Section A

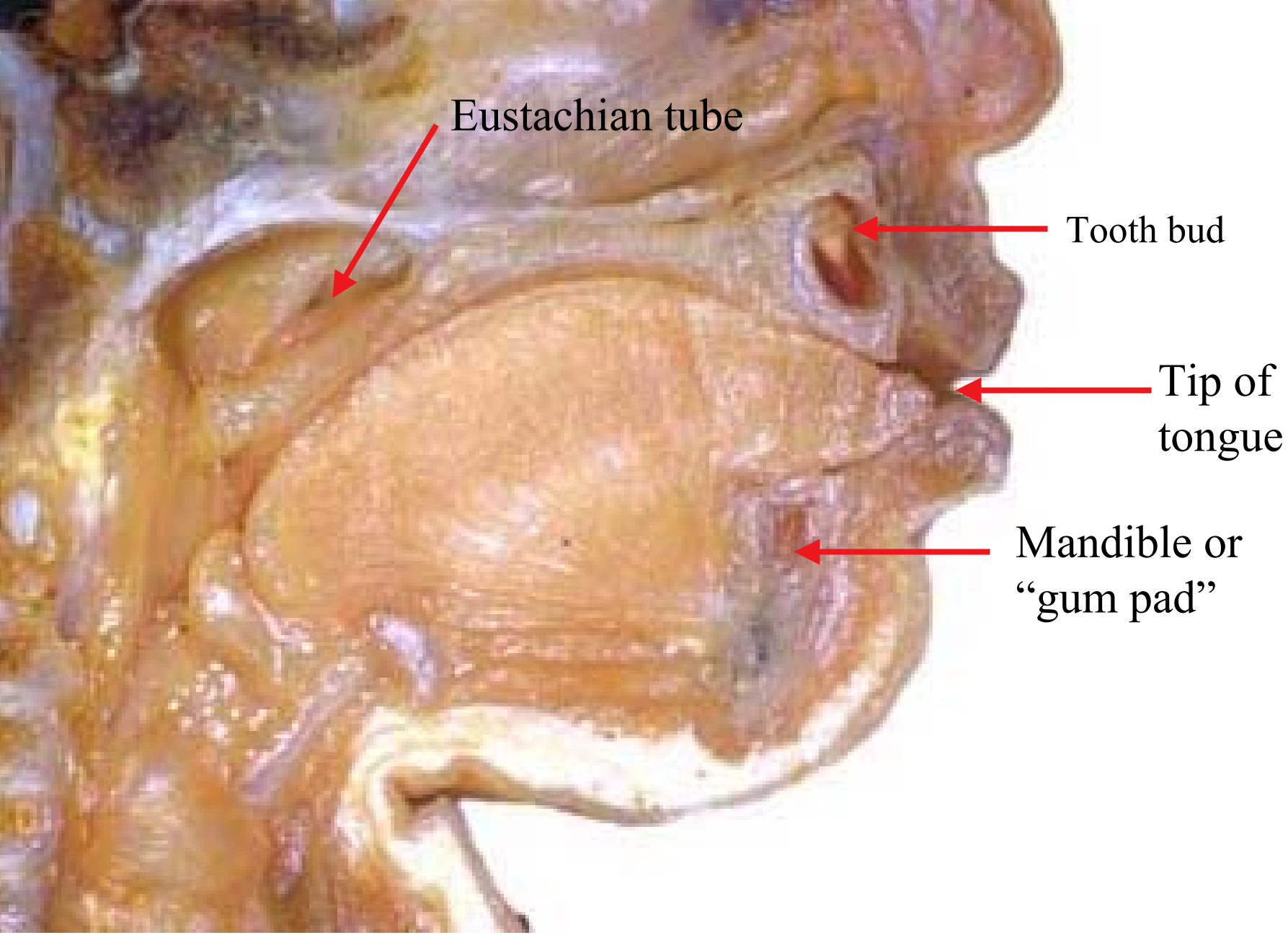
The Importance of Breastfeeding as it Relates to Total Health

Presented by:

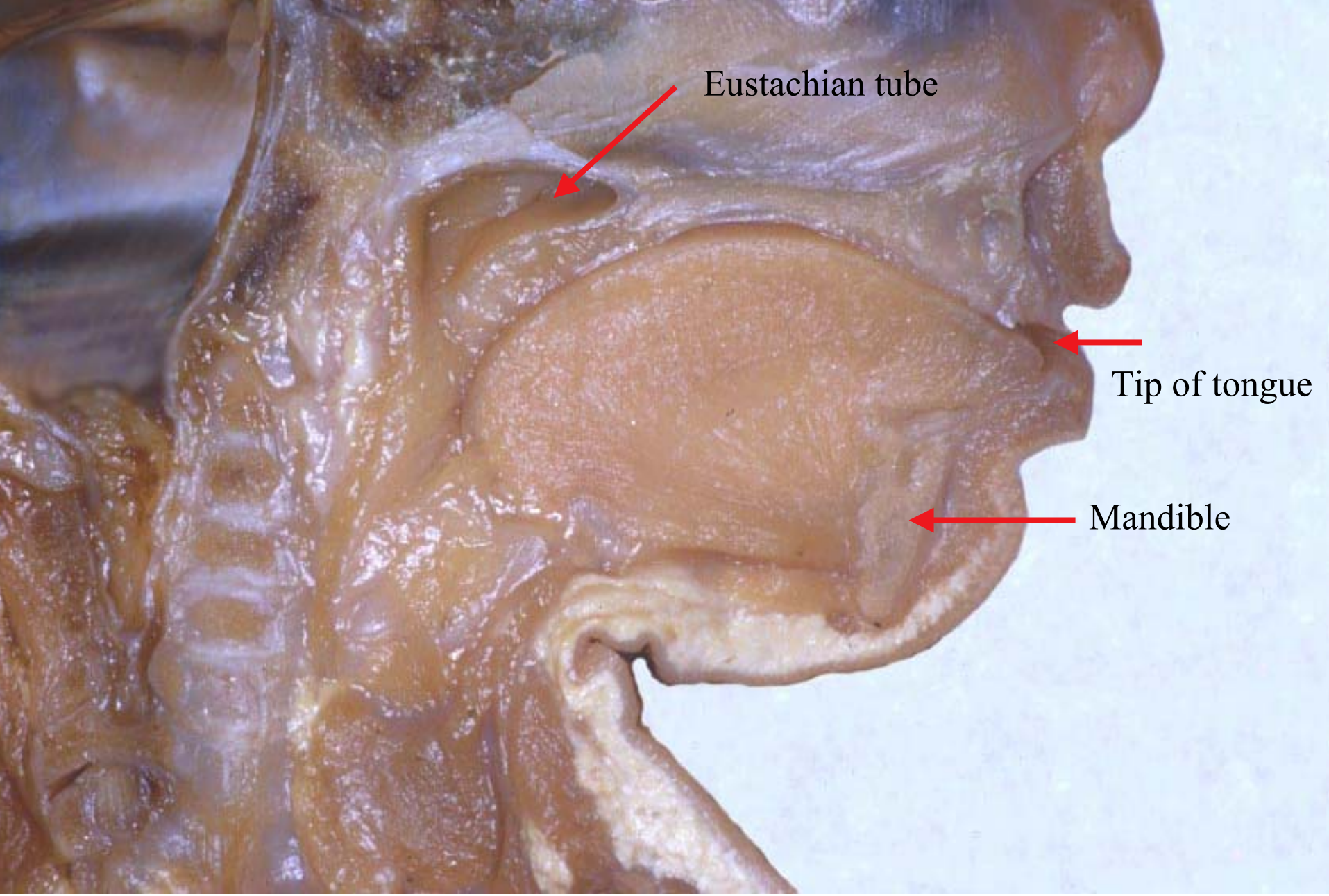
Brian Palmer, D.D.S.
Kansas City, Missouri
January, 2002

Natural position of the tongue,
shape of the palate, and
position of the epiglottis
in a healthy newborn

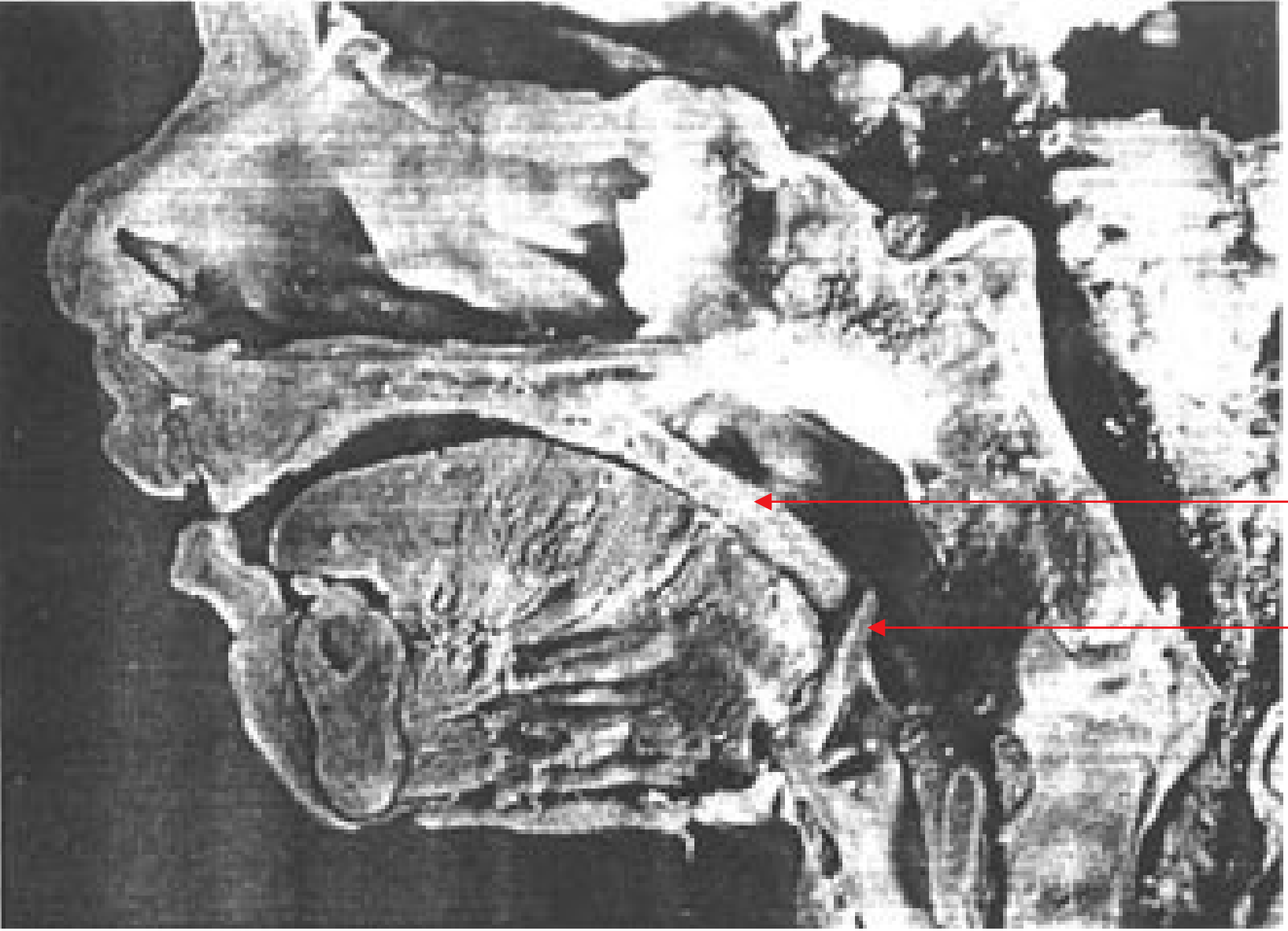
A2



A3 Habitual resting position of tongue of a newborn



A4 Normal / habitual tongue posture of infant - extends out over & past mandible.



The epiglottis is in direct contact with the soft palate. The tongue is located entirely within the oral cavity. (Crelin)

Action of the tongue during normal breastfeeding

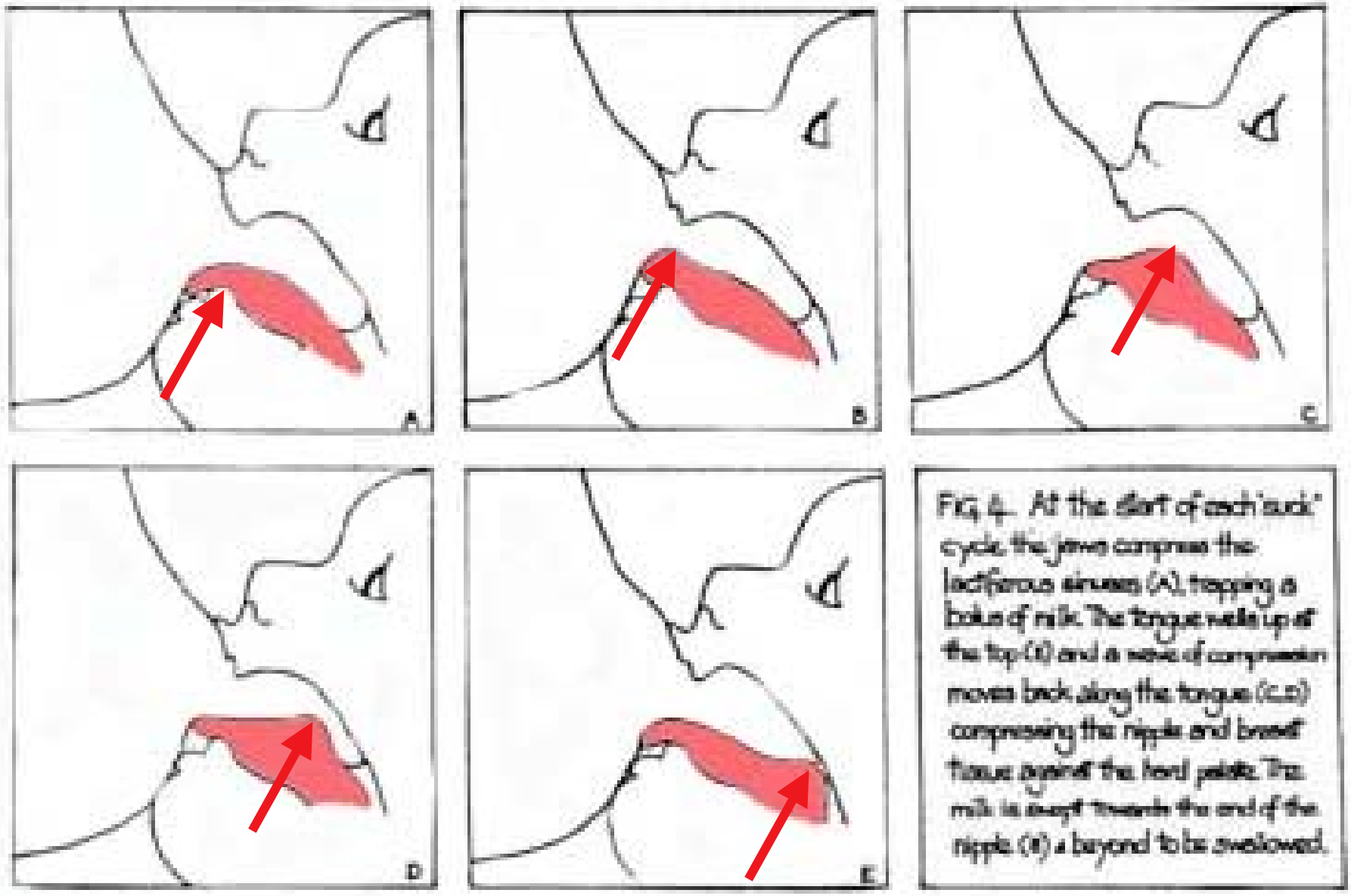
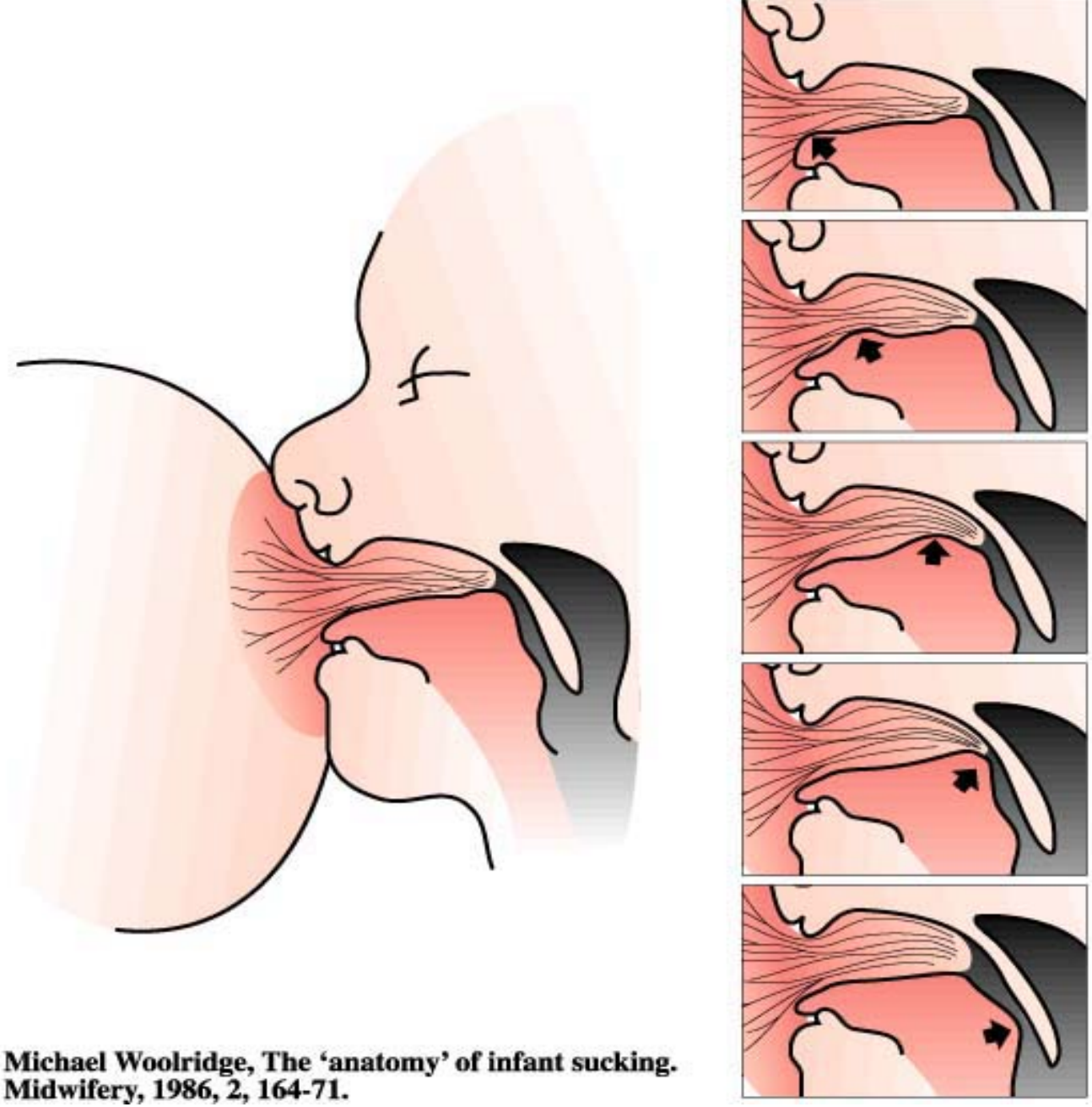


