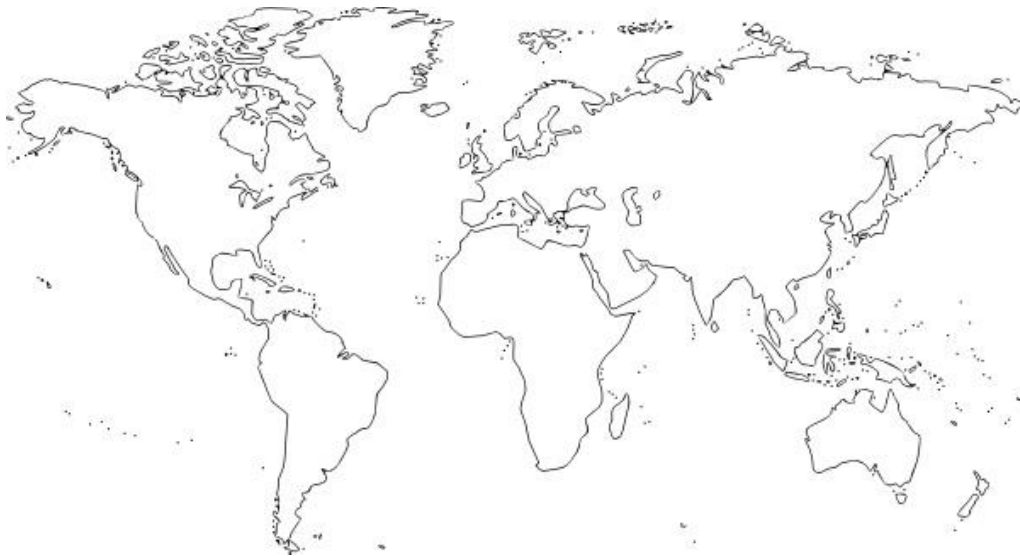


DENTAL MANAGEMENT OF CLEFT LIP AND PALATE

J Harewood DDS MA MS

CLEFT LIP/PALATE: INCIDENCE



- Cleft lip and/or palate
 - 1:1000
 - Varies with race
 - Japan: 20: 10 000
 - Western Europe: 12: 10 000
 - USA: 10.2:10 000
 - Sub- Saharan Africa 3:10 000
- Isolated cleft lip
 - 3.32:10 000
- Cleft lip and palate
 - 6.6:10 000

