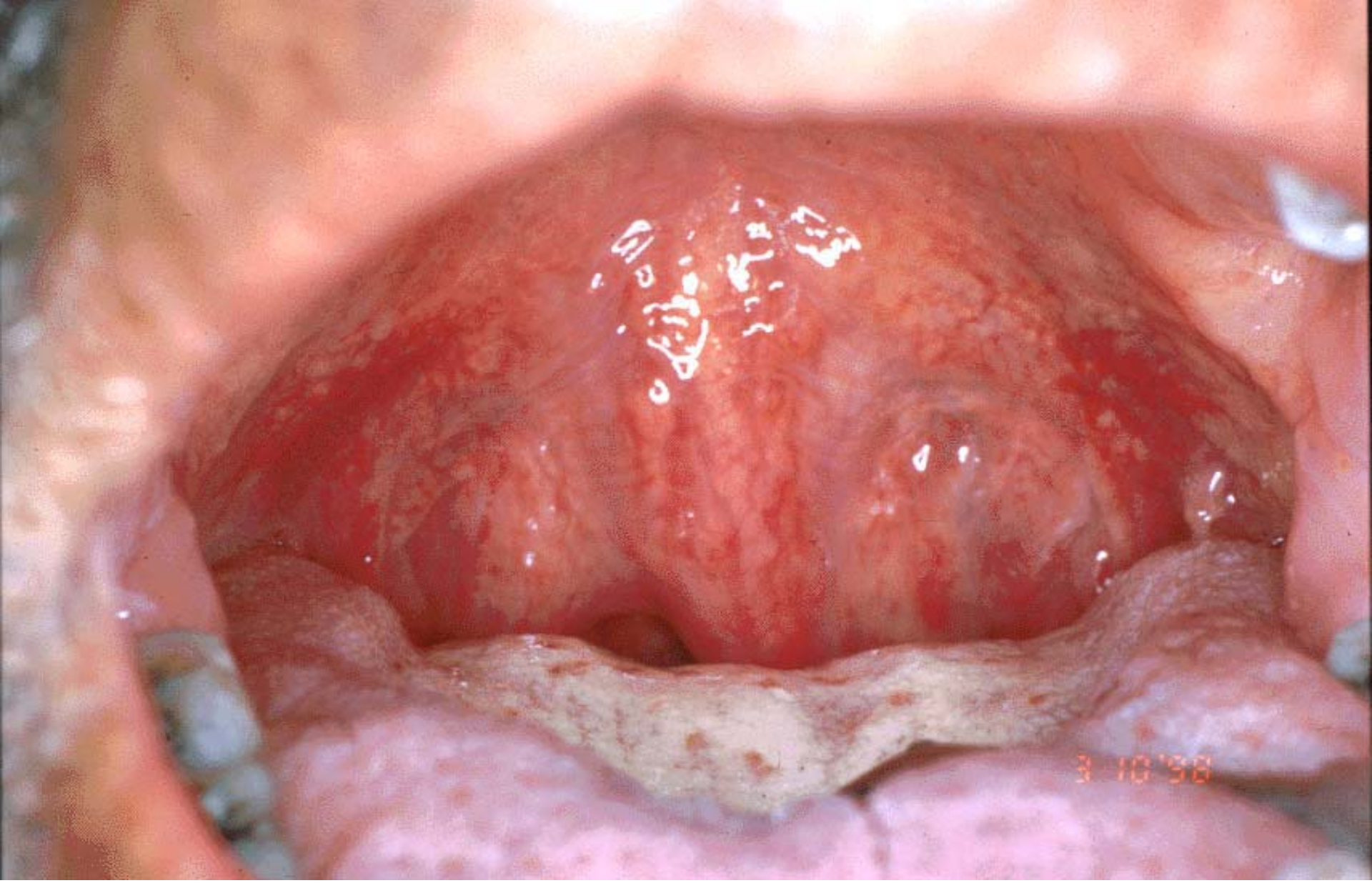
D30

Compromised oropharynx (age 7).

Enlarged tonsils can compromise an oropharynx at any age.

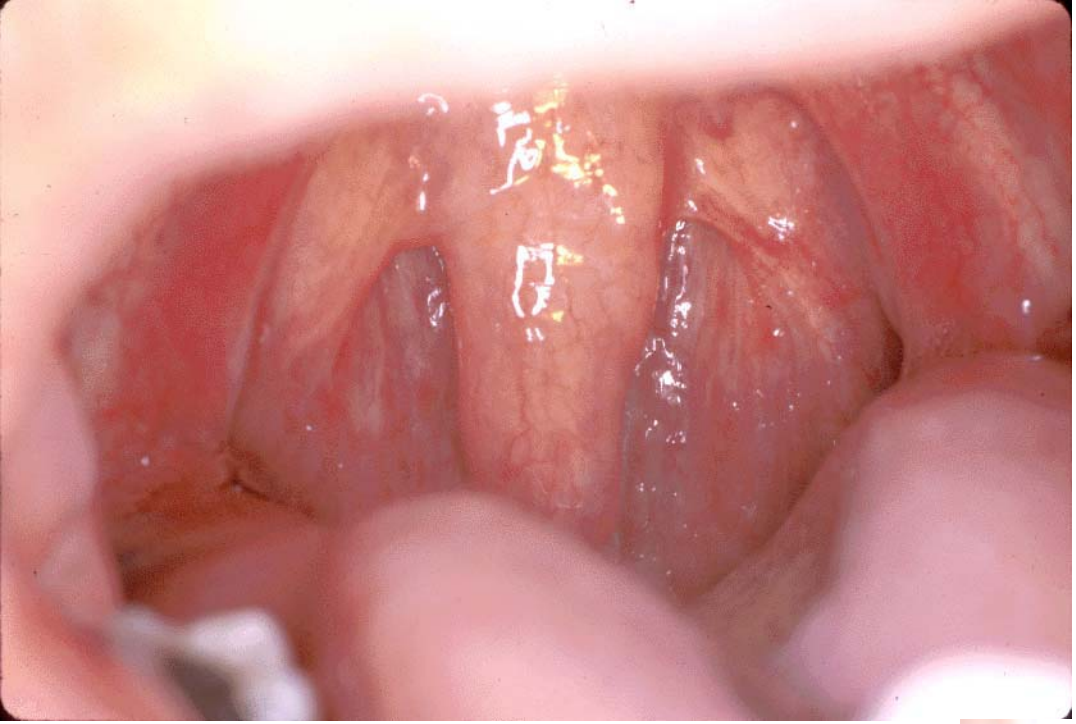
Compromised oropharynx (age 27).

D31



Very elongated soft palate compromises oropharynx.