Fig 4. At the start of each 'suck' cycle the jaws compress the lactiferous sinuses (A), trapping a bolus of milk. The tongue rolls up at the tip (B) and a wave of compression moves back along the tongue (C,D) compressing the nipple and breast tissue against the hard palate. The milk is swept towards the end of the nipple (E) + beyond to be swallowed.

Illustration from Ros Escott article, Positioning, Attachment and Milk Transfer, Breastfeeding Review, 1989, p.35.



A8

Michael Woolridge, The 'anatomy' of infant sucking. Midwifery, 1986, 2, 164-71.

Demonstrates position and action of tongue during breastfeeding (Woolridge)

Research by Dr. John R. Neil (OB/GYN)

- Did 4 years of ultrasonic research in Australia on suckling. Study of 50 normal / 80 difficult cases.
- Discovered that the normal nipple junction distance (NJD) is equal to or less than 5 mm from the hard/soft palate junction.
- Nipple/breast in and out slide movement during suck is equal to or less than 5mm.
- Normal breastfeeding tongue action has a “rocker” or peristaltic like motion.
- Bottle feeding has an abnormal“piston” action.

Dr. Neil research continued

- NJD is more likely to be abnormal with babies who had attachment problems (Statistically significant)
- 100% of babies who had a piston tongue action had used a bottle teat.
- Of those who had used a teat, 13 had piston tongue actions, and 18 had rocker.
- Of those who had **not** used a bottle teat, 0 had piston and 48 had rocker action.
- He prefers the term “suck confusion” rather than nipple confusion.
- He has also seen tongue “clicks” on the ultrasound - possibly due to an air leak.

Dr. Neil research continued

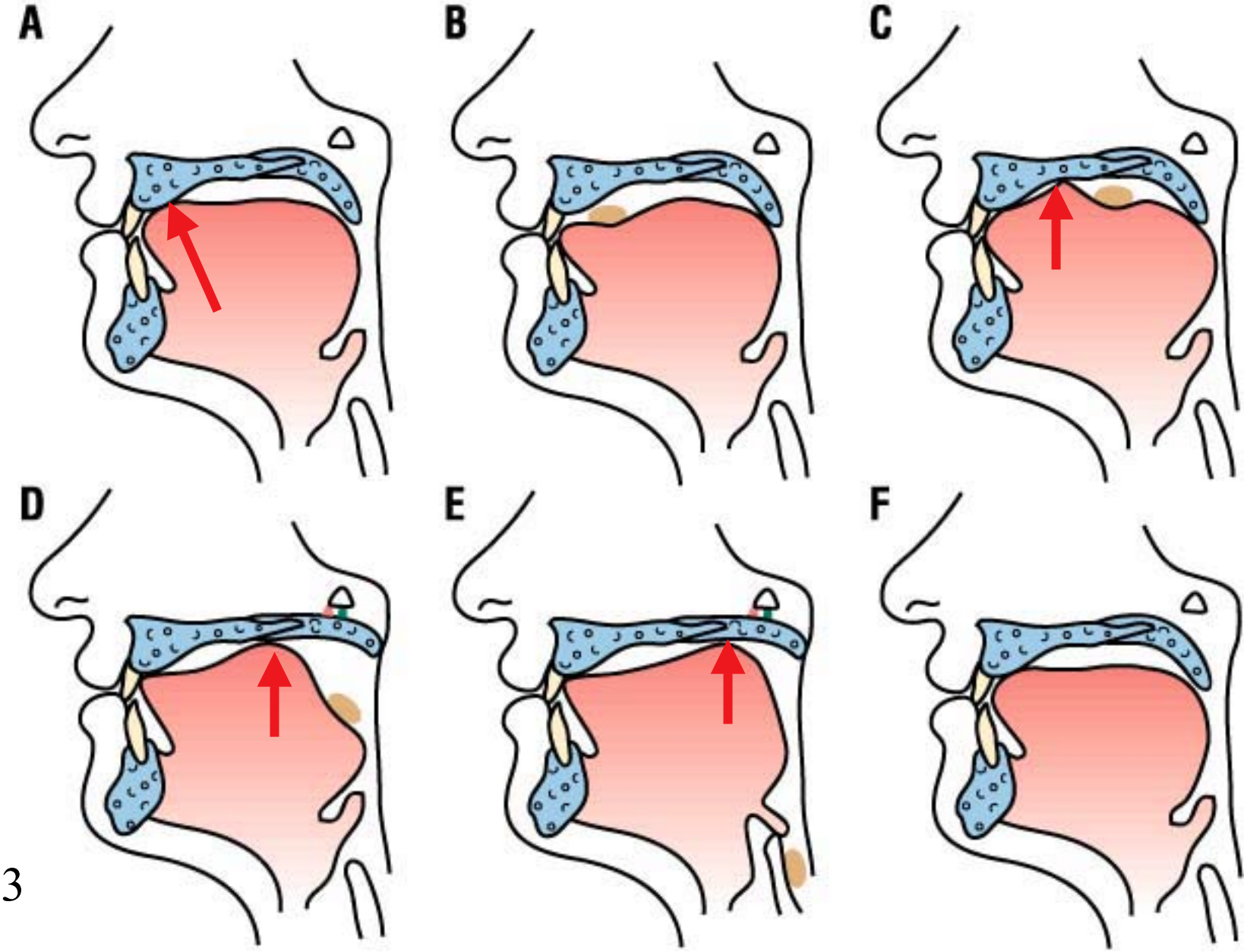
- Action of tongue:
  - 90% of normal action is a peristaltic wave like motion that looks like a “rocker”.
  - 10% of normal swallowers have piston like action (may be tongue-tied).
- If baby had poor attachment or sucking problems, found distance from hard/soft palate junction was greater than 5mm.

Dr. Neil research continued

- KEY FINDING:
  - If there was a "piston like" action of the tongue, 100% of the babies had had a bottle of pacifier.
- PACIFIER USERS:
  - Do not do as well on the breast although some babies are better coordinated and can do better than others.
- SUCTION:
  - There is mild suction during breastfeeding to hold the nipple. Stronger suction is needed to suck milk out of the bottle.

Personal conversation, 1996, plus info from others who attended his presentation at ALCA in 1996.

Adult Swallow



A13

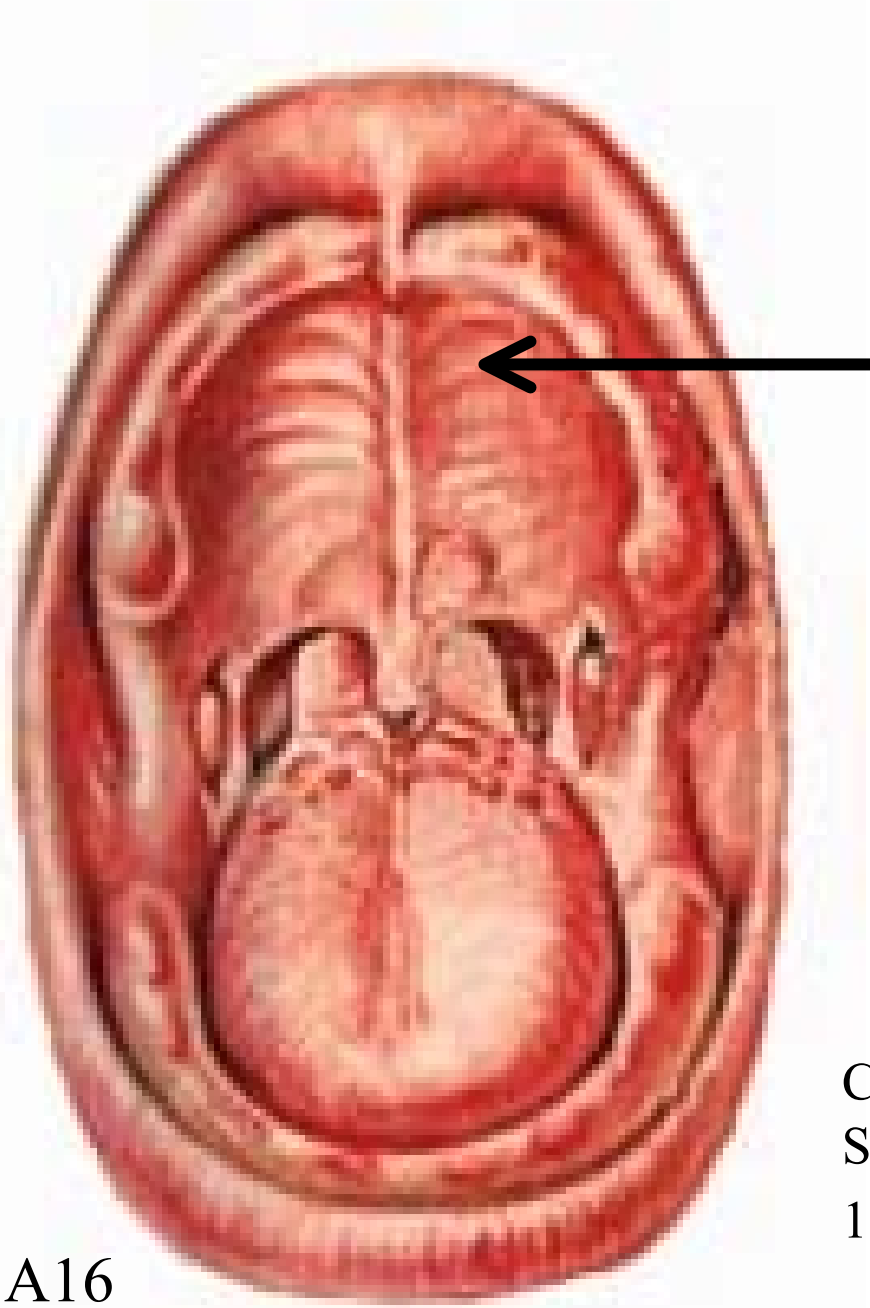
Rugae

- What are they?
- What are they used for?

Rugae / Transverse ridges

"In most mammals, they aid in the grinding of food, but in man they are poorly developed. They are usually optimally developed at birth when the ridges aid the suckling infant in gripping the nipple."

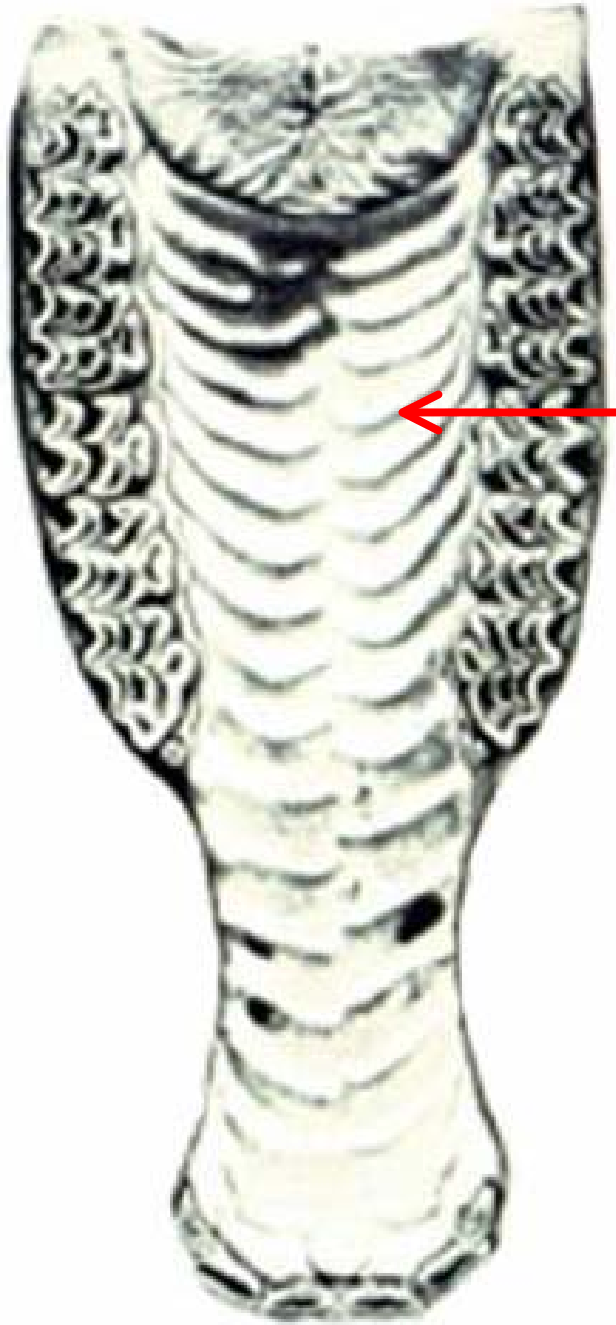
Edmund Crelin, Development of the Upper Respiratory System, Clinical Symposia, CIBA, 1976, Vol. 28, No. 3, p12.



Transverse ridges
or rugae

Crelin ES, Scherz RG, Can the cause of SIDS be this simple? Patient Care, March 15, 1978, Vol 12, No 5:234-241

A16



Transverse ridges of cow's palate.

Palate of a cow. Sisson and Grossman, "The Anatomy of the Domestic Animals, 5th Ed., Saunders.

A17

Adult rugae in area just behind upper front teeth.