Cosanguinous unions

Smokers

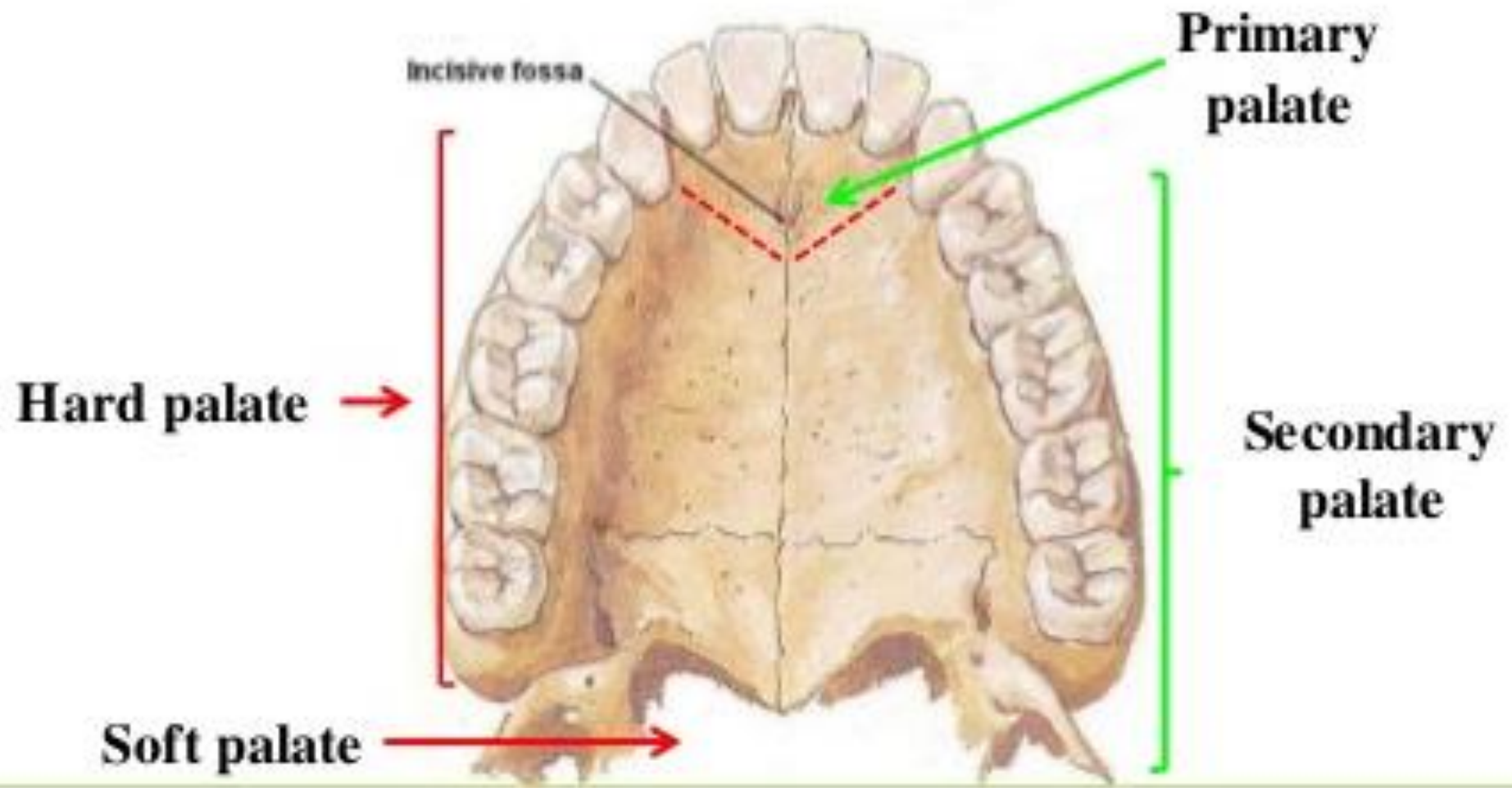
Diabetics

Women on anticonvulsants

Increased maternal age

Deficiency of certain vitamins

CLEFT LIP/PALATE:
HIGH RISK



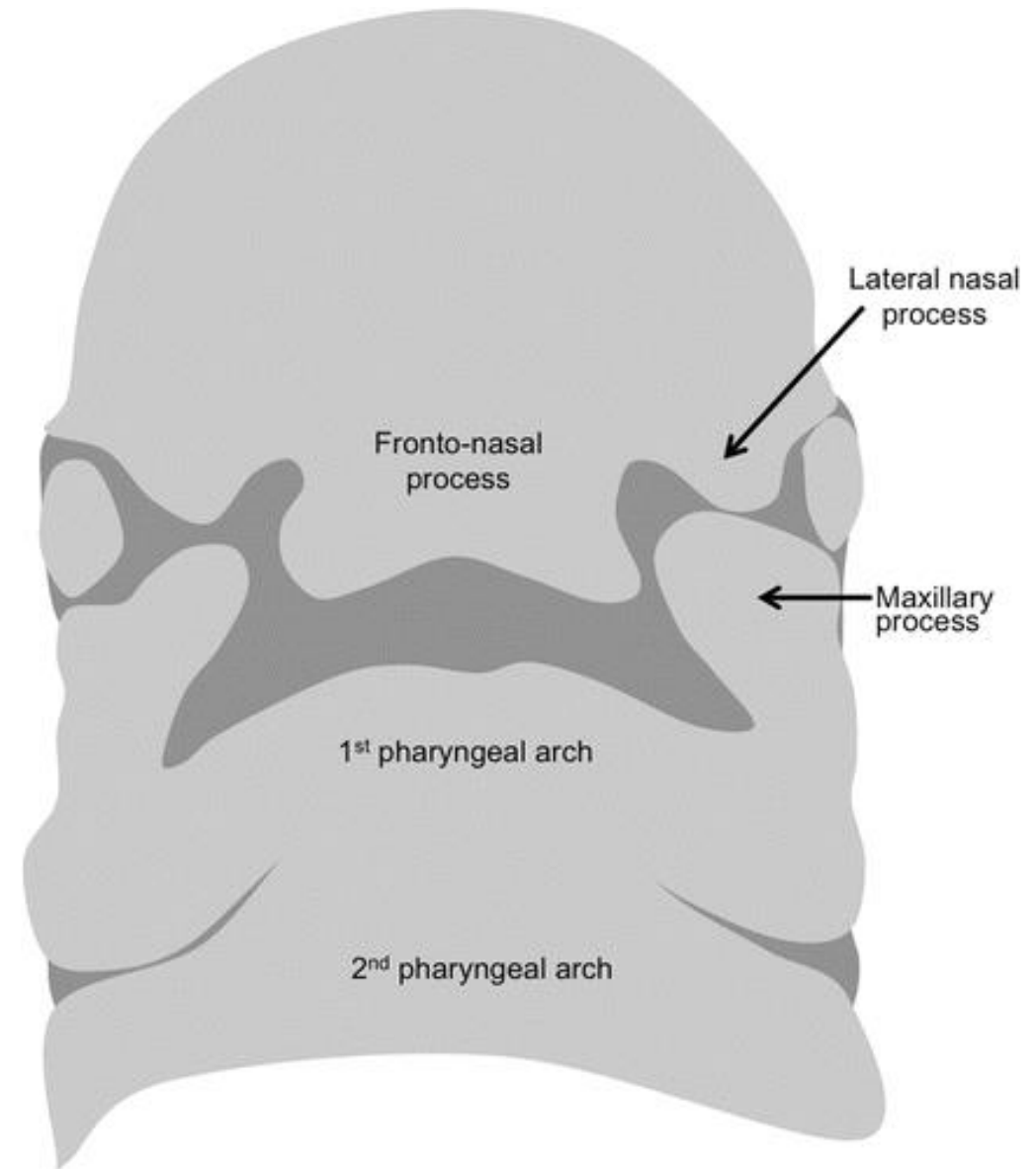
CLEFT LIP AND/OR PALATE: EMBRYOLOGY

Cleft lip