D32



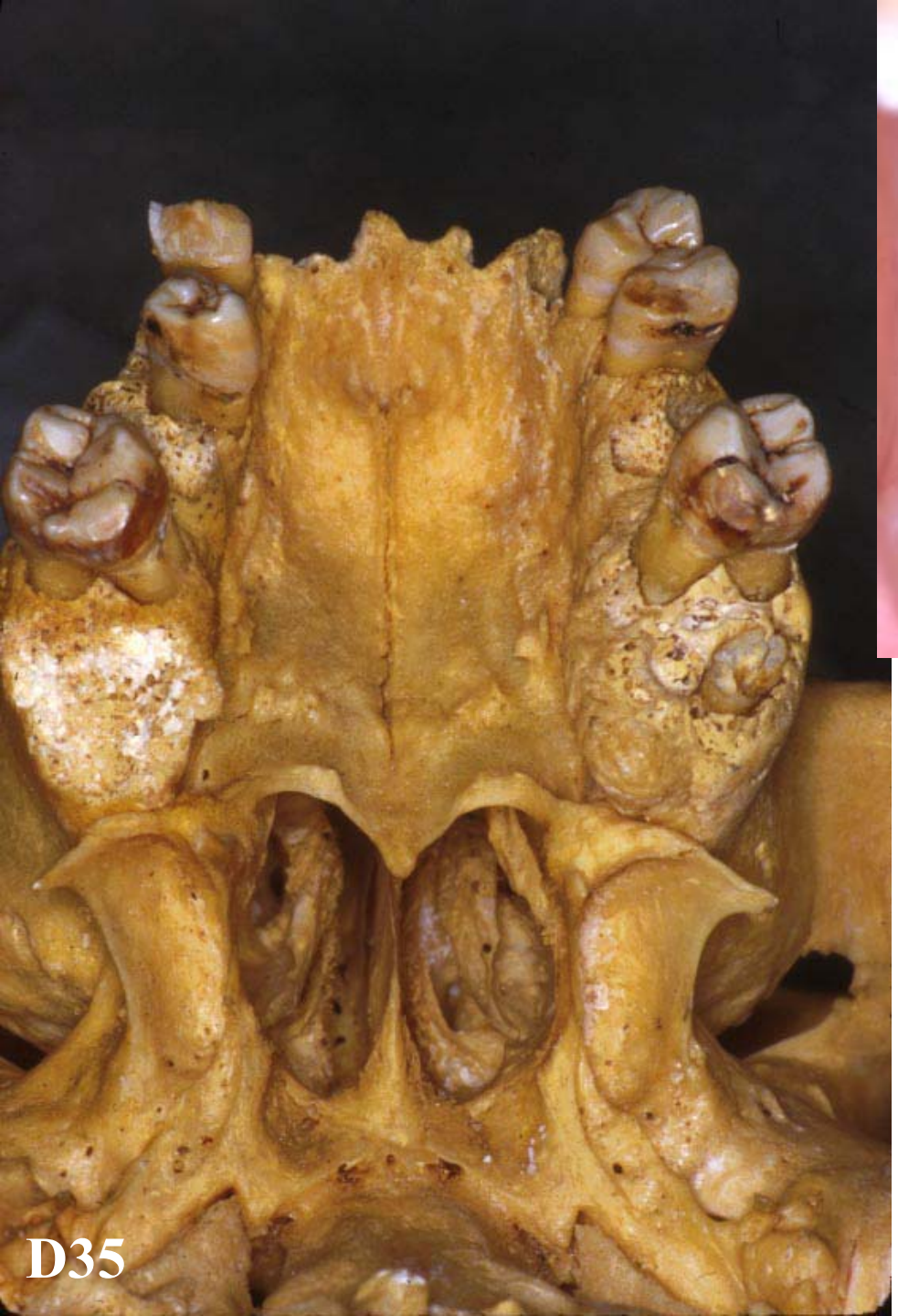
Adult with massive uvula that can obstruct airway.

Oropharynx of 14 year old.

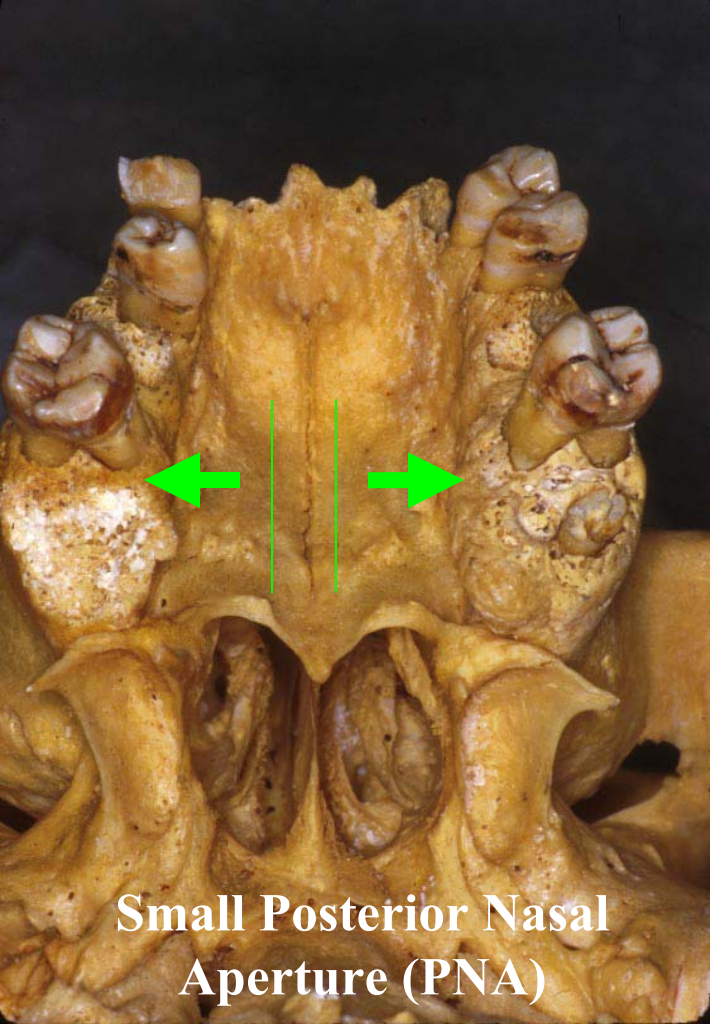
D33

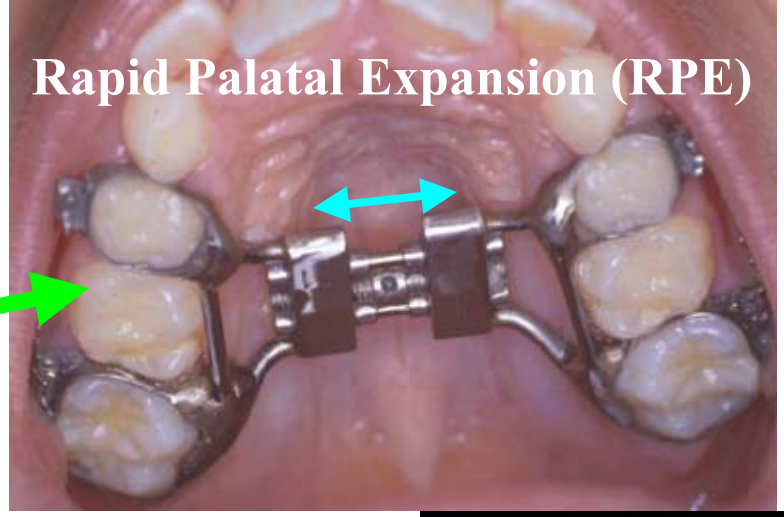
Contemporary skull (1940s) demonstrates how a high palate and narrow arch results in a small posterior nasal aperture (PNA).

D34



A compromised oropharynx above is probably the result of having a small posterior aperture as illustrated on left.