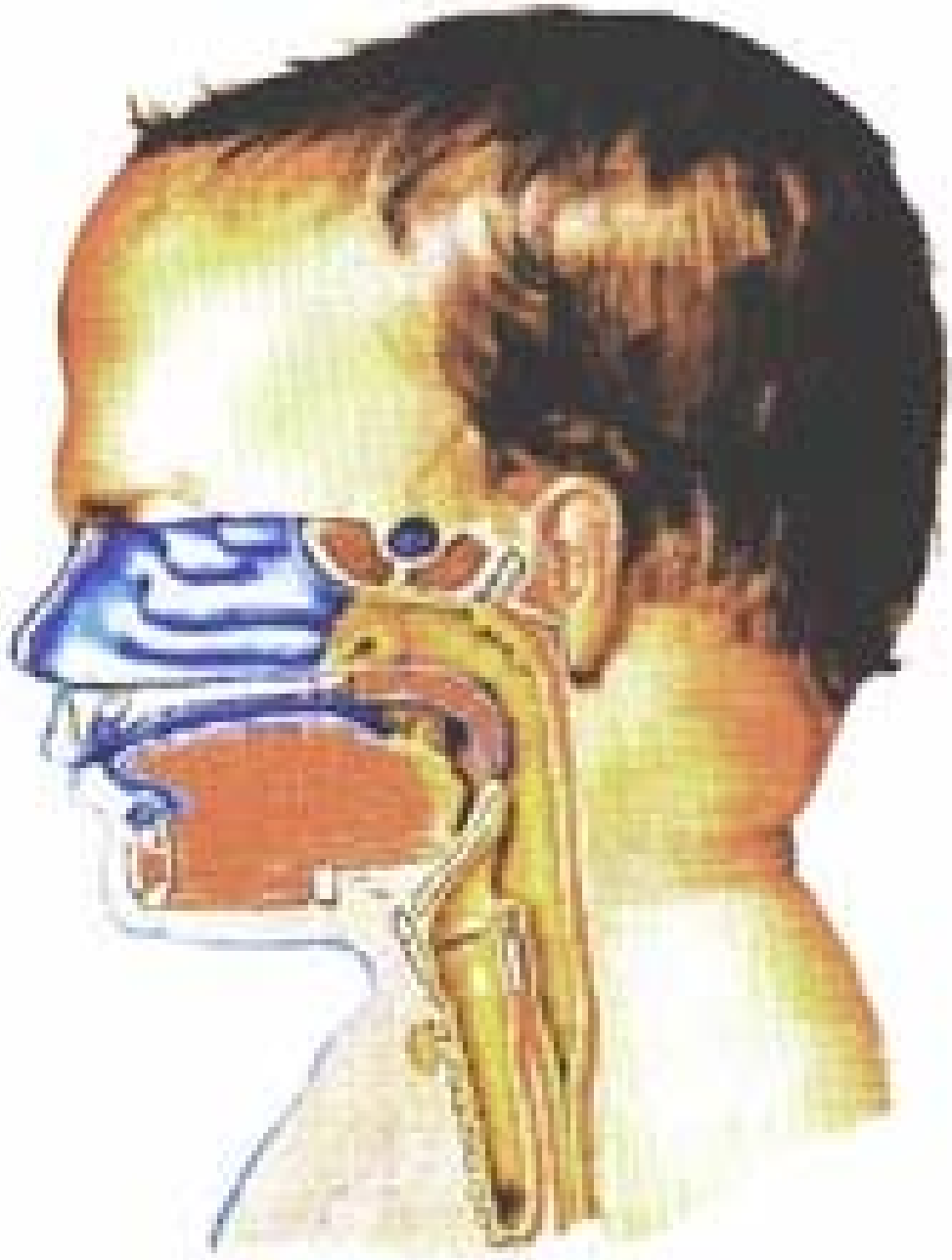
Close up view.

A18

Obligate nose breathing

A19

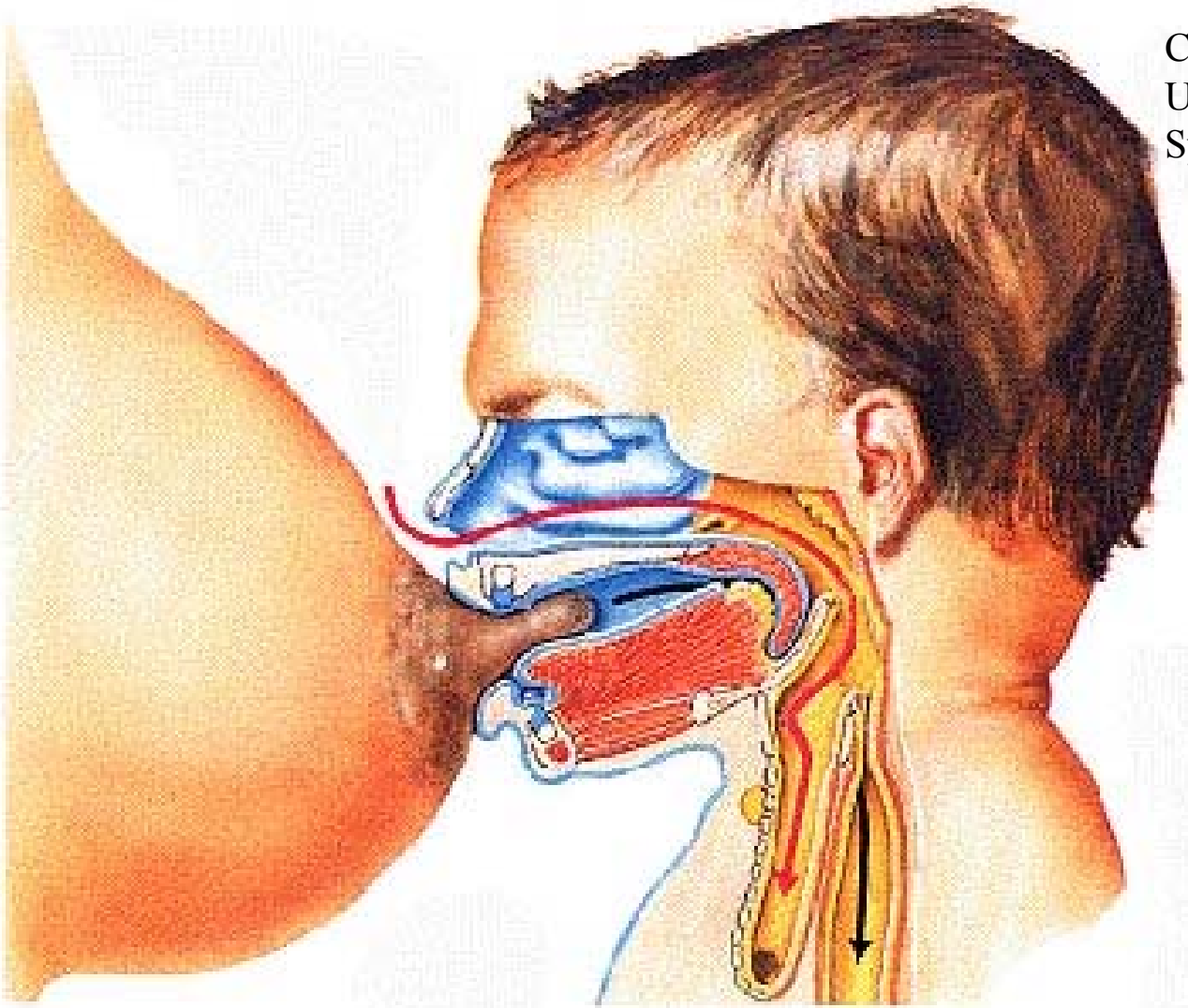
Newborn during quiet respiration with mouth closed.



Note soft palate and epiglottis are touching.

A20

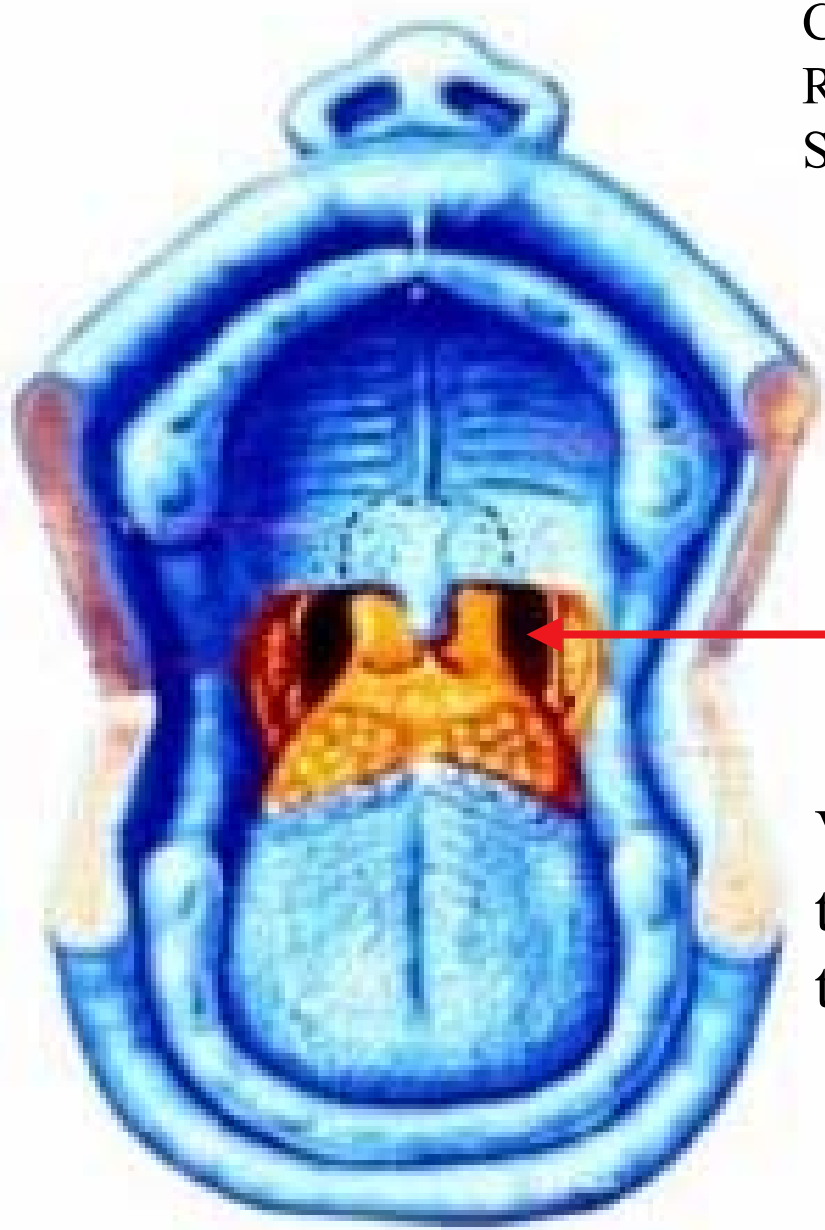
Crelin ES. Development of the Upper Respiratory System, Clinical Symposia, Vol. 28, No. 3, 1976



Crelin ES. Development of the Upper Respiratory System, Clinical Symposia, Vol. 28, No. 3, 1976

During the act of breastfeeding, Dr. Crelin states the larynx can be elevated so that the epiglottis can slide up behind the soft palate to lock the larynx into the nasopharynx. This allows the infant to both swallow and breathe at the same time (Obligate).

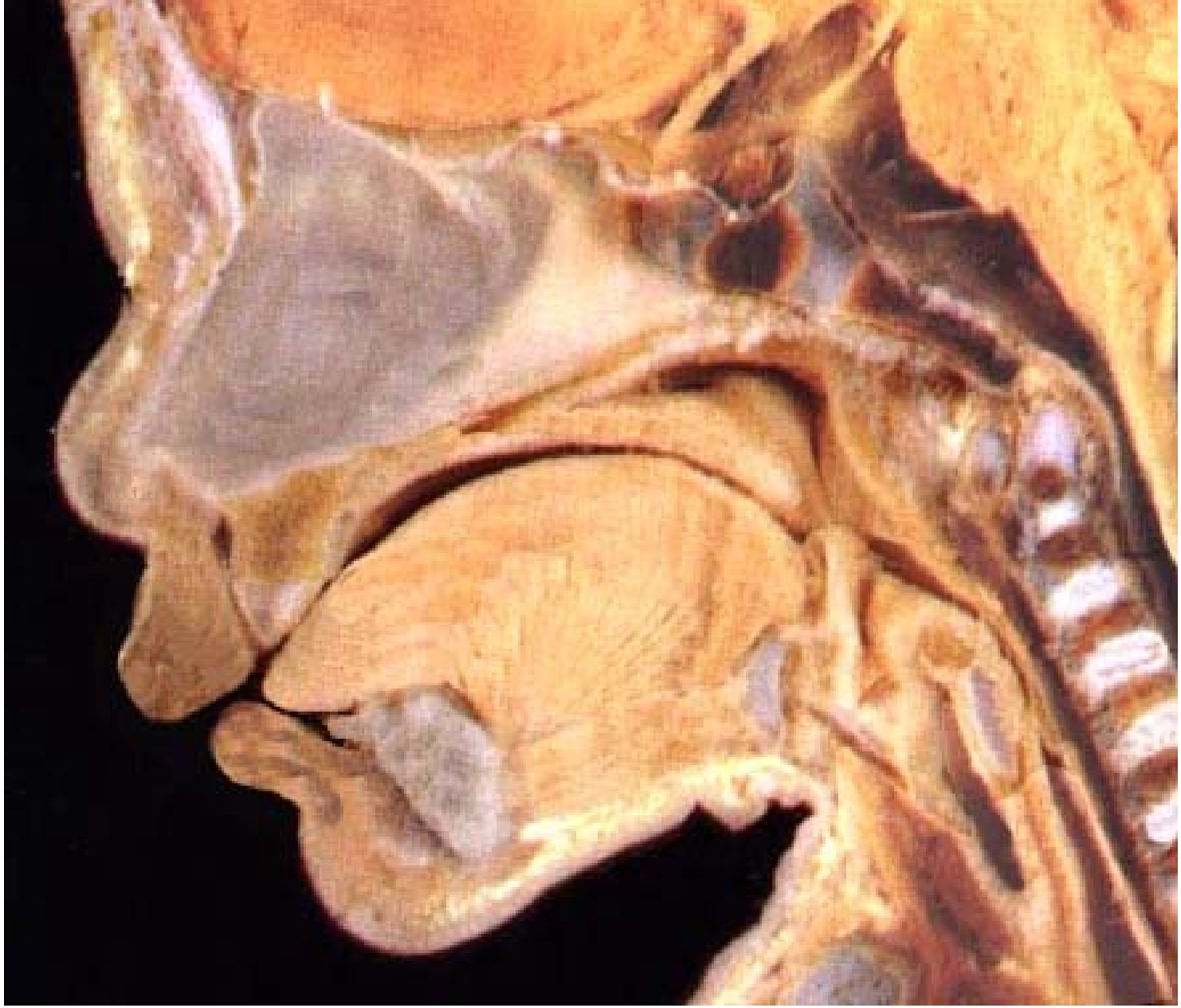
Crelin ES. Development of the Upper Respiratory System, Clinical Symposia, Vol. 28, No. 3, 1976



Faucium channel

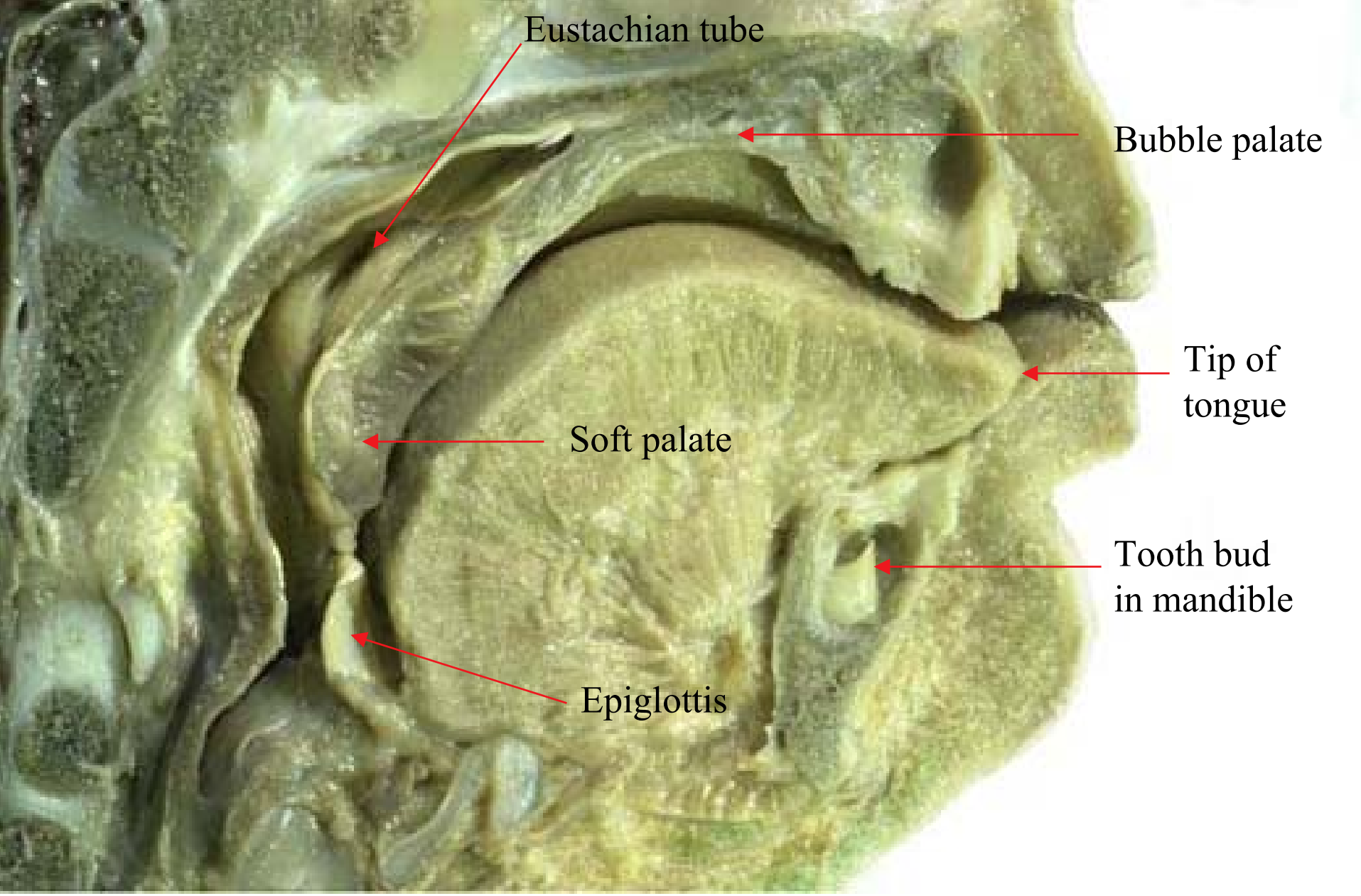
View looking into the mouth to illustrate the interlocking of the soft palate and epiglottis.