KEY POINT

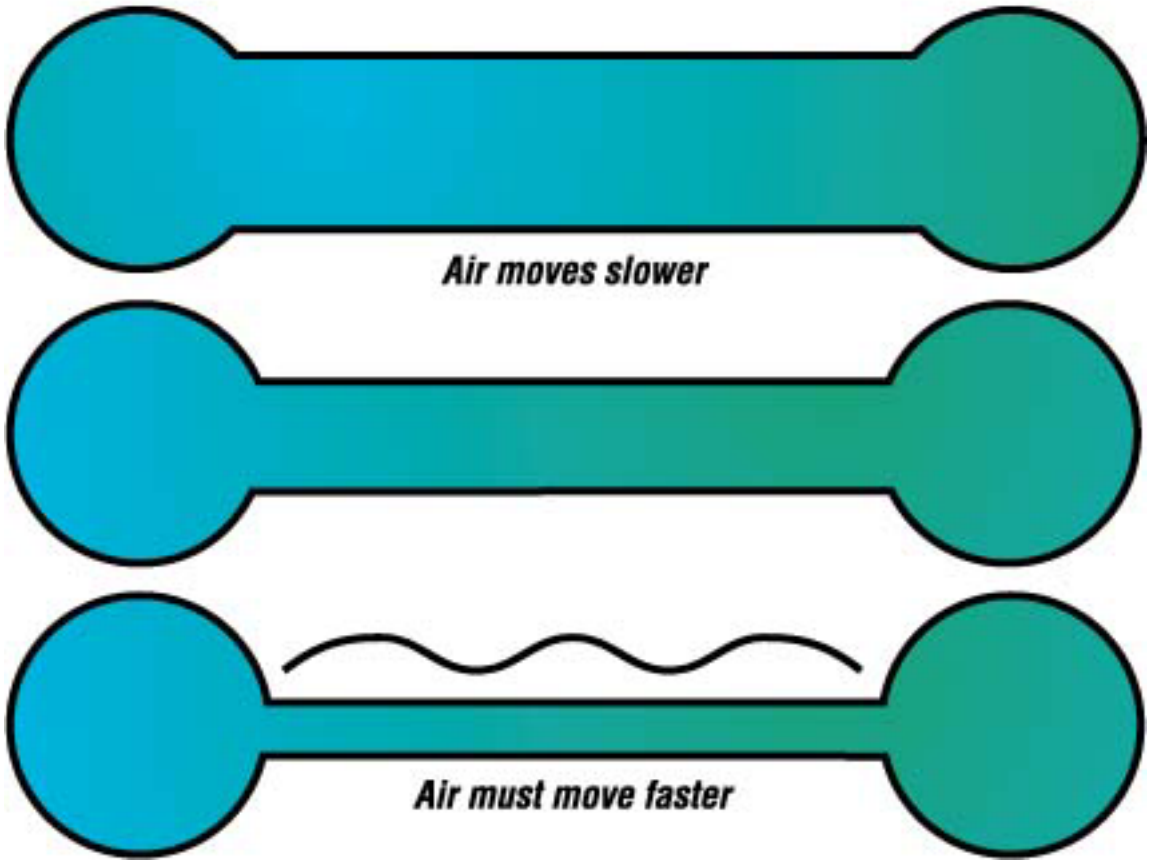
In order to obtains a large PNA, it is necessary to get separation of the mid-palatal suture line by RPE before the mid-palatal line fuses.

D36

Venturi Principle

Air must pass through a small tube faster than through a large tube, if the volume of air and time to pass through are equal.

VENTURI PRINCIPLE



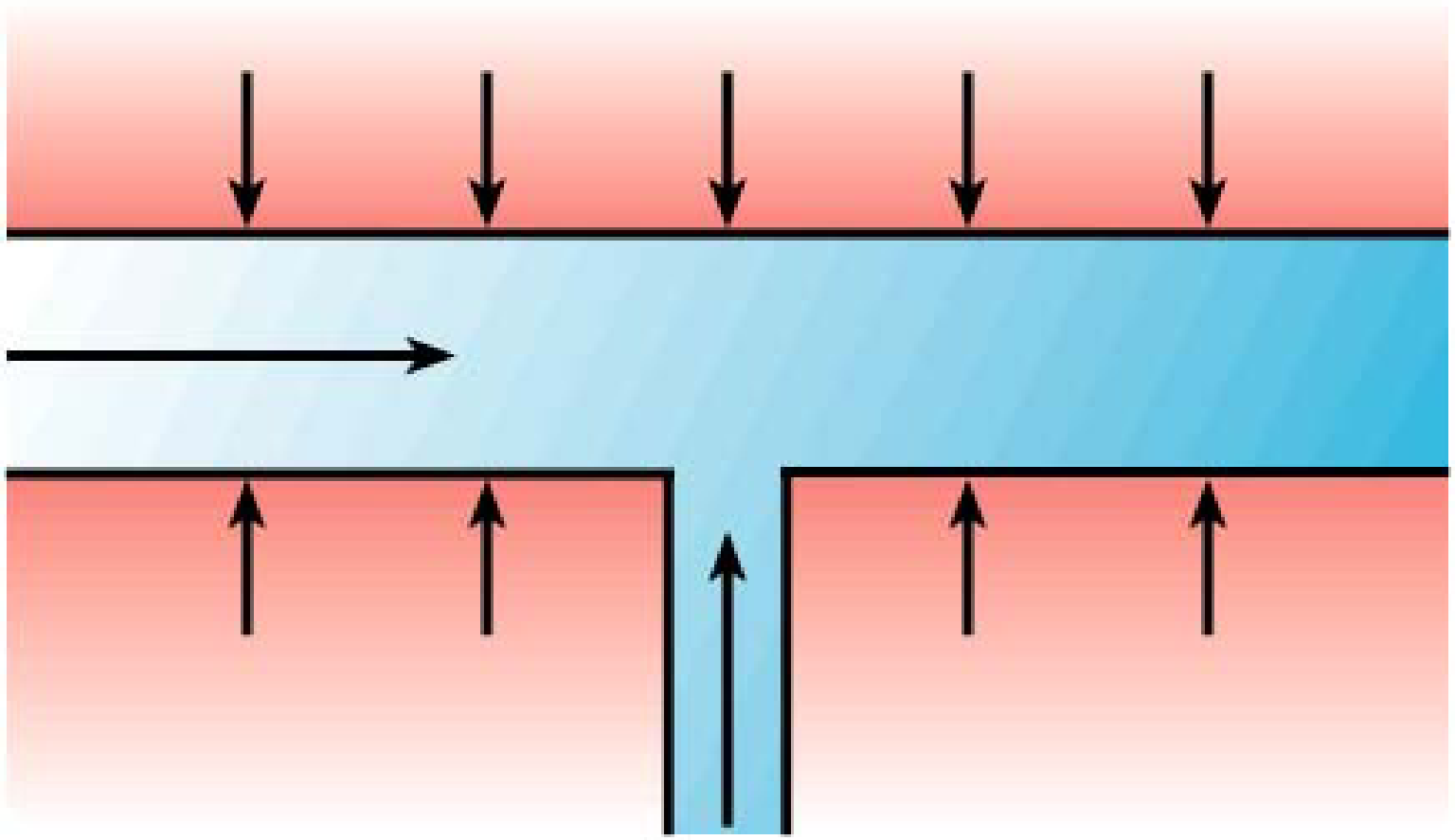
D38

Bernoulli Principle

- Causes an inward collapsing of a soft tube.
- Principle used in atomizers & carburetors.
- Could cause an elongation of any stretchable material inside the tube.

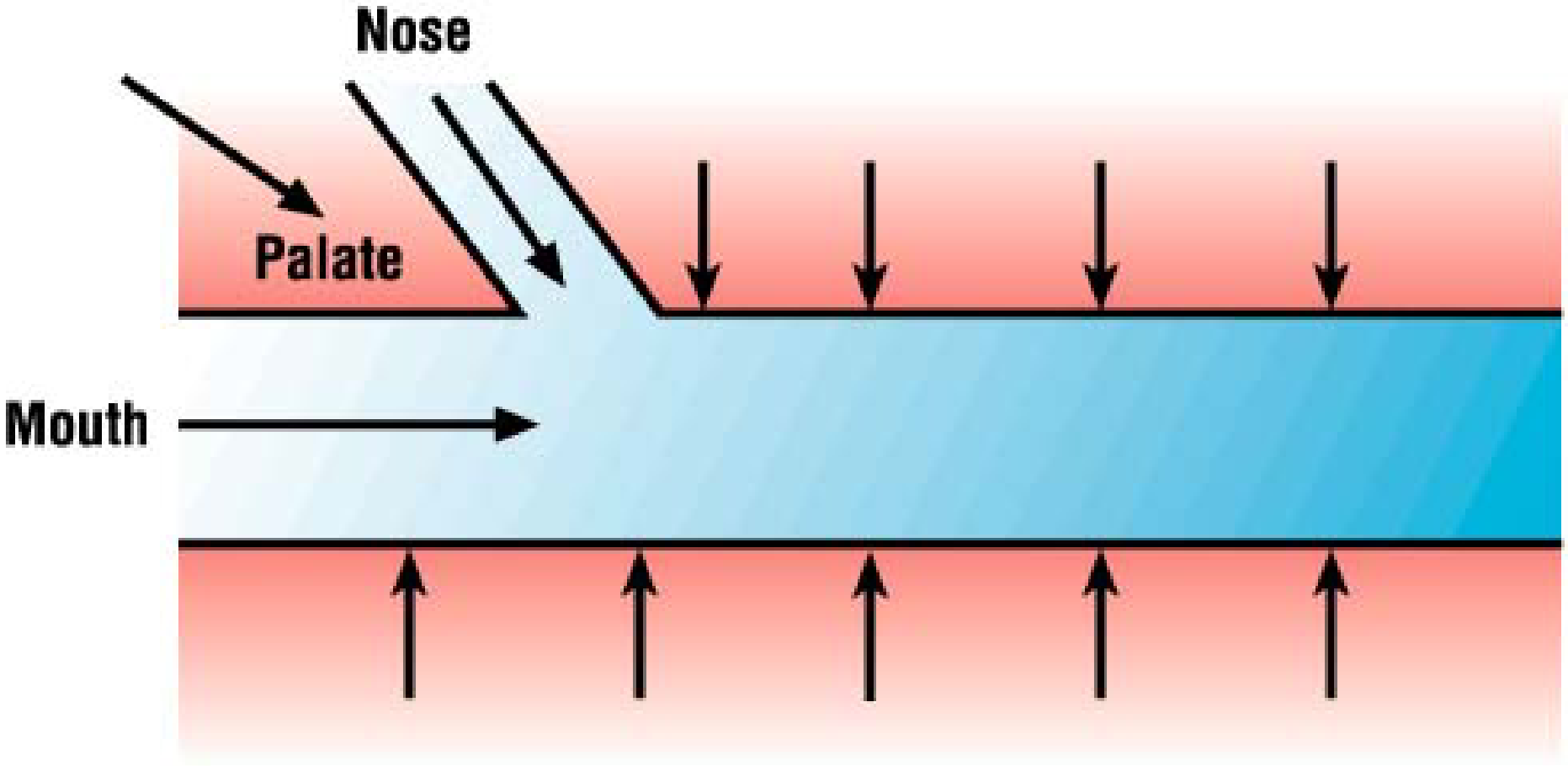
D40 Atomizer uses Bernoulli principle

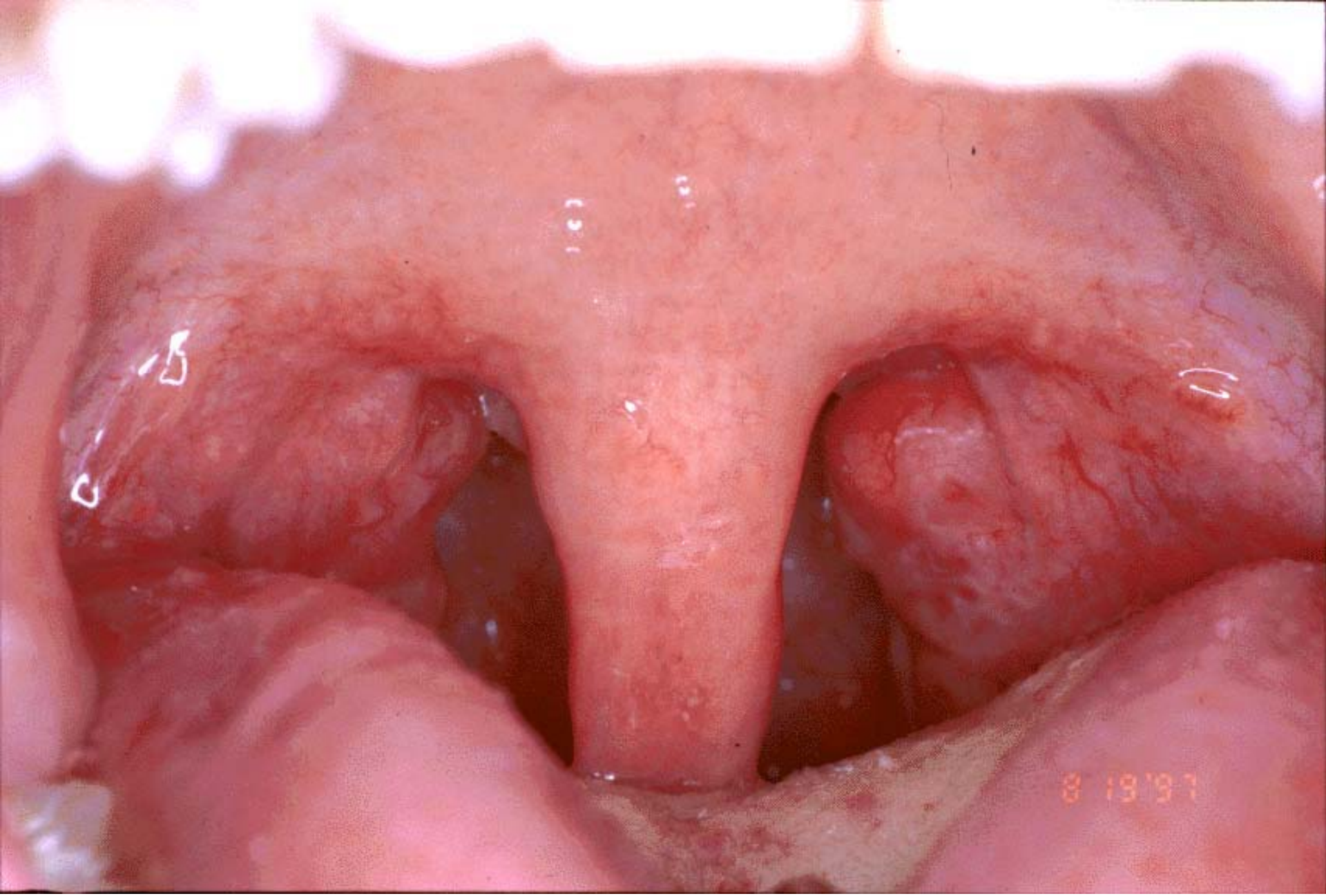
Bernoulli Principle



D41

Bernoulli Principle

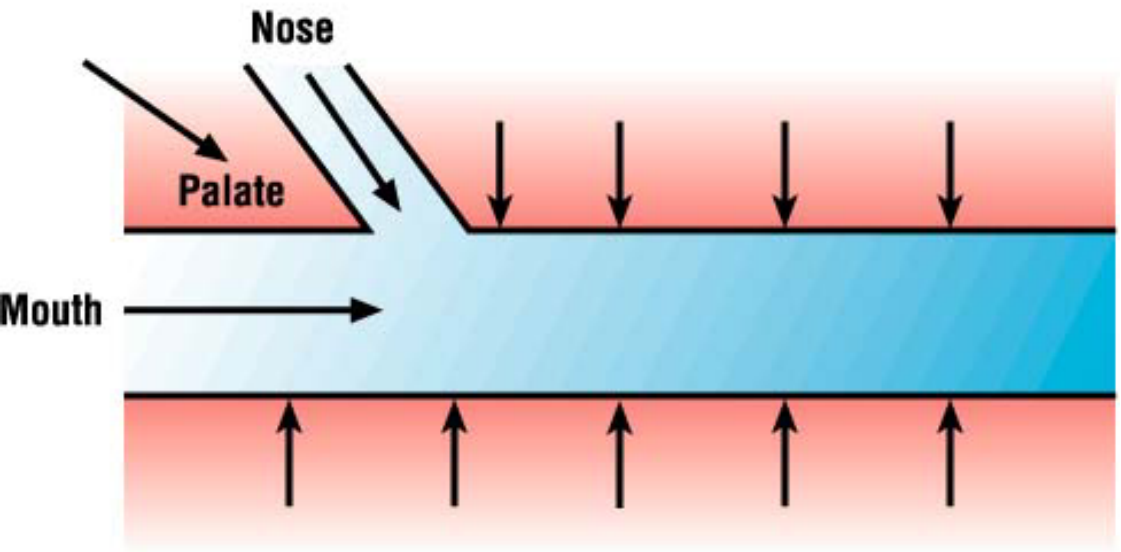




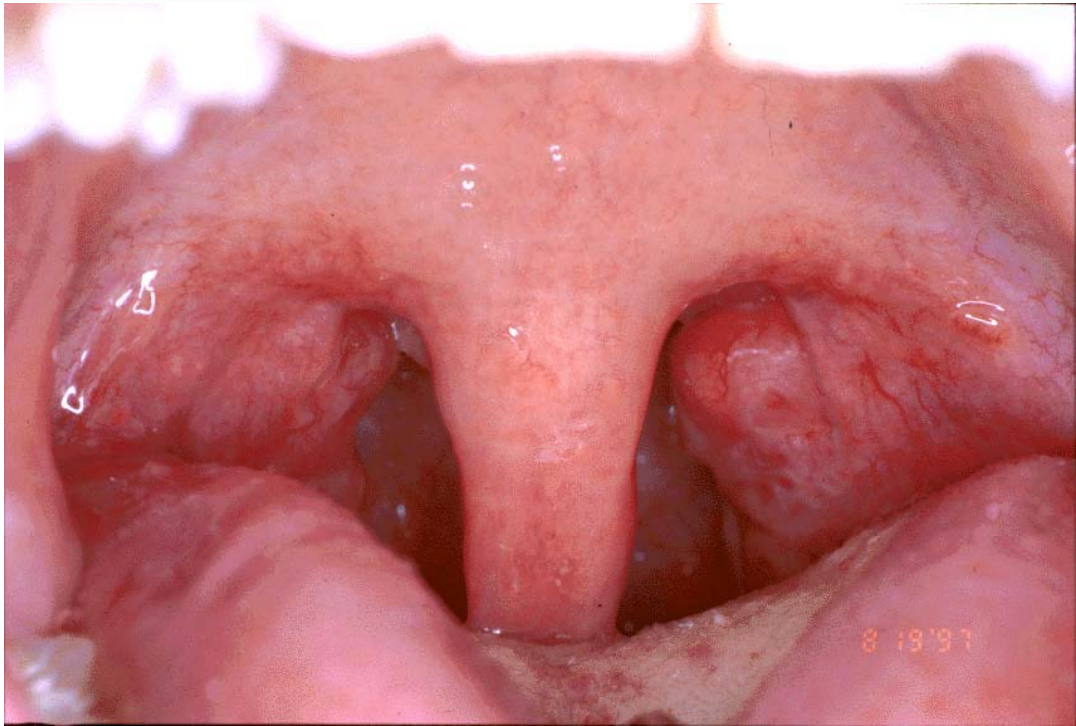