A22

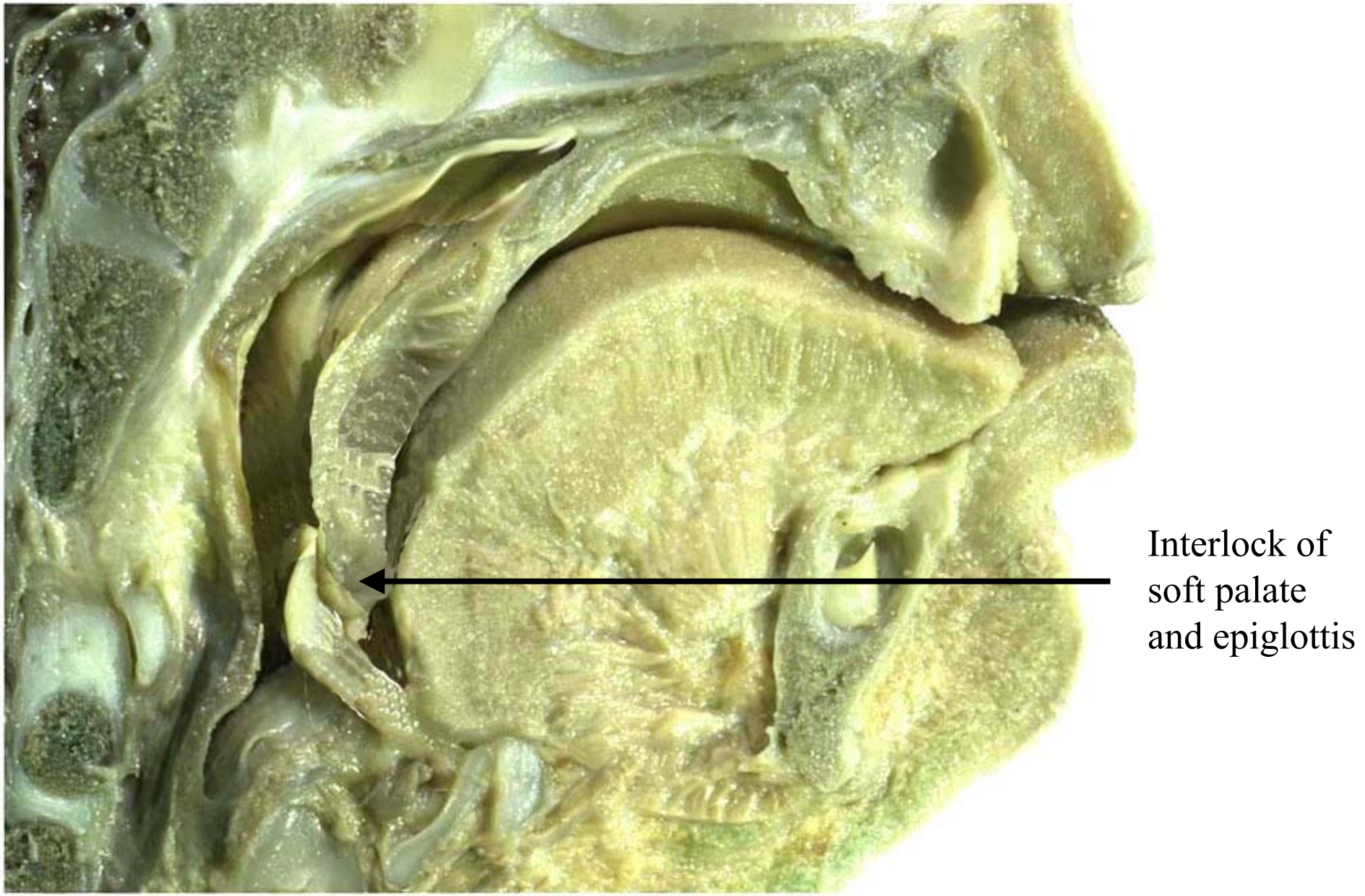


Atlas picture demonstrating similar relationship of epiglottis and soft palate. (Rohen/Yokocki)

A23

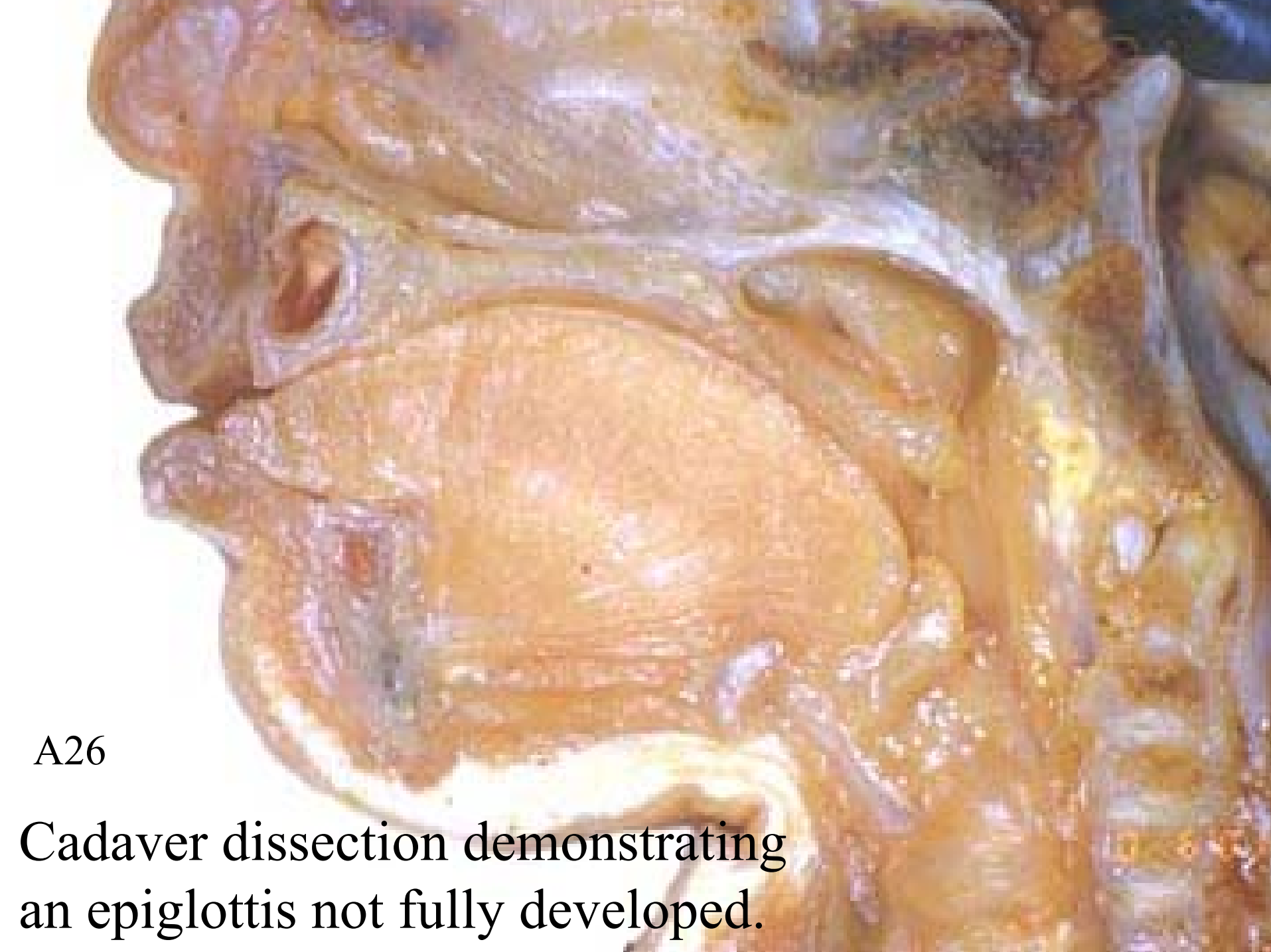


A24 Cadaver dissection demonstrating habitual tongue posture and relationship between the soft palate and epiglottis.



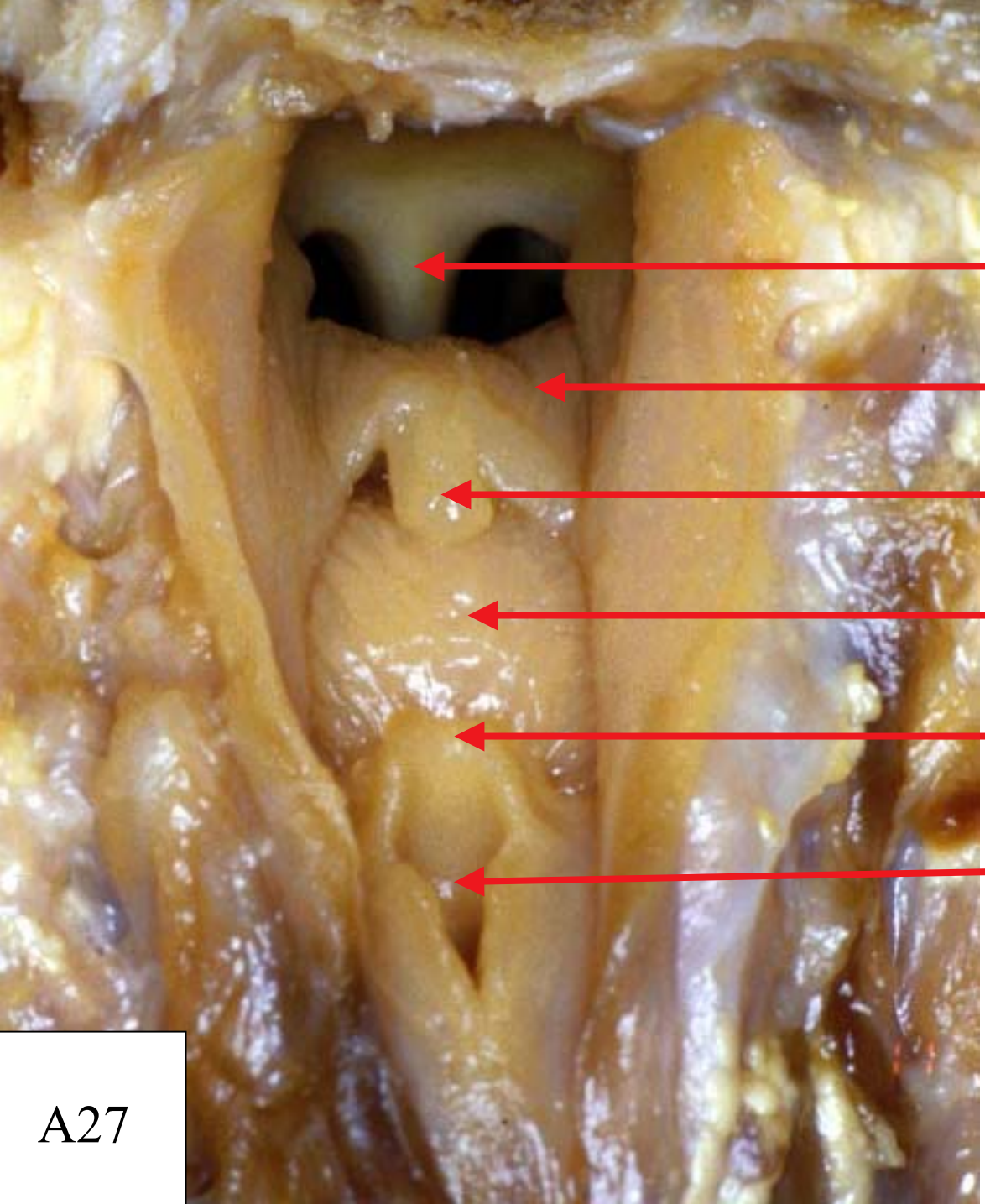
Previous picture altered to demonstrate interlocking of soft palate and epiglottis during breastfeeding.

A25



A26

Cadaver dissection demonstrating an epiglottis not fully developed.



Interior dissection of the pharynx from behind.

Nasal septum

Soft palate

Uvula

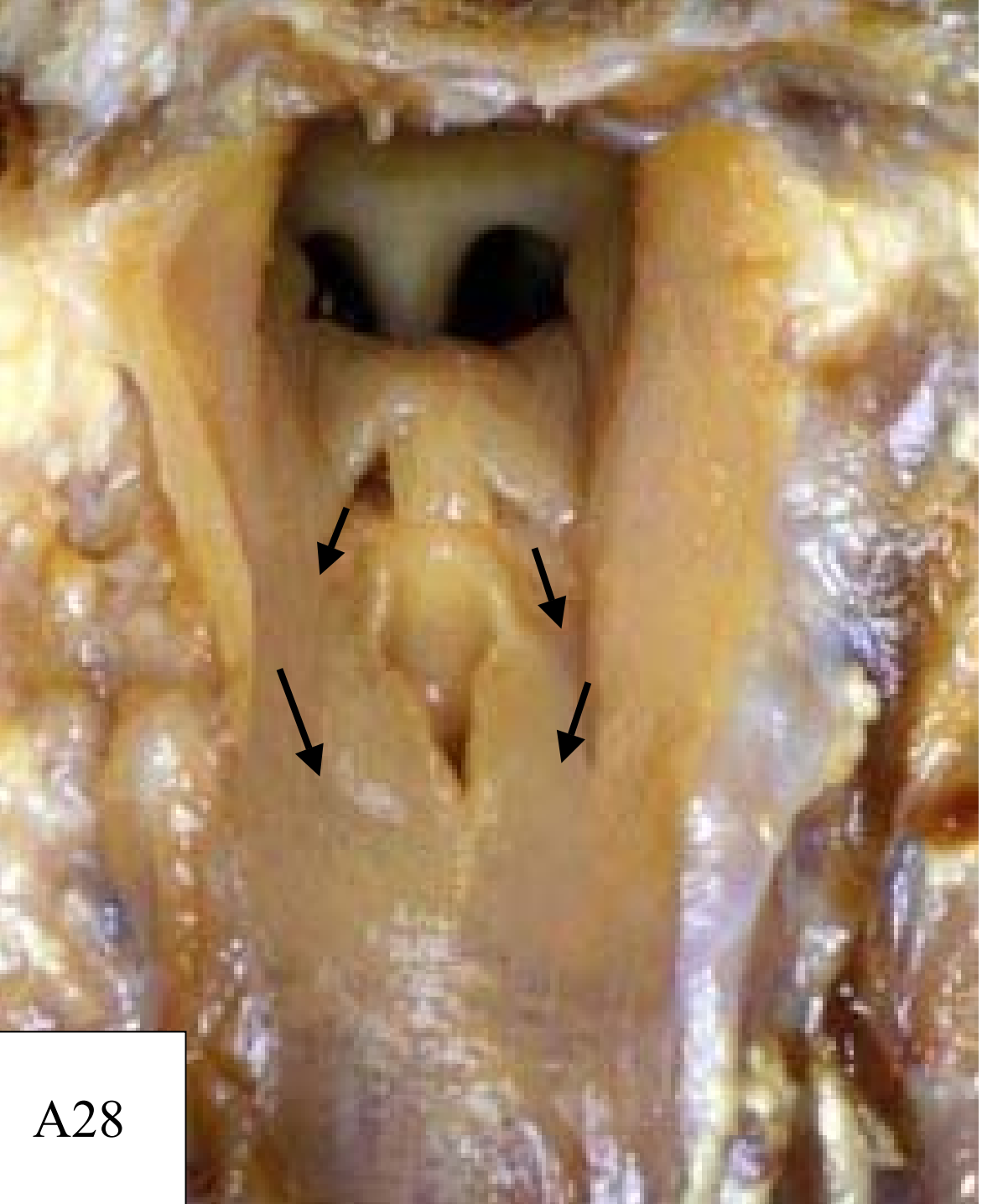
Tongue

Epiglottis

Inlet to larynx

A27

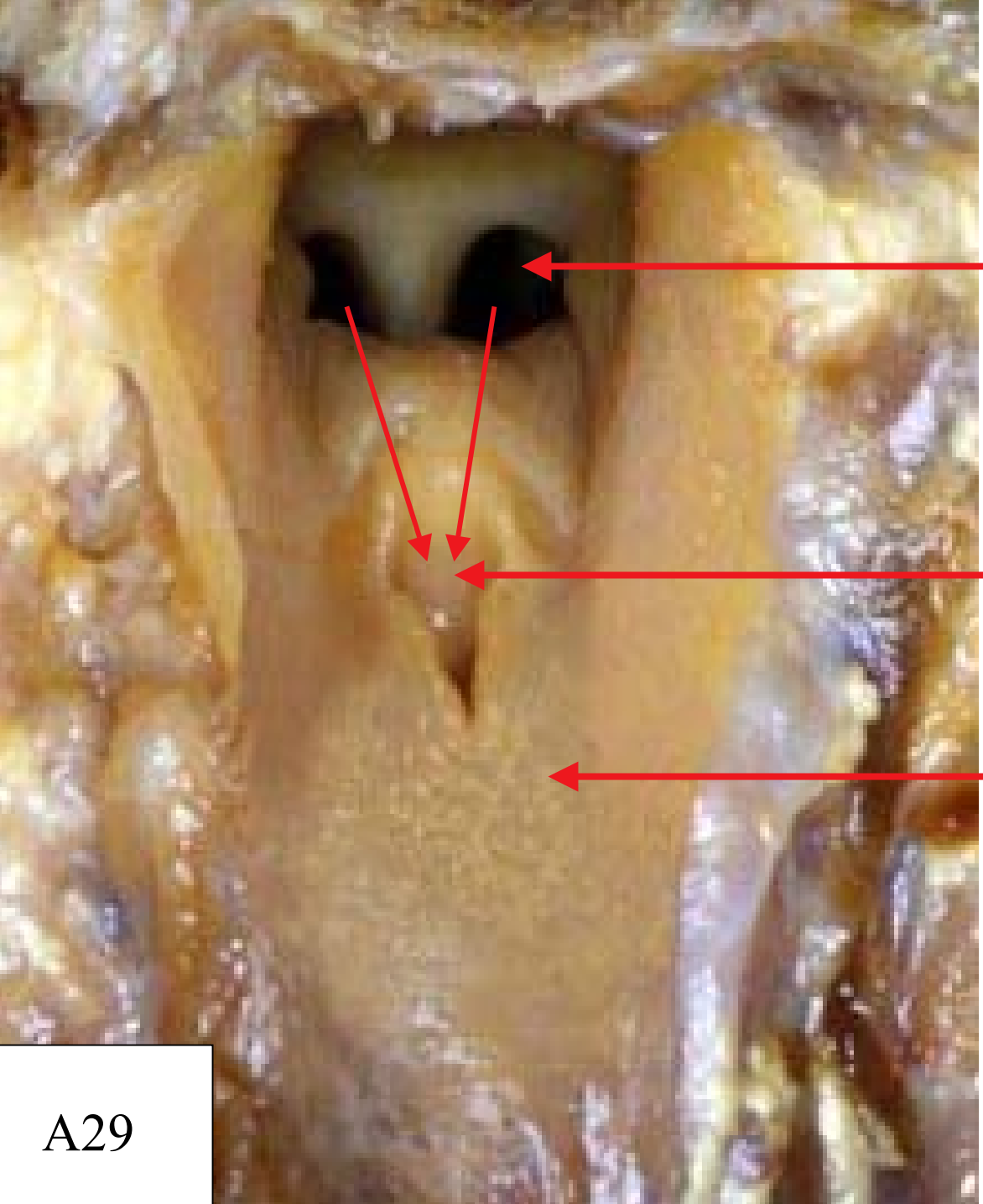
Dissection of twin of previous picture.