Elongated palate and uvula of a 14 year old with compromised airway

D43

Bernoulli Principle

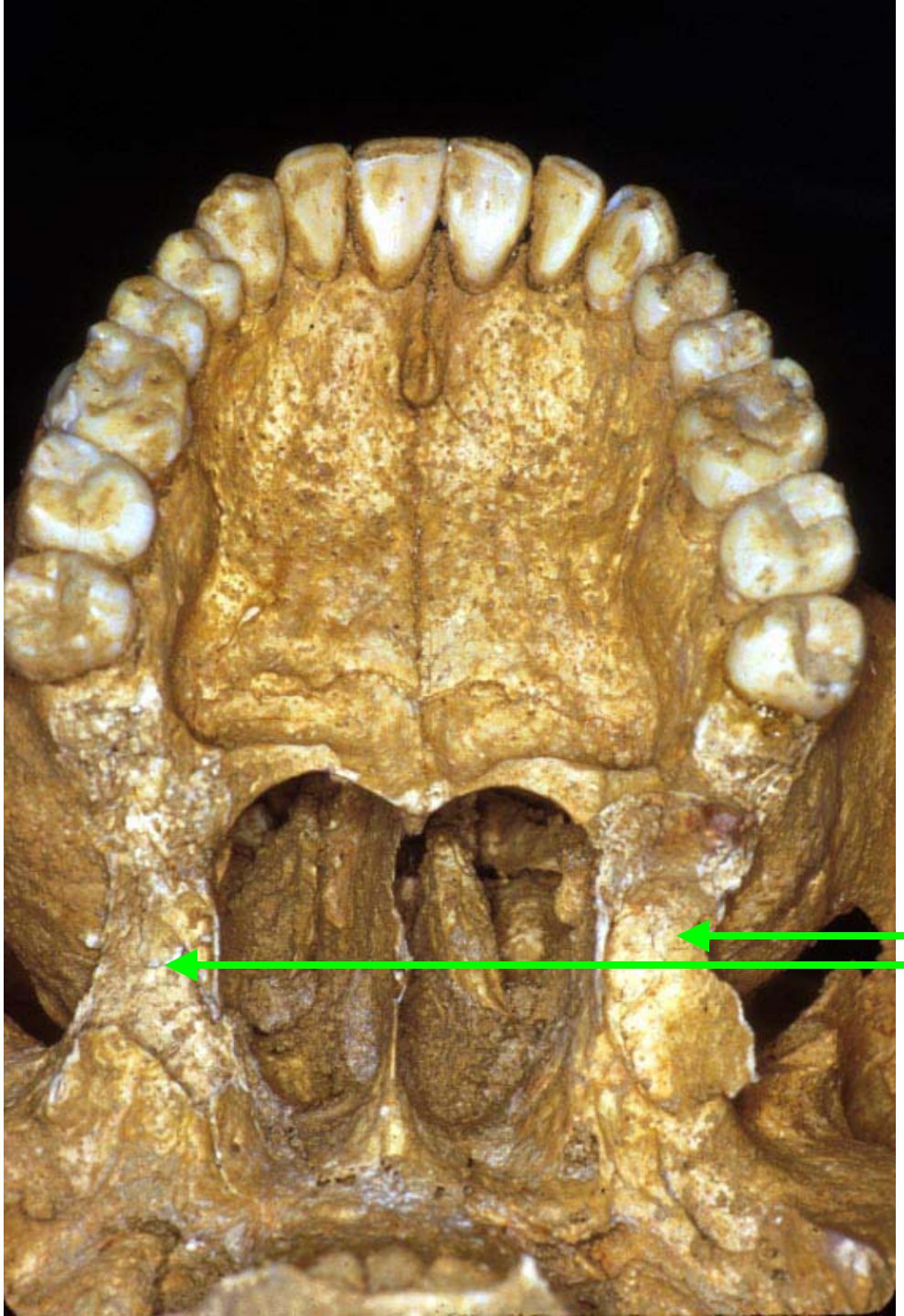


I believe this principle can be used to explain this elongated uvula and compromised oropharynx.



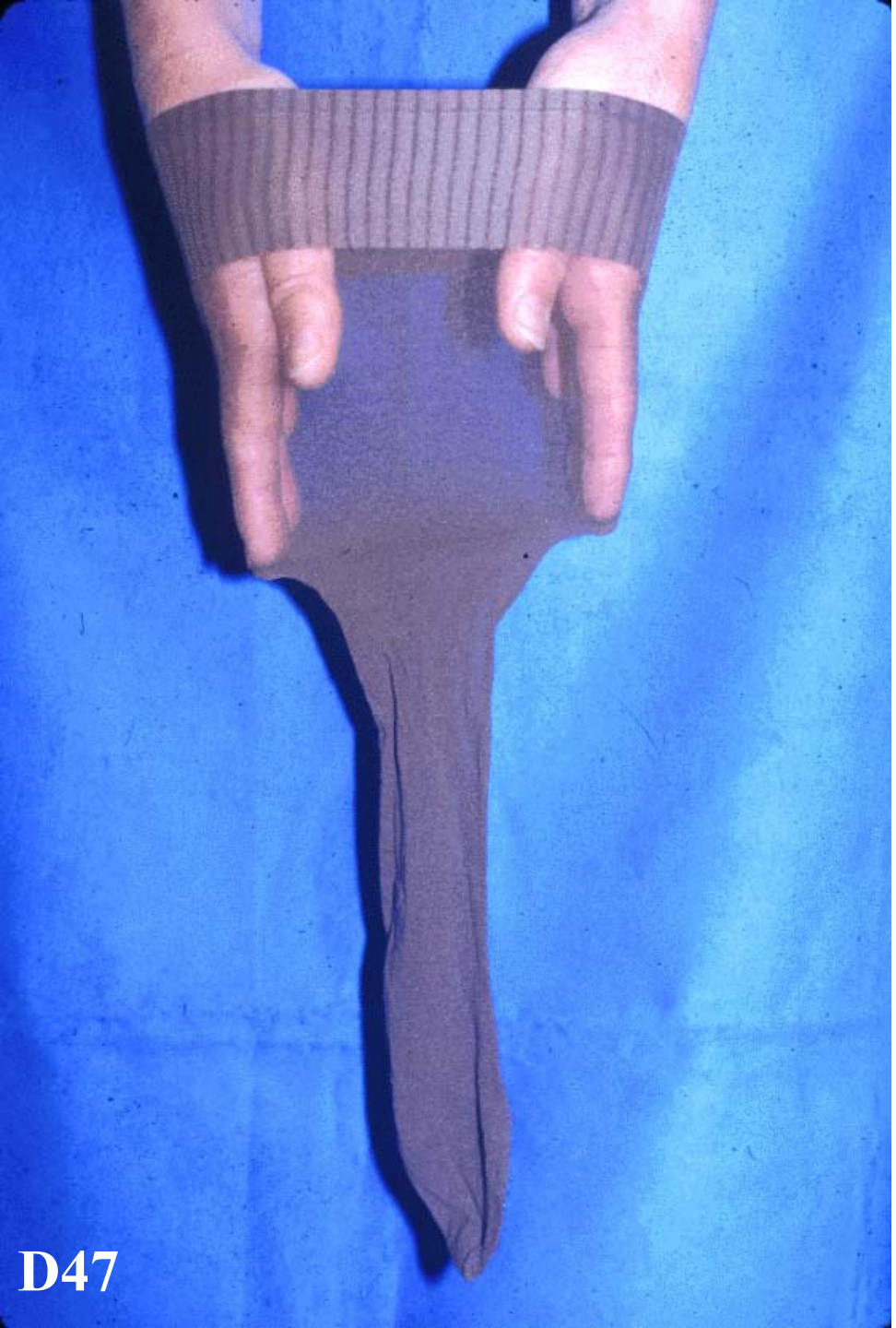
D44

Significance of differences between large and small posterior nasal apertures. (PNA)

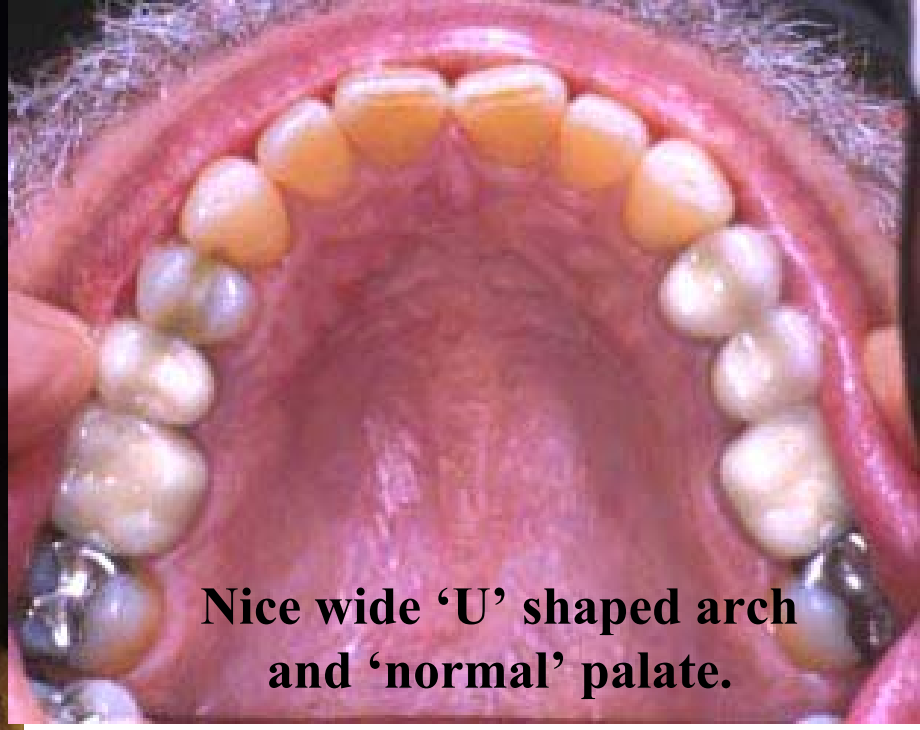


Prehistoric skull with wide palate and large posterior nasal aperture (opening). There is good width between the pterygoid plates. This allows for a wide beginning of the airway.

Pterygoid plates.



The wider the beginning of the airway, the less the risk for collapse of the airway.