A28

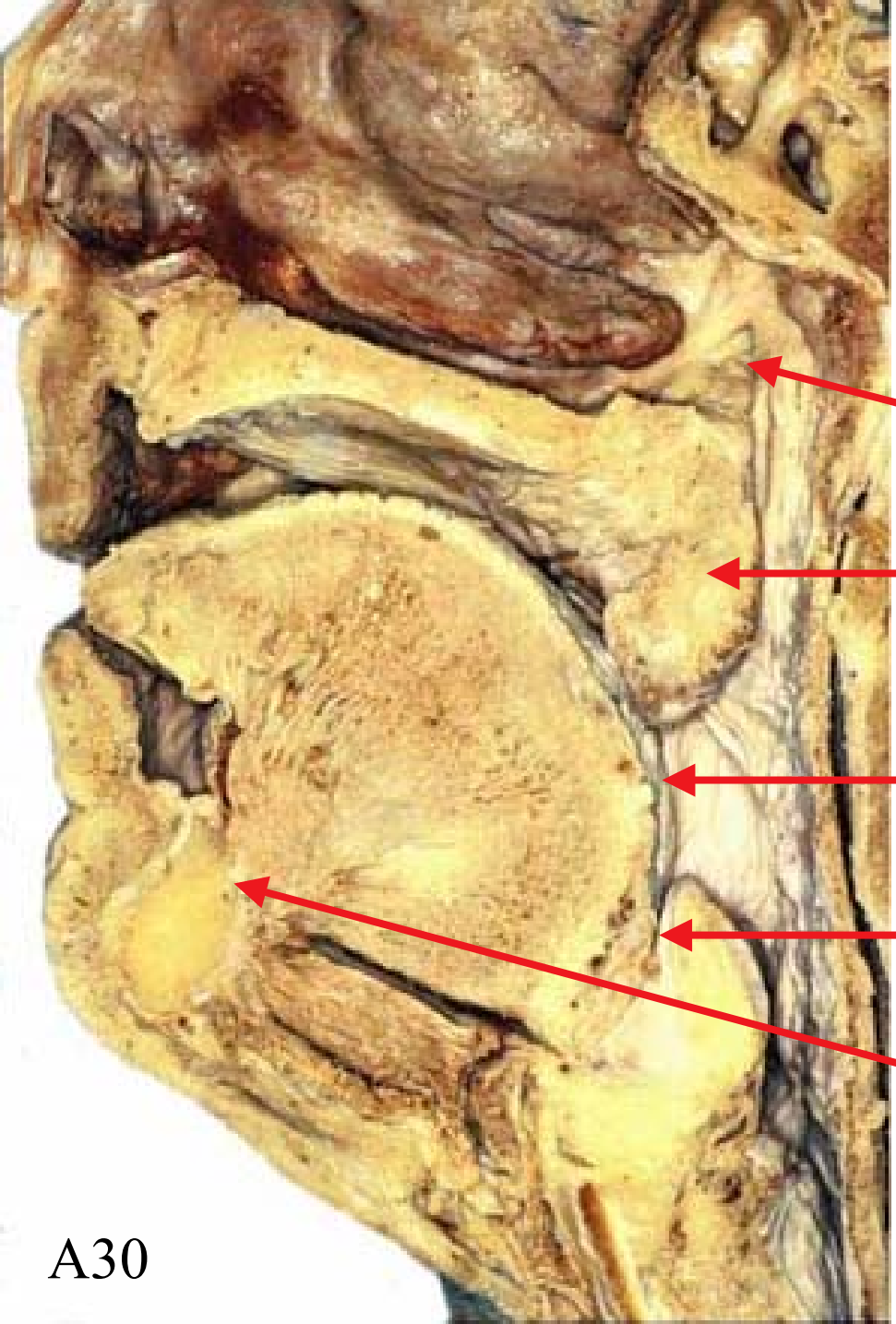
This is the previous picture that has been altered to demonstrate how interlocking of soft palate and epiglottis would occur and how fluid passes though faucium channels and around the epiglottis.

(Epiglottis was elevated using Photoshop)



Picture altered by elevating epiglottis even more to show direct link between nasal cavity and inlet to larynx.

A29



Soft palate and epiglottis never touch in adult humans.

Auditory canal / Eustachian tube

Soft palate

Posterior 1/3 of tongue is now anterior wall of oropharynx

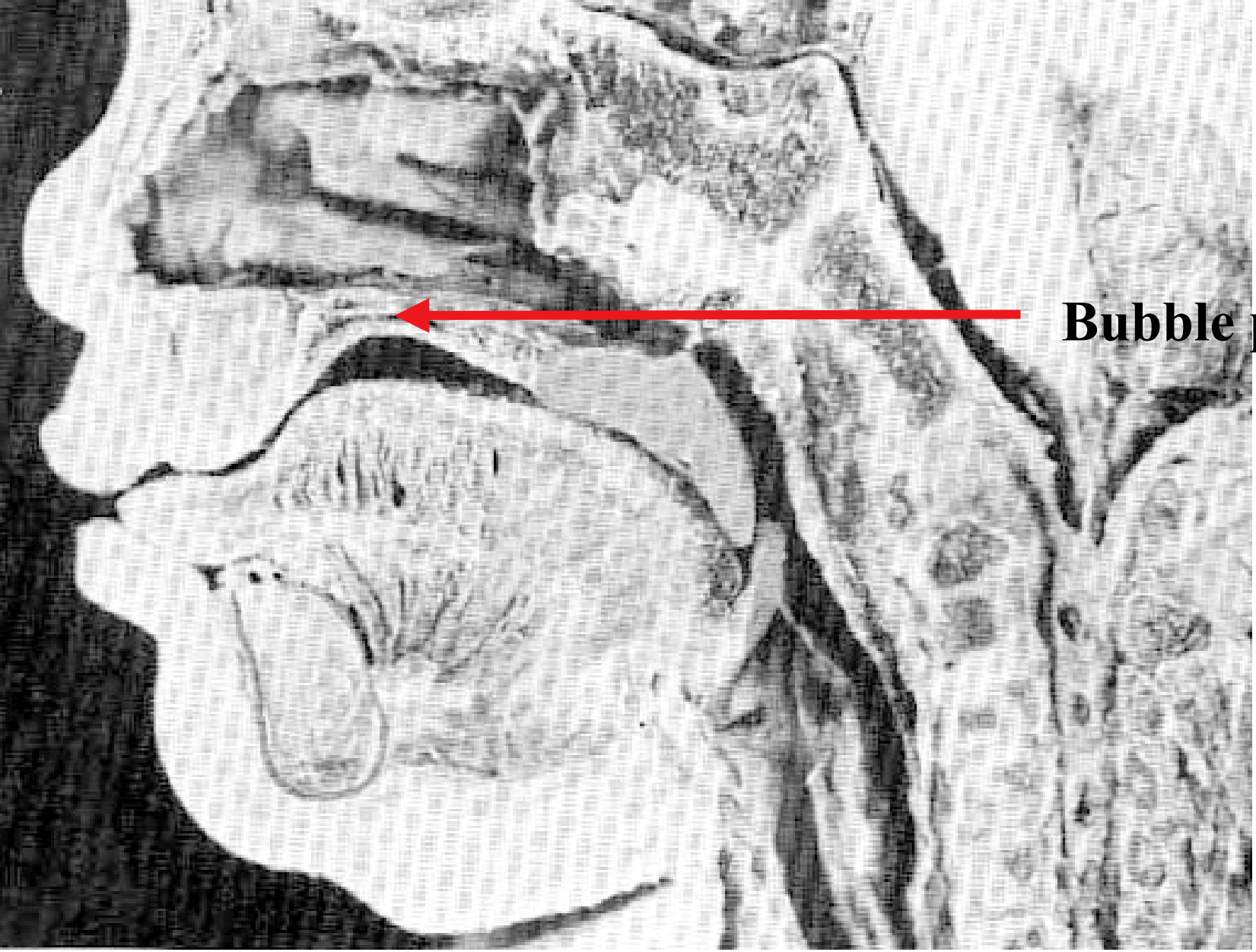
Neck of epiglottis

Insertion of tongue on lingual aspect of the mandible.

A30

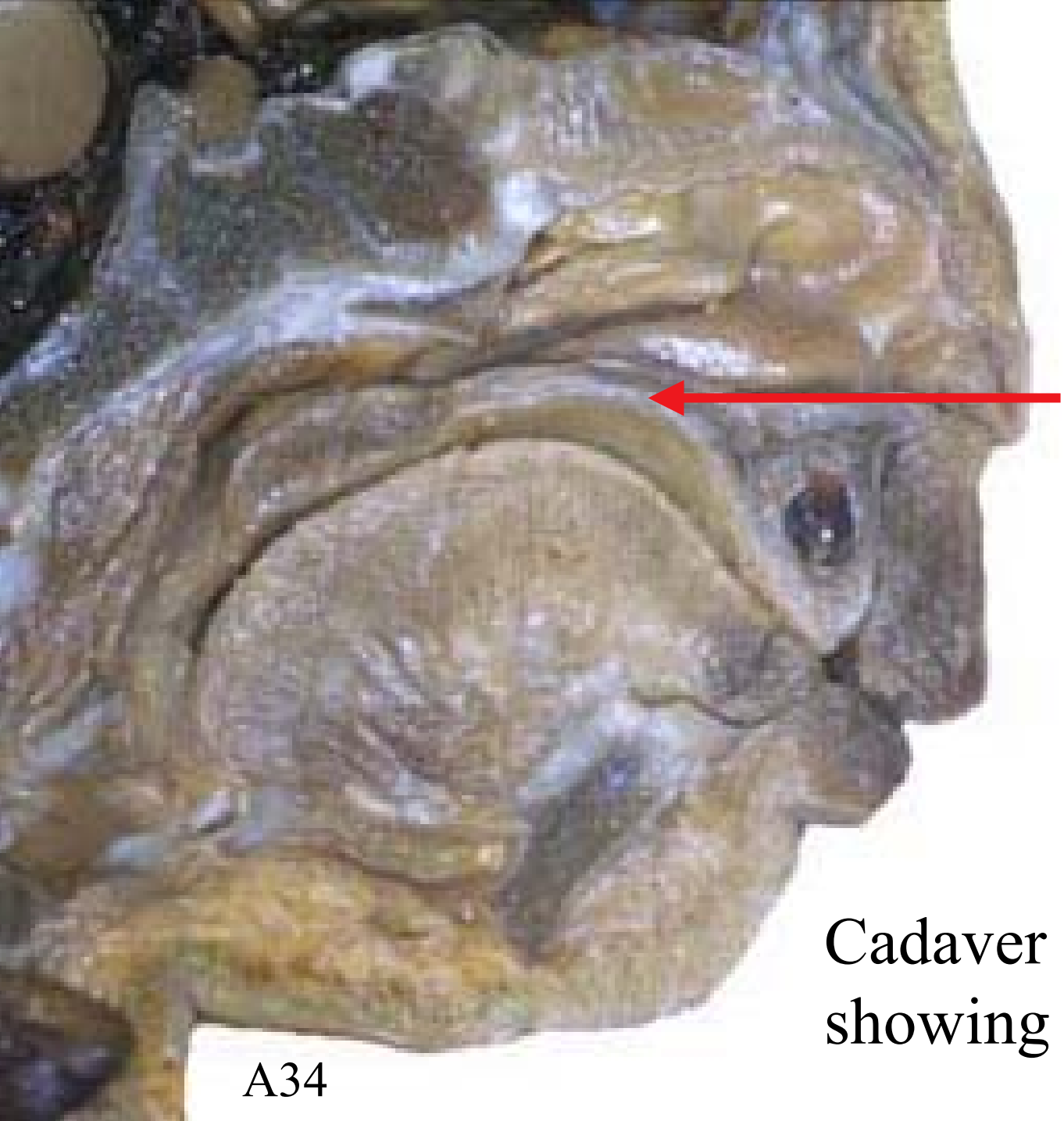
Bubble Palates

- What are they?
- Do they interfere with breastfeeding?



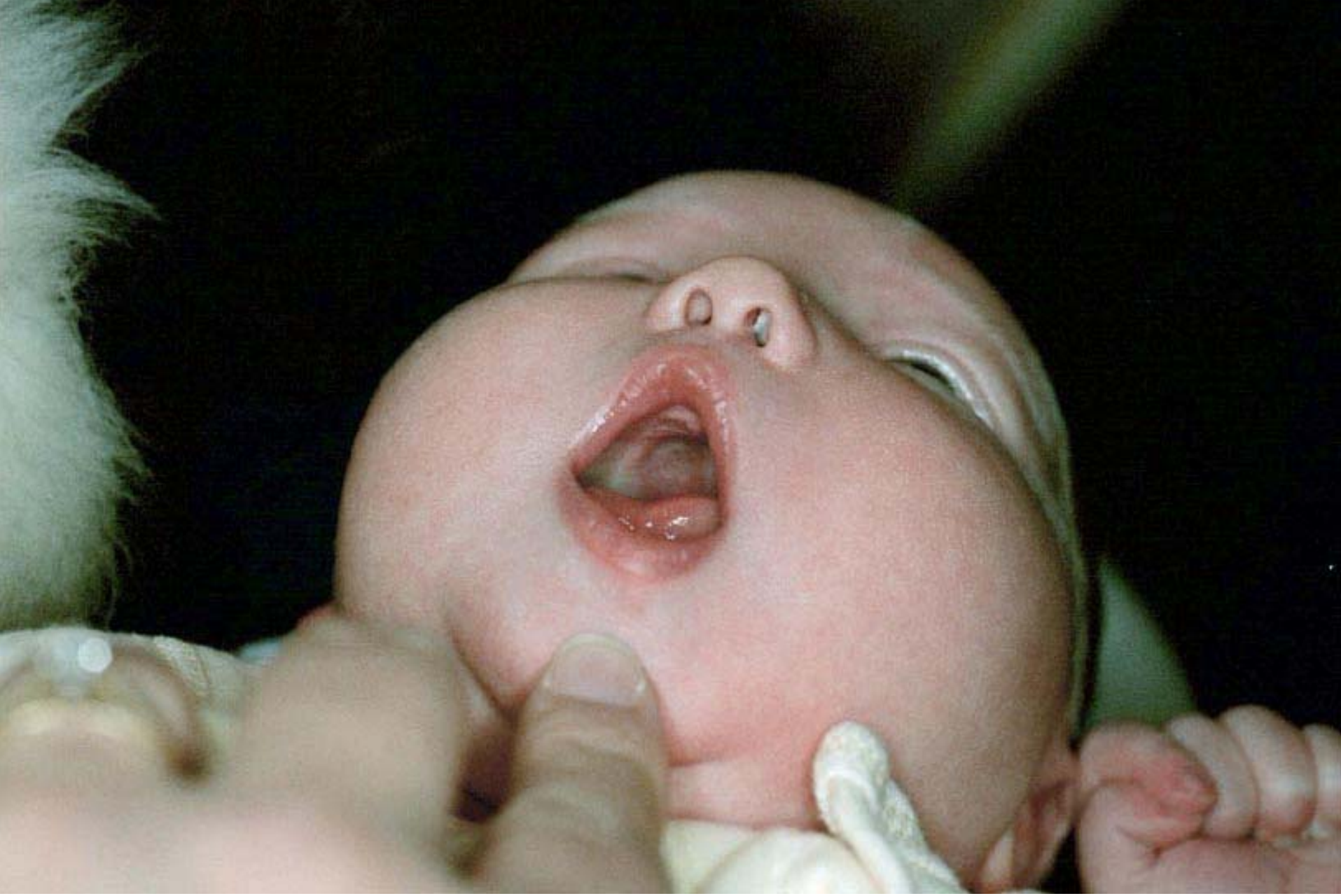
A32 Bubble palate in Dr.Crelin illustration.

A33 Cadaver dissection with bubble palate.



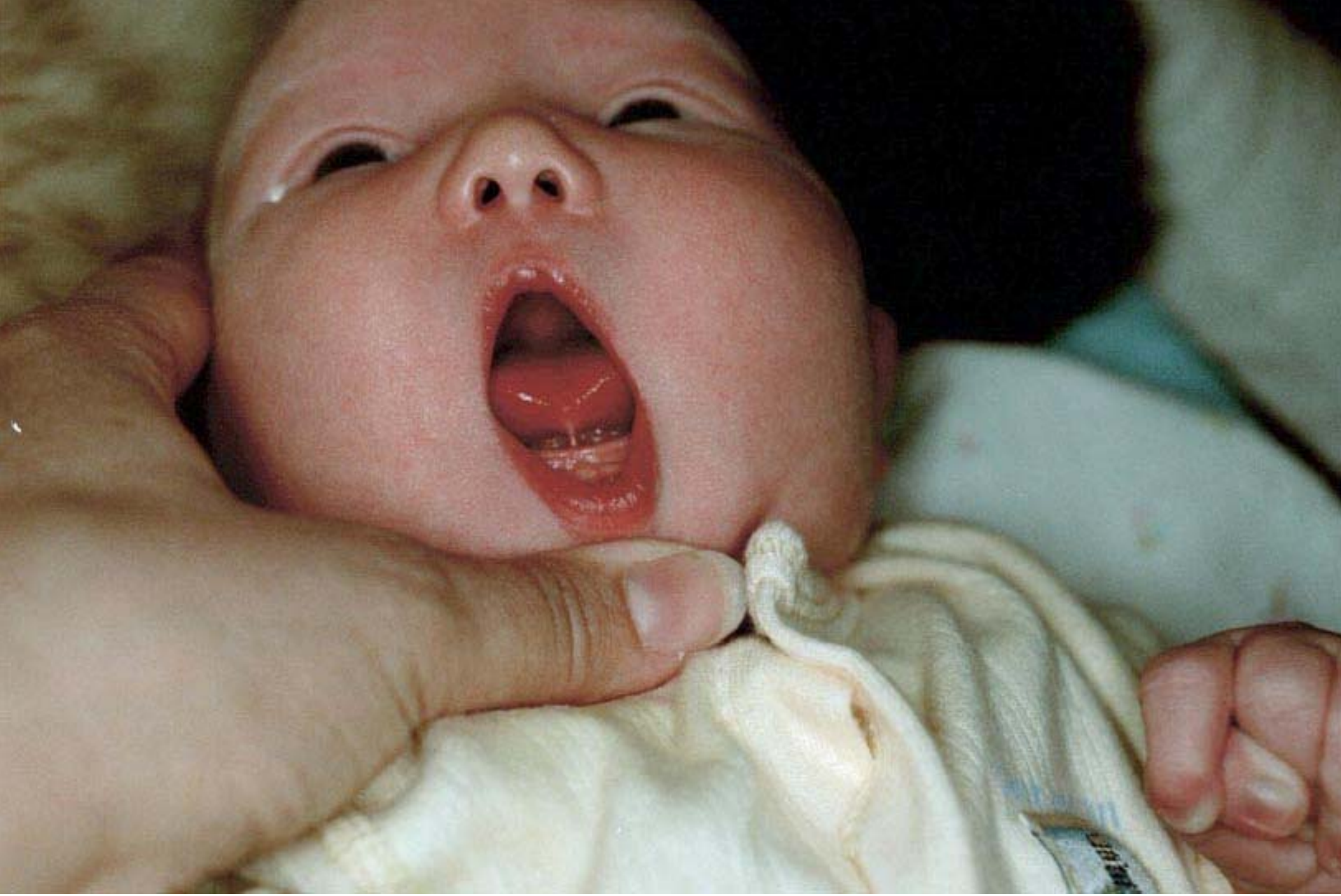
Cadaver dissection showing bubble palate.

A34

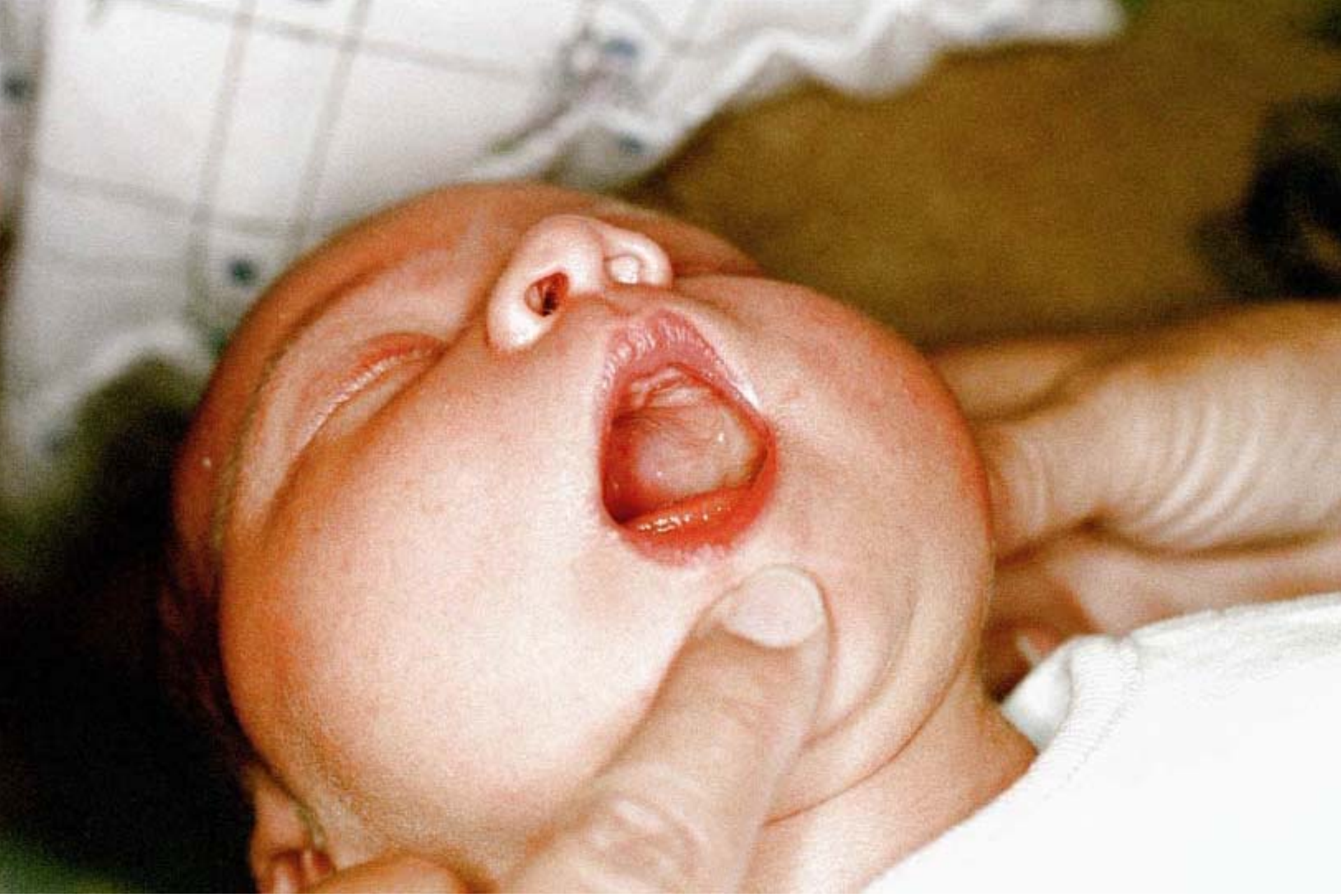


A35

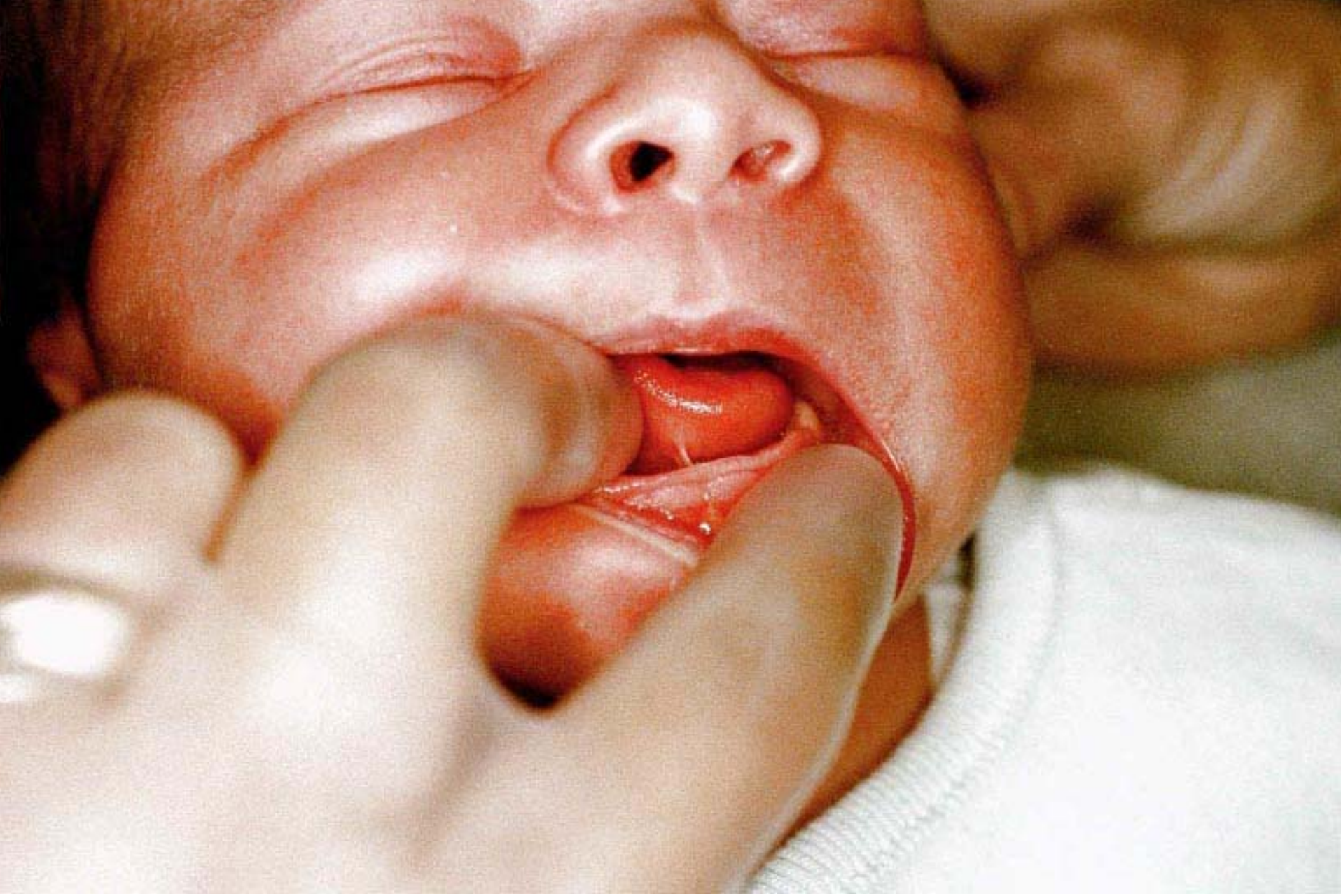
Baby 1: Bubble palate (Genna)



A36 Baby 1: Tongue-tied (Genna)



A37 Baby 2: Bubble palate (Genna)



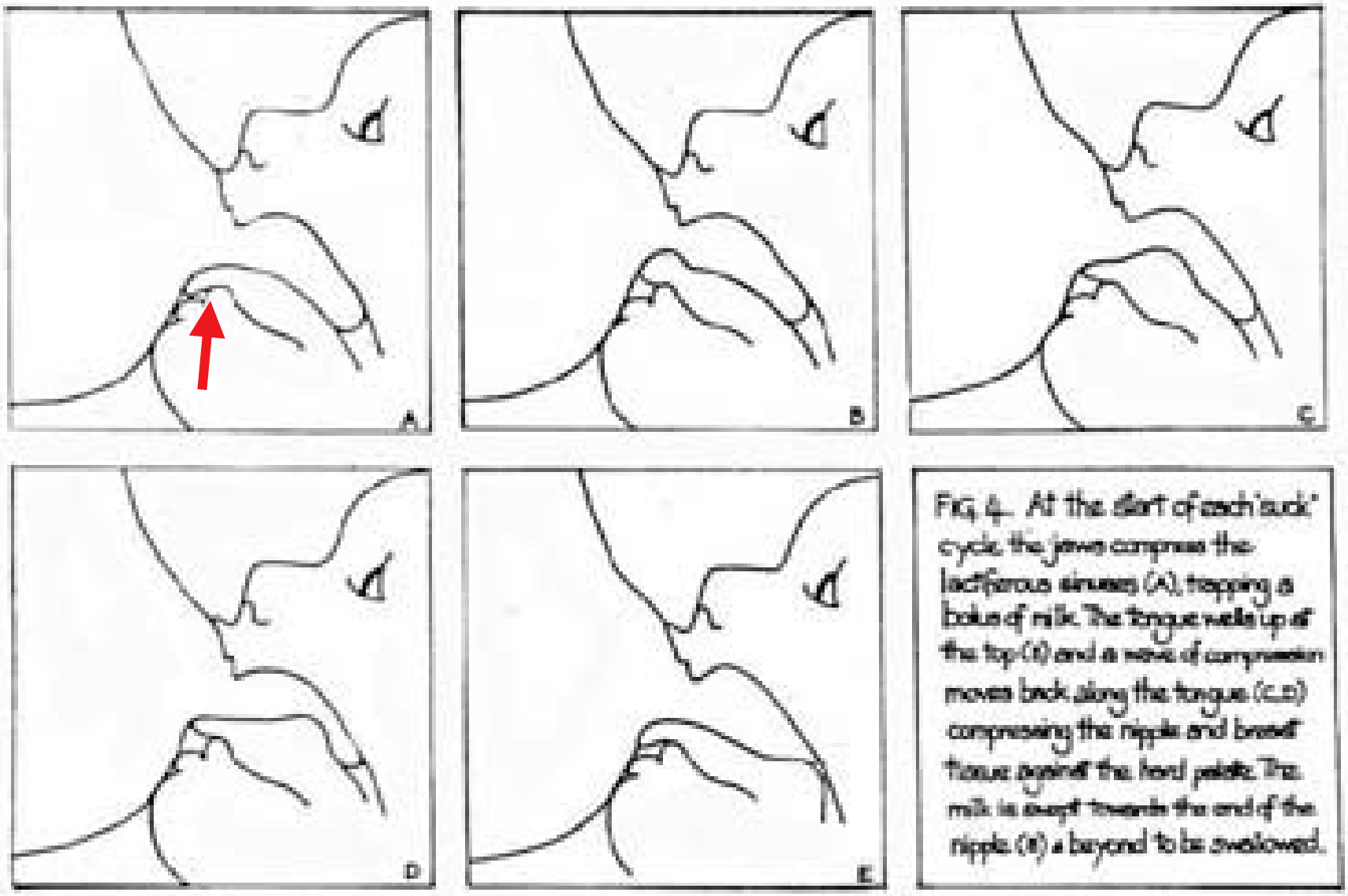
A38

Baby 2 - Tongue-tied (Genna)

Why tight frenums can cause breastfeeding challenges.