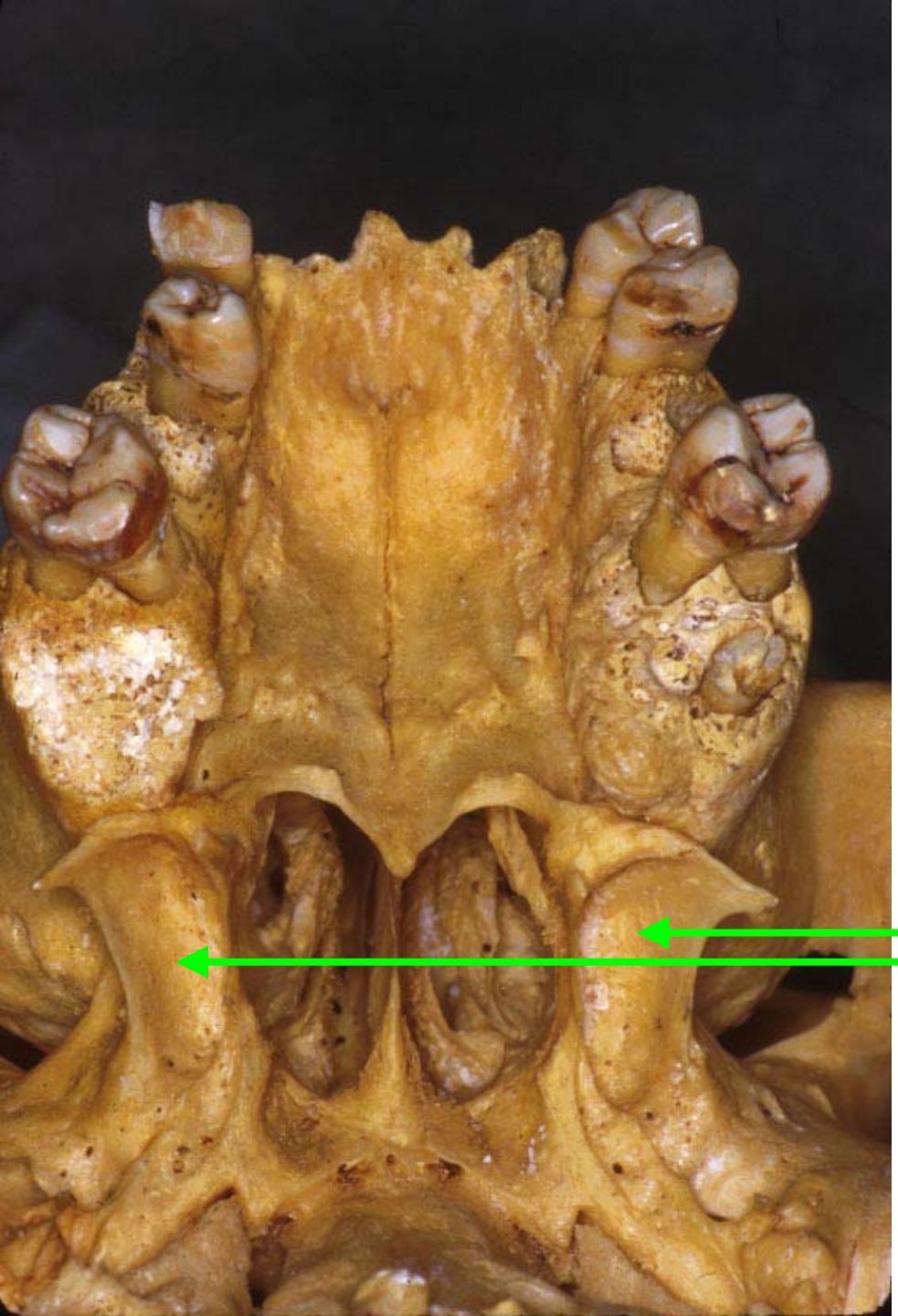


Nice wide ‘U’ shaped arch and ‘normal’ palate.

KEY COMPARISON

Demonstrating the correlation between a wide palate and a large PNA.

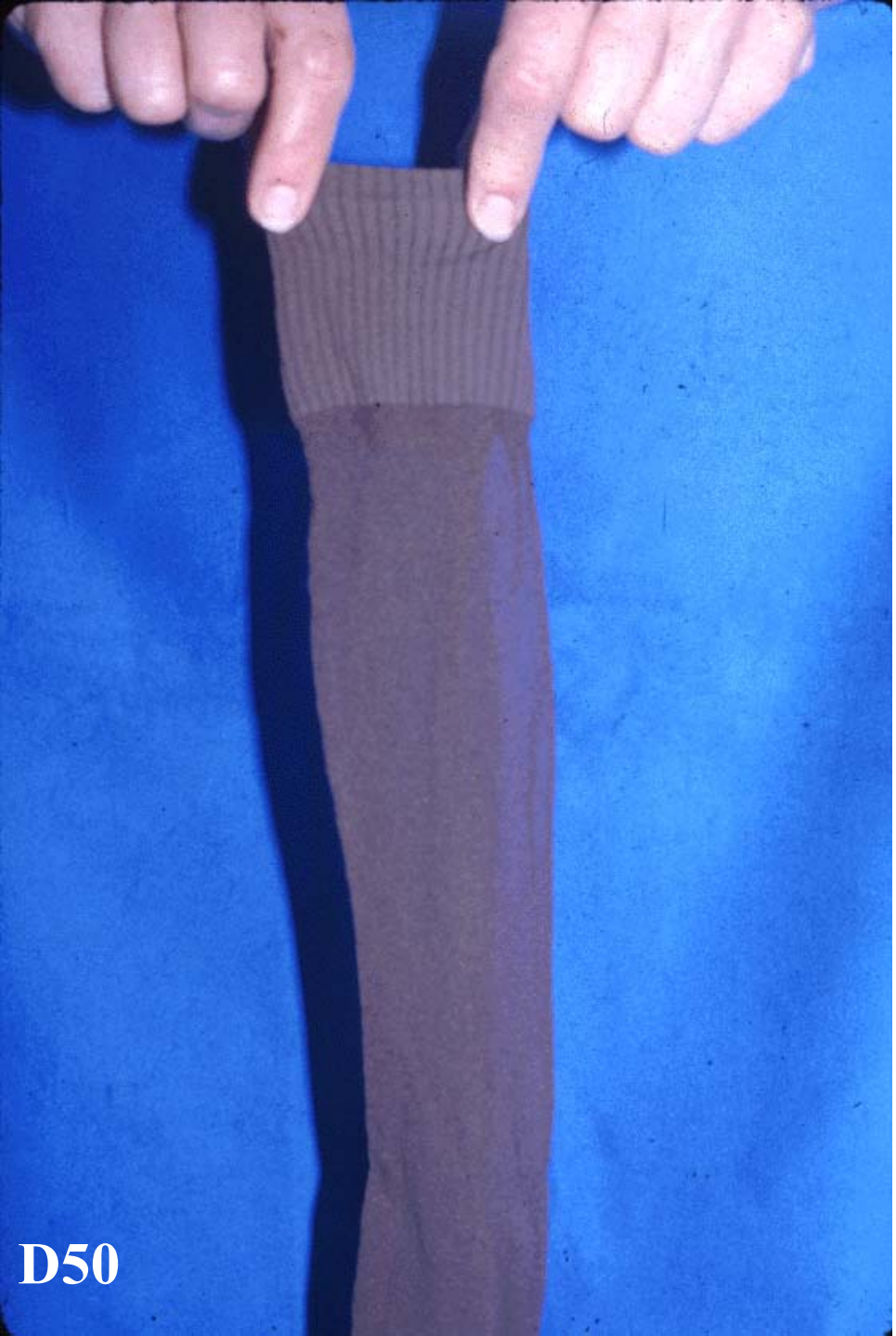
D48



Skull from the 1940s demonstrating a high palate and narrow maxillary arch. Note small posterior nasal aperture and less width between the pterygoid plates. This results in a narrow beginning of the airway - which creates a greater risk of airway collapse and OSA.

Pterygoid plates.

D49



The narrower the beginning of the airway, the greater the risk for collapse.

For example, a narrow skinny straw collapses a lot easier than a wide straw when drinking a very thick milk shake.