Ankyloglossia and Breastfeeding

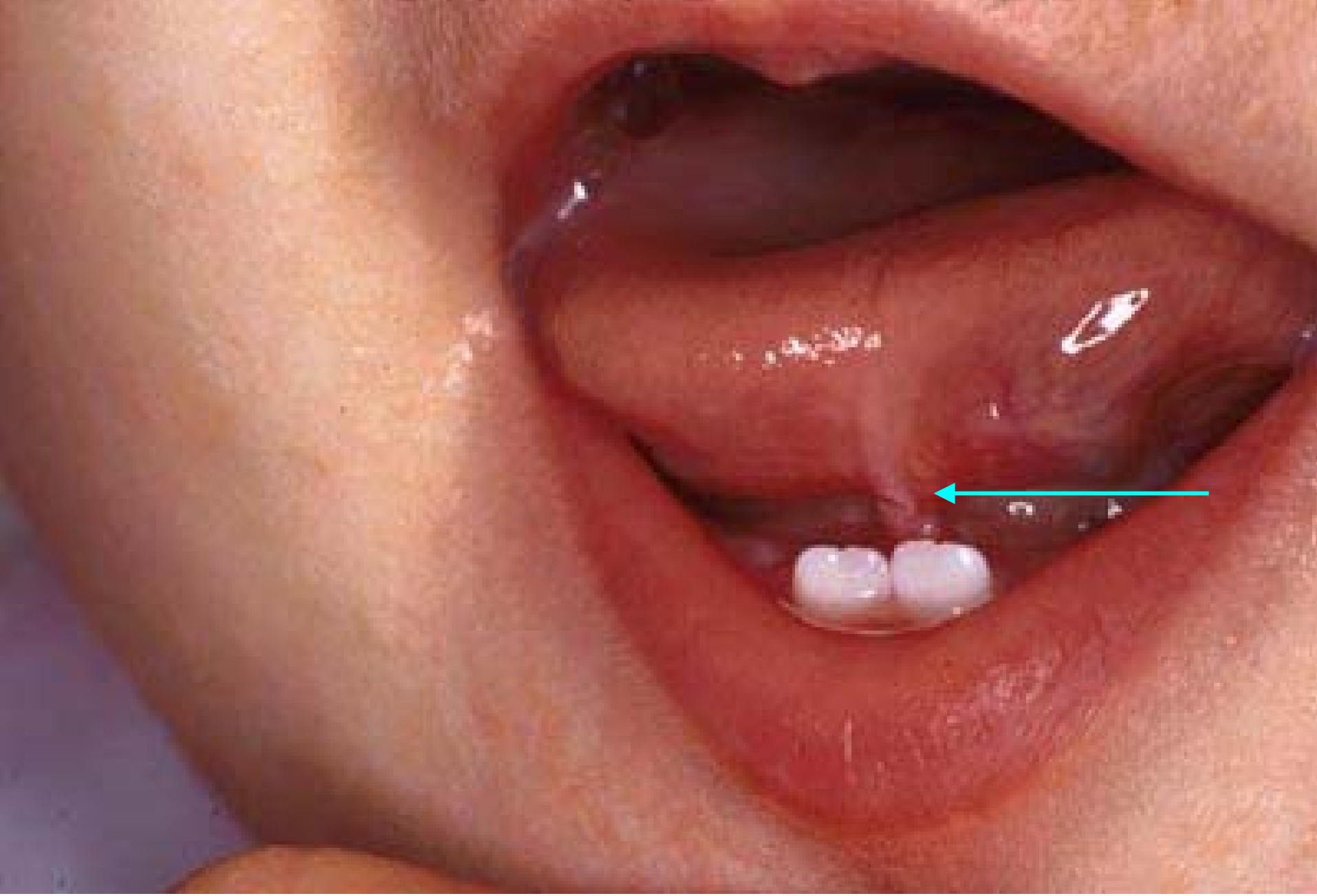
- Nipple trauma and pain
  - Compression against gum pad instead of tongue
- Inefficient, inadequate suckling, poor seal.
- Limited action of tongue /poor wave motion.
- Lengthy feedings.
- Failure to thrive.
- Often switched to bottle.



A41 If tongue cannot extend past the bony gum pad (mandible), trauma to breast can occur.

A42

3 month old who was weaned because of breastfeeding difficulties.



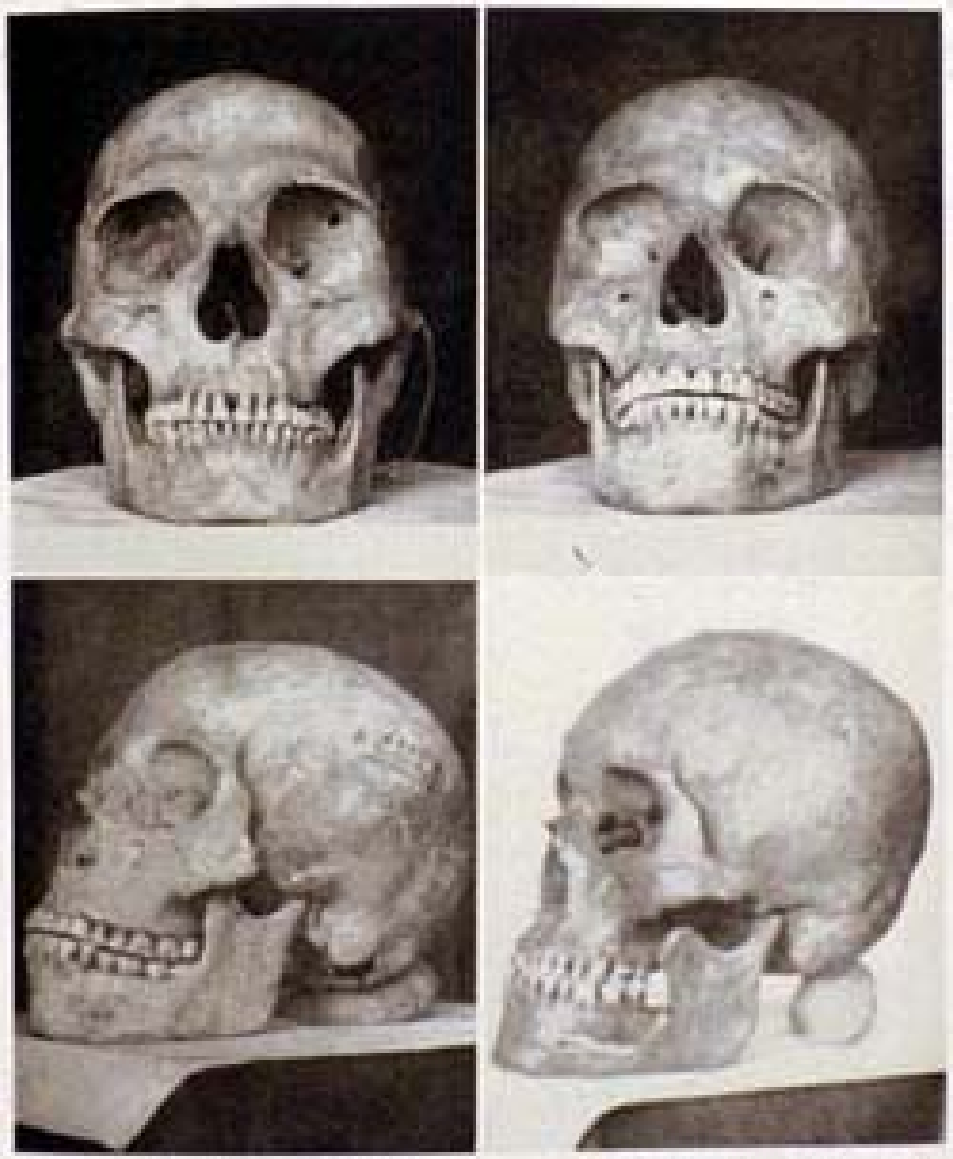
A43 Age 4 months - Note lesion on frenum caused by teeth.

A44 Age 4 - Tight frenum - note pull on inside of lower jaw.

A45 Tongue thrust due to being tongue-tied.

Facial form and dental occlusion prior to bottles and pacifiers.

Modern is not always better!



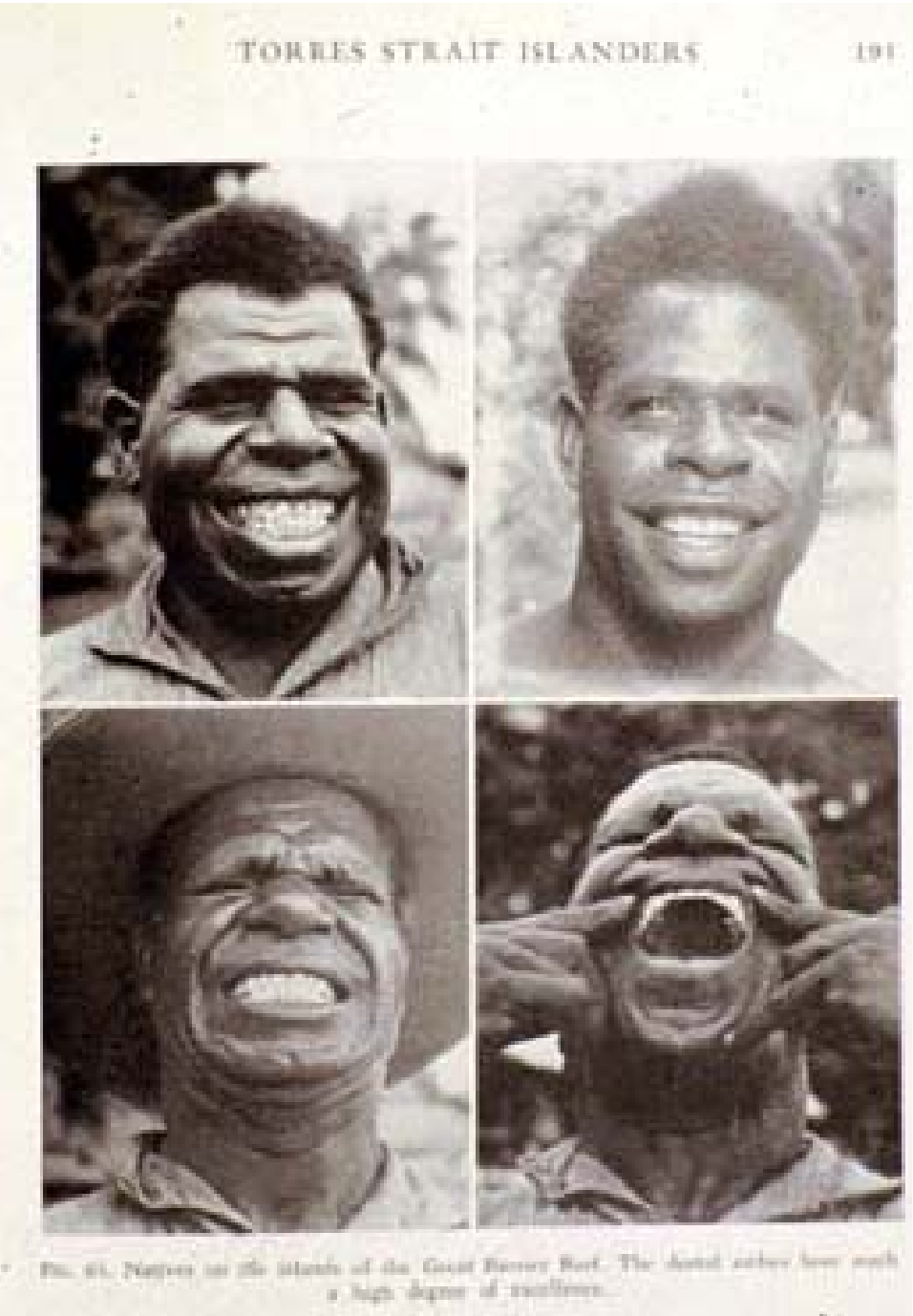
Indian skulls studied by Dr. Weston A. Price. Each skull has nice occlusion and no decay.

Nutrition and Physical Degeneration, 6th Ed., Keats Publishing, 1997.

A47

Peruvians studied by Dr. Weston A. Price showing off their smiles. Note nice "U" shaped arches and no decay.

Nutrition and Physical Degeneration, 6th Ed., Keats Publishing, 1997.



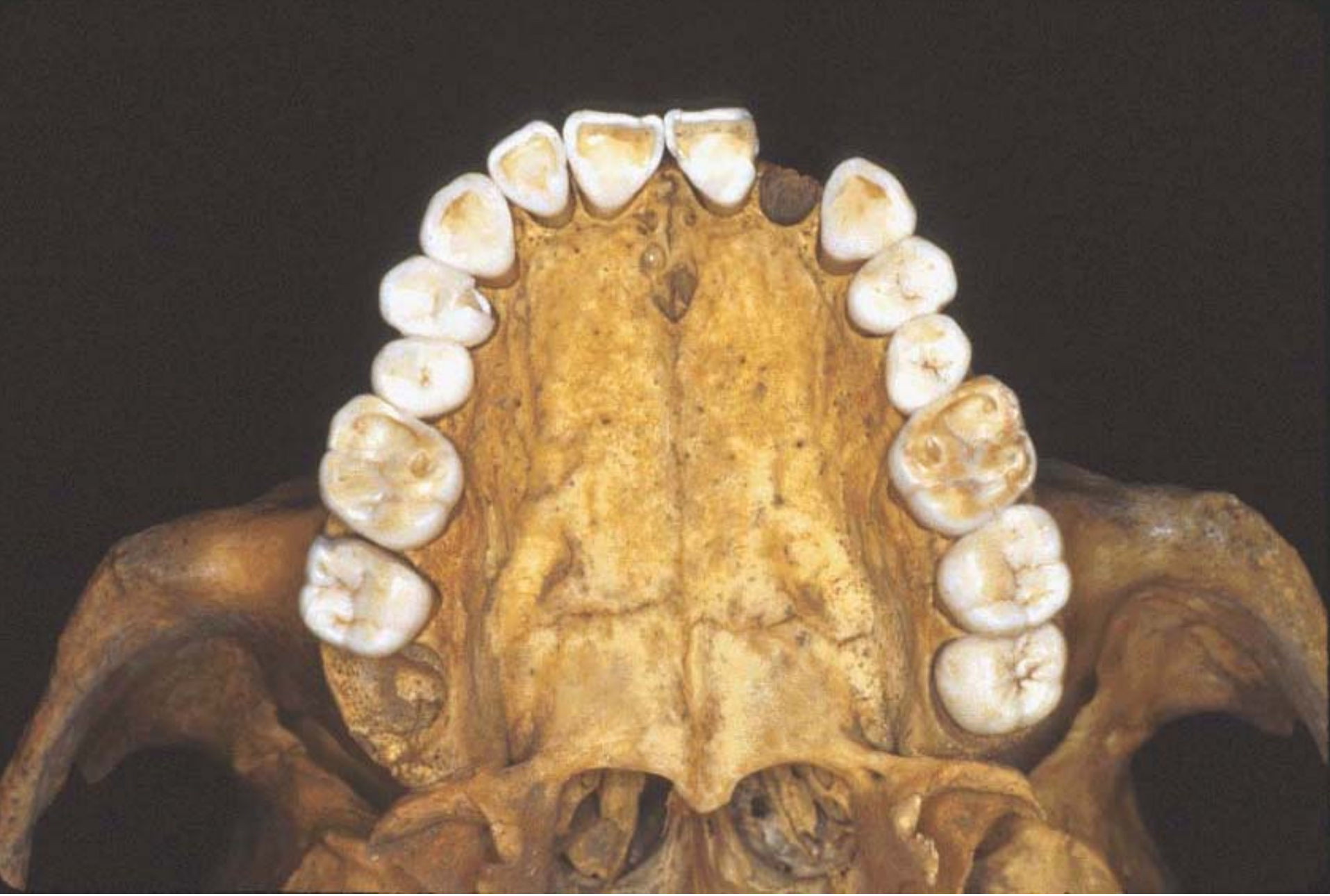
Torres Strait natives studied by Weston A. Price showing off their beautiful smiles and teeth.

Nutrition and Physical Degeneration, 6th Ed., Keats Publishing, 1997.

A49

Prehistoric Native American skull evaluated at the Smithsonian.

A50



A51 Full “U” shaped palate of previous skull. No decay.

A52 Prehistoric Native American Indian skull from South Dakota

Ideal facial form and occlusion of a prehistoric skull at the Smithsonian.

A53

A54 Close up of teeth of previous skull. Perfect occlusion and no decay.

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

A55

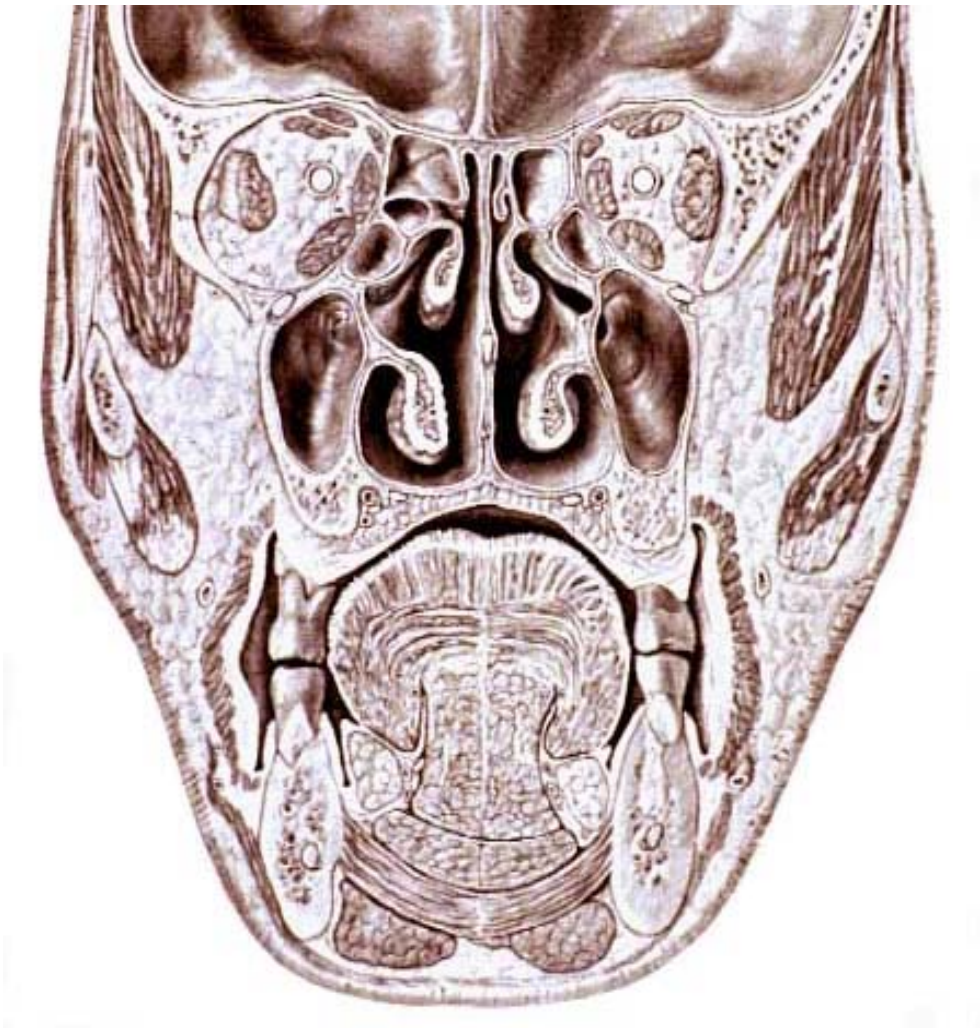
Prehistoric adult mandible with nice arch form and no decay.

A57 70,000 year old AMUD skull with nice occlusion and no decay.

Bottle feeding

Pacifiers

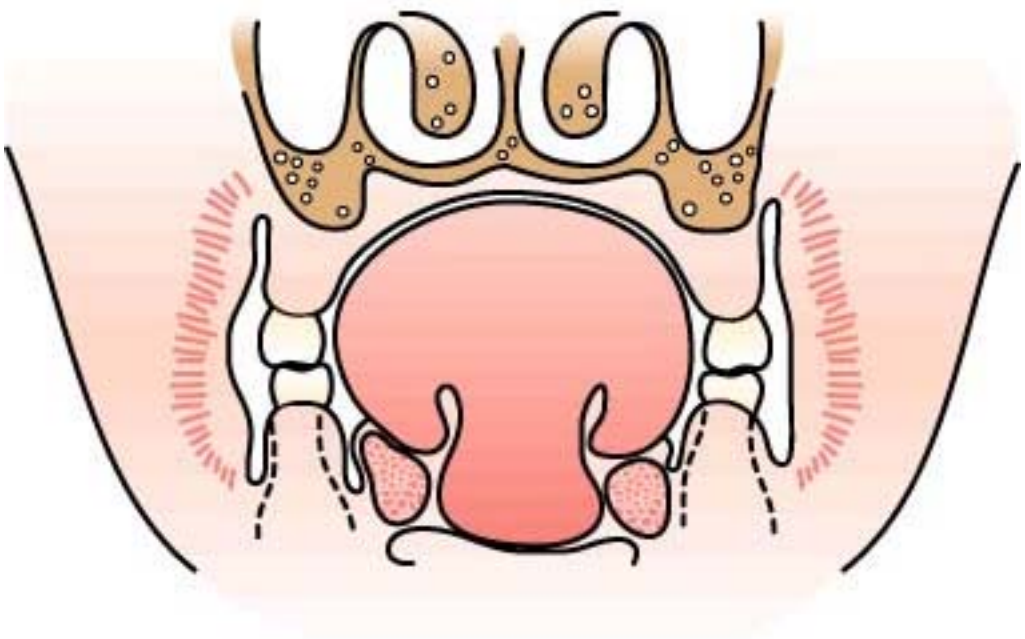
Infant habits



Tongue / teeth / cheeks are at rest in a “neutral” position. There are no abnormal forces within the mouth. This allows for the proper alignment of the teeth and dental arches.

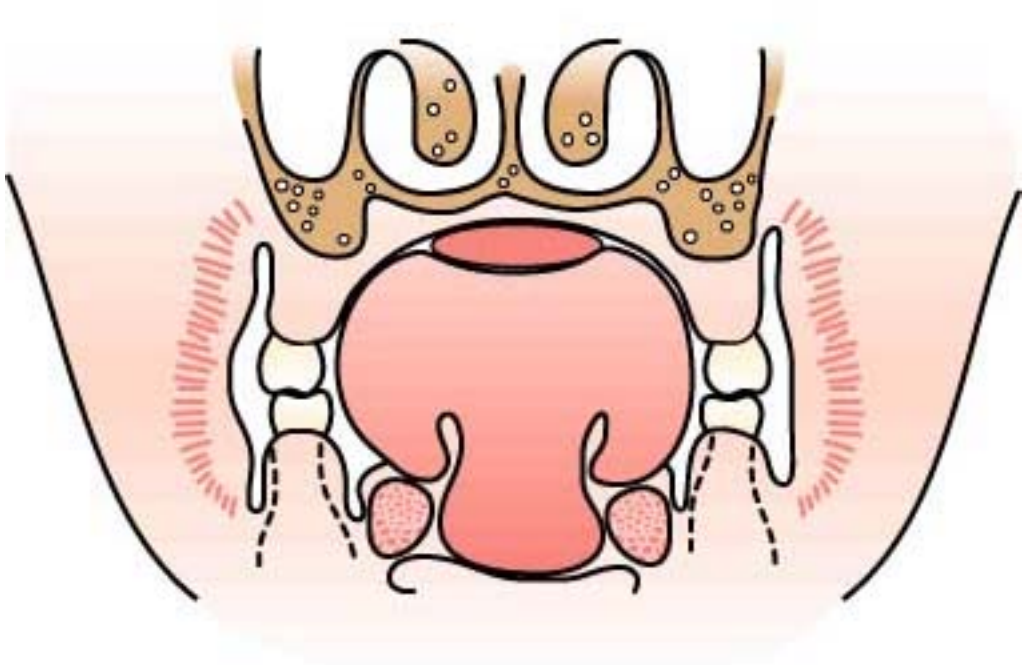
This also allows for normal face development. Will discuss in following presentation on “long face syndrome”.

Tongue at Rest



While at rest, the tongue does not exert abnormal forces on any of the structures within the oral cavity. The teeth remain in a stable position because they are in a "neutral zone" between the tongue and cheeks.

Tongue Position While Breastfeeding



During breastfeeding, the breast (breast/nipple) adapts to the shape of the mouth. The peristaltic motion of the tongue during breastfeeding, presses the breast up against the palate.

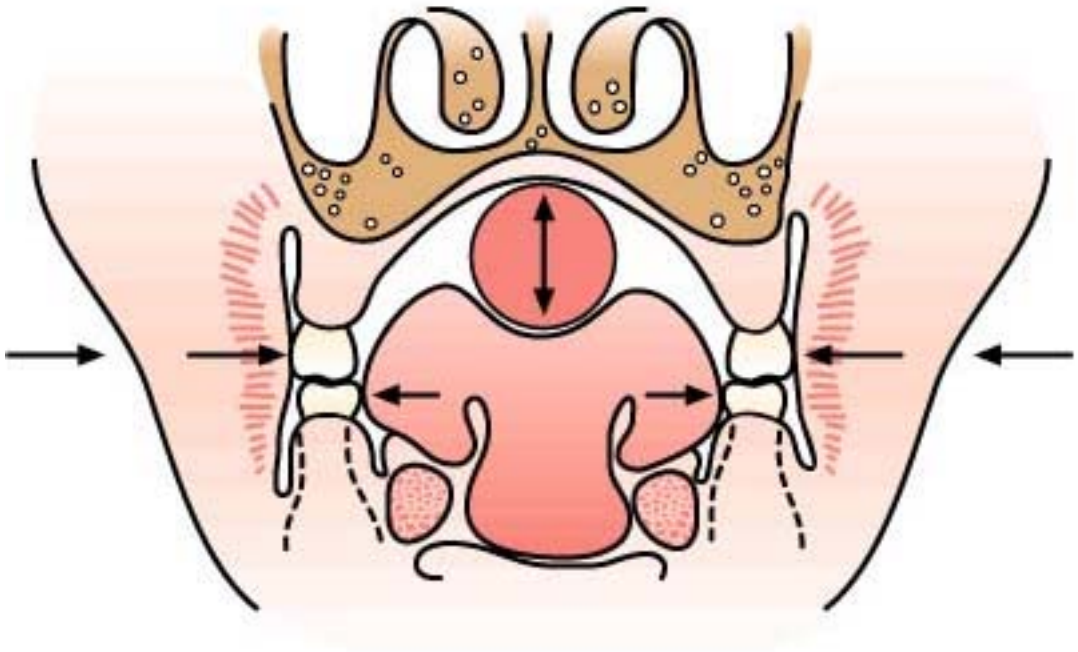
A61

Vacuum

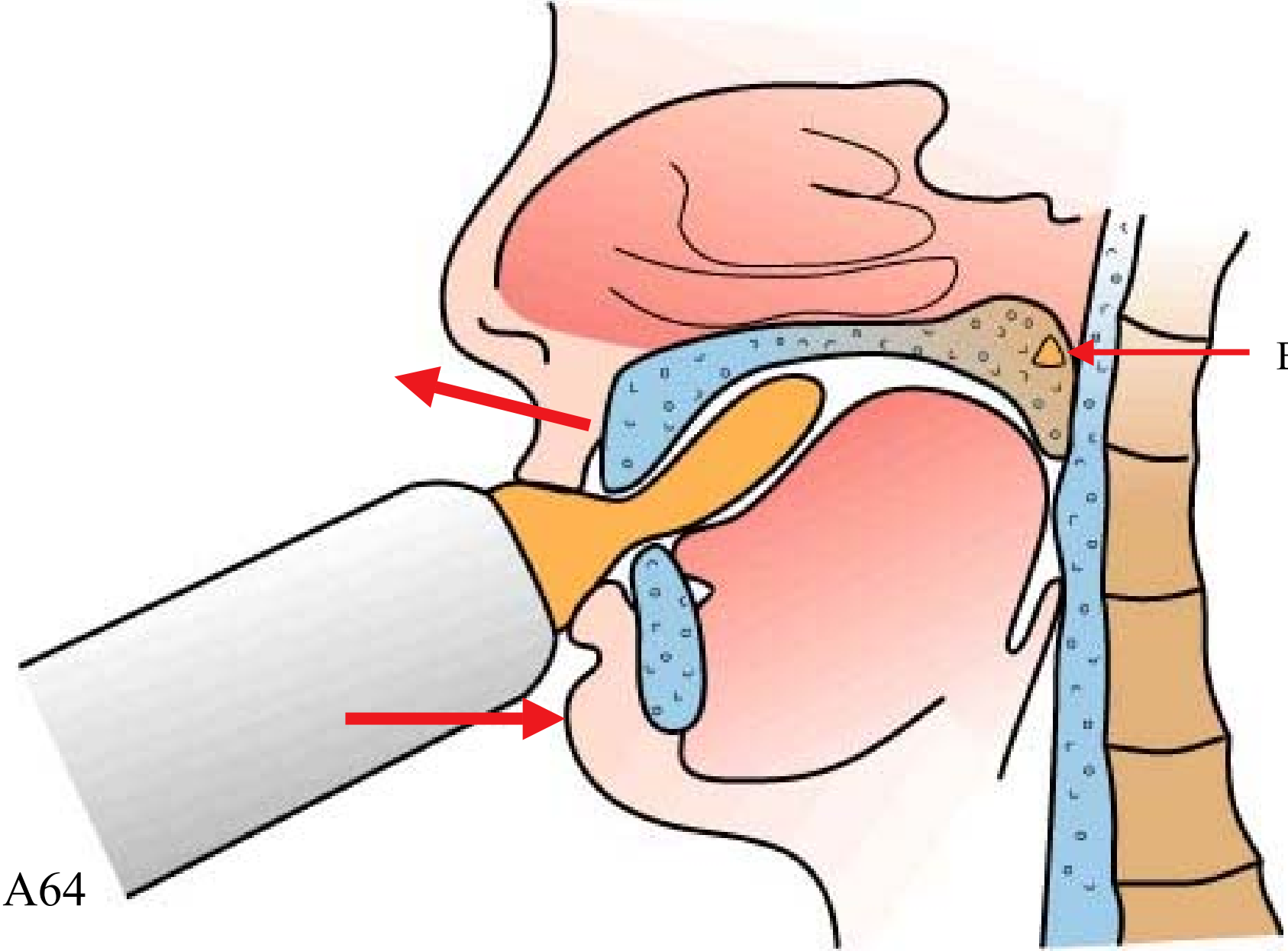
A vacuum can create an inward collapse of the oral cavity, throat and airway.

A62

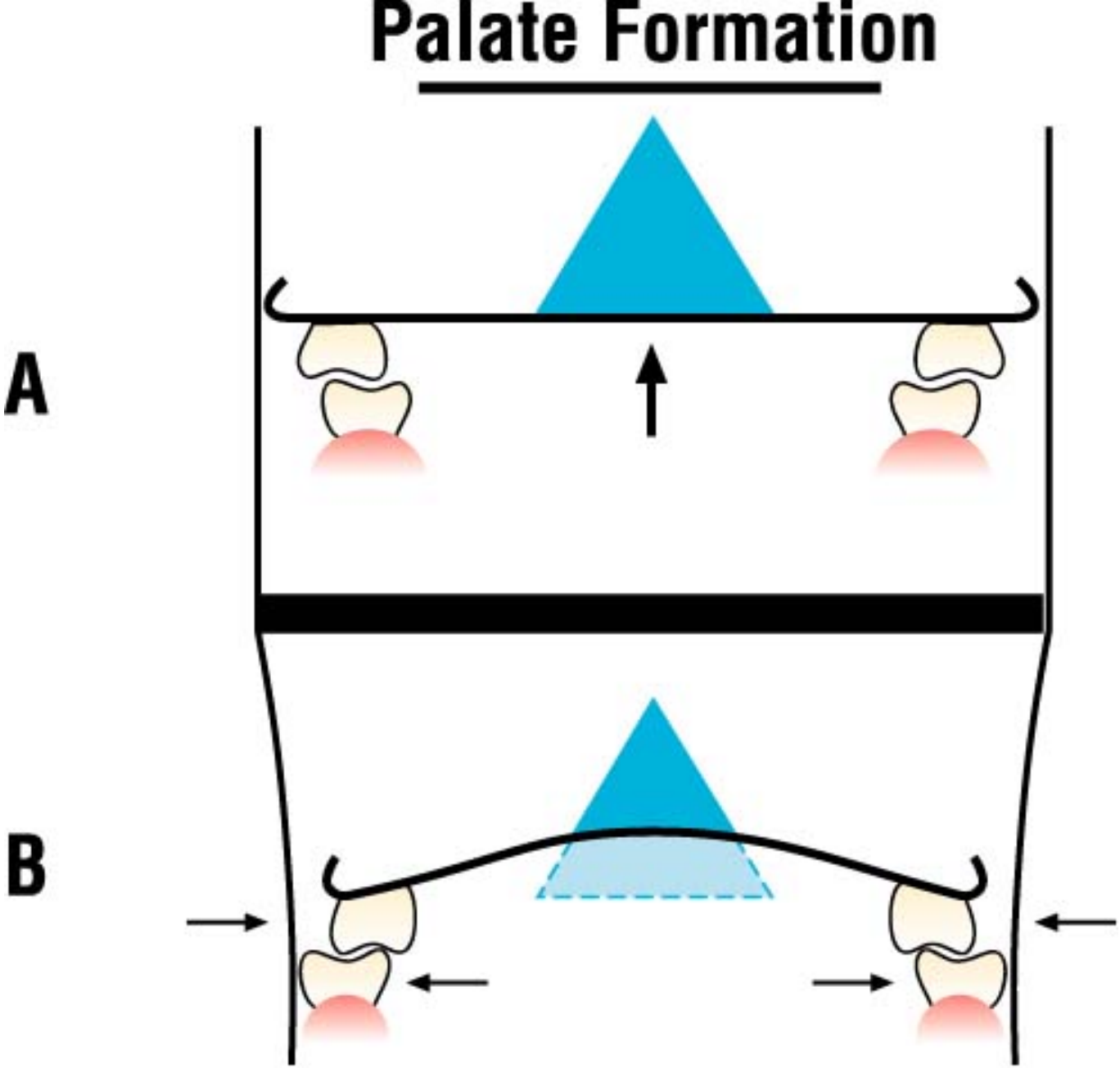
Pacifier / Bottle Nipple



The mouth has to adjust to any object in the mouth other than the breast. The unnatural forces that can develop can impact the position of the teeth and shape of the palate. Muscle forces always win out over bone. - e.g.- teeth will be moved.



Bottle feeding can separate the epiglottis/soft palate connection, elevate the soft palate, drive the tongue back and alter the action of tongue.



A65 Upward forces on palate and vacuum can alter oral development.

High palate / narrow arch

A66

A67

Previous models placed together. The result is a cross-bite malocclusion.

Section A presented by:

Brian Palmer, D.D.S.

Kansas City, Missouri, USA

Return to commentary