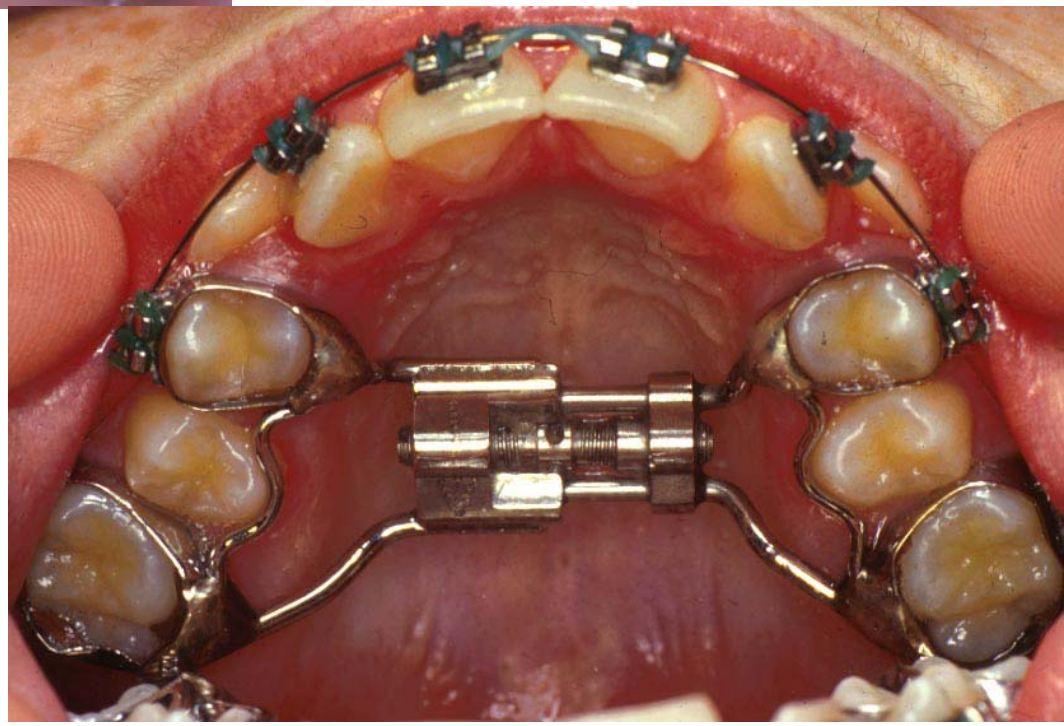
KEY COMPARISON

Demonstrating the correlation between a narrow arch and a small posterior nasal aperture (PNA).

Examples of fixed rapid palatal expanders (RPE).

RPE MUST be done before the mid-palatal suture fuses.

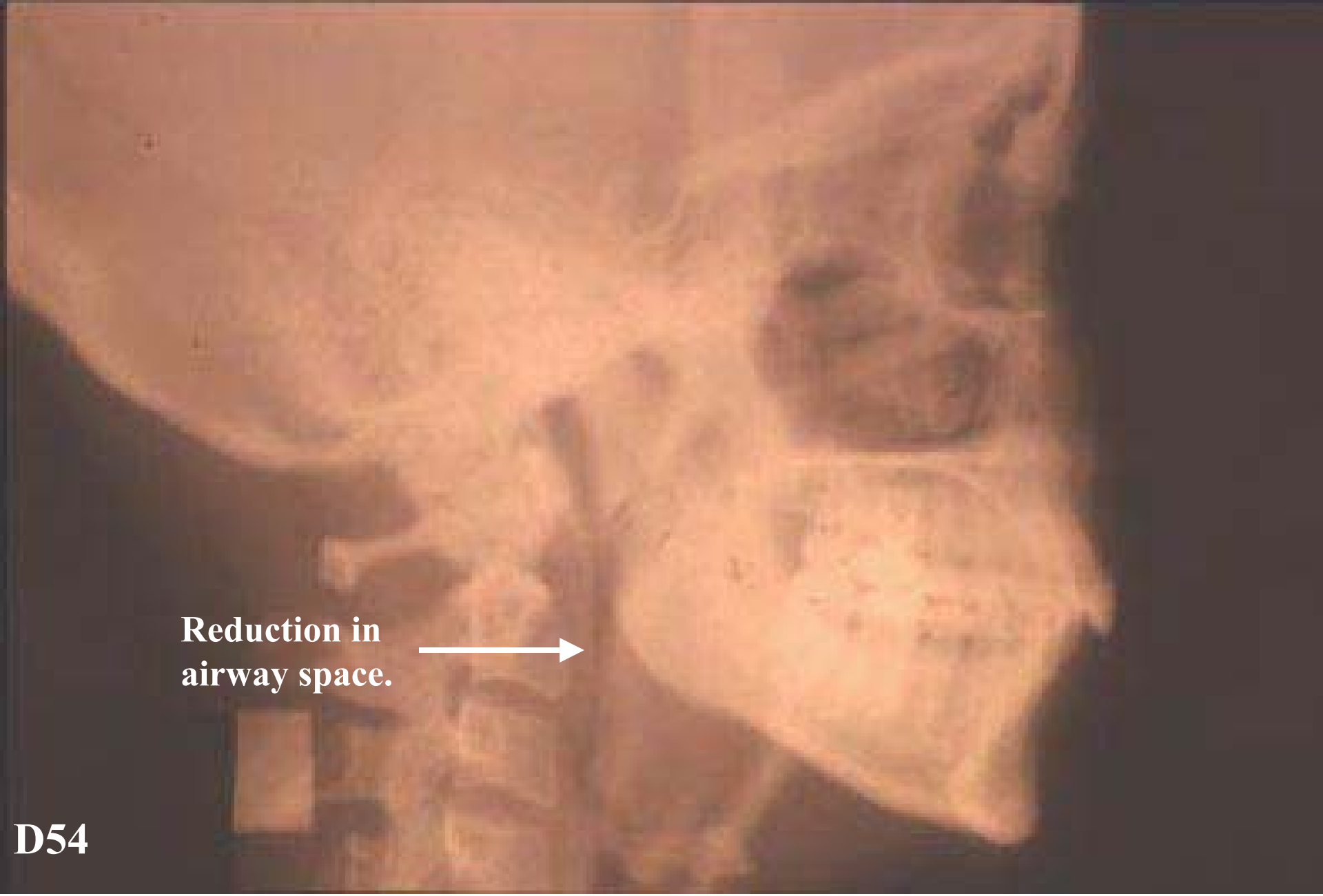
Rapid palatal expansion expands arch **and** pterygoid plates **and** can lower the height of the palate..



D52

Example of removable palatal expander.

D53



Cephalometric radiograph demonstrating reduction in airway space.

Hypothesis:
Prehistoric man did not have OSA.

In prehistoric skulls, it is rare to find:

- High palates.
- Narrow arches.
- Overjets.
- Non pathologic malocclusions.

What is found, however are:

- Large posterior nasal apertures (choanae).

Impact of nose shape on occlusion.

A high narrow nose can collapse easily and block air flow. Usually associated with long face syndrome, high palates and narrow dental arches.

D57

Key statement:

Not everyone who breastfeeds will have perfect teeth, occlusion, airway or facial form, but they will have a **better chance** of being perfect over someone who has been bottle fed, used pacifiers, had noxious infant habits or attended day care programs.

The connection:

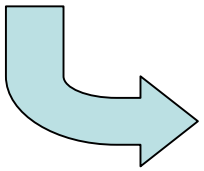
Bottle-feeding

Excessive thumb sucking

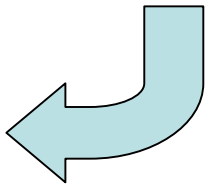
Pacifier use

Snoring

Sleep apnea



Similar signs and symptoms



End of section D

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December 2004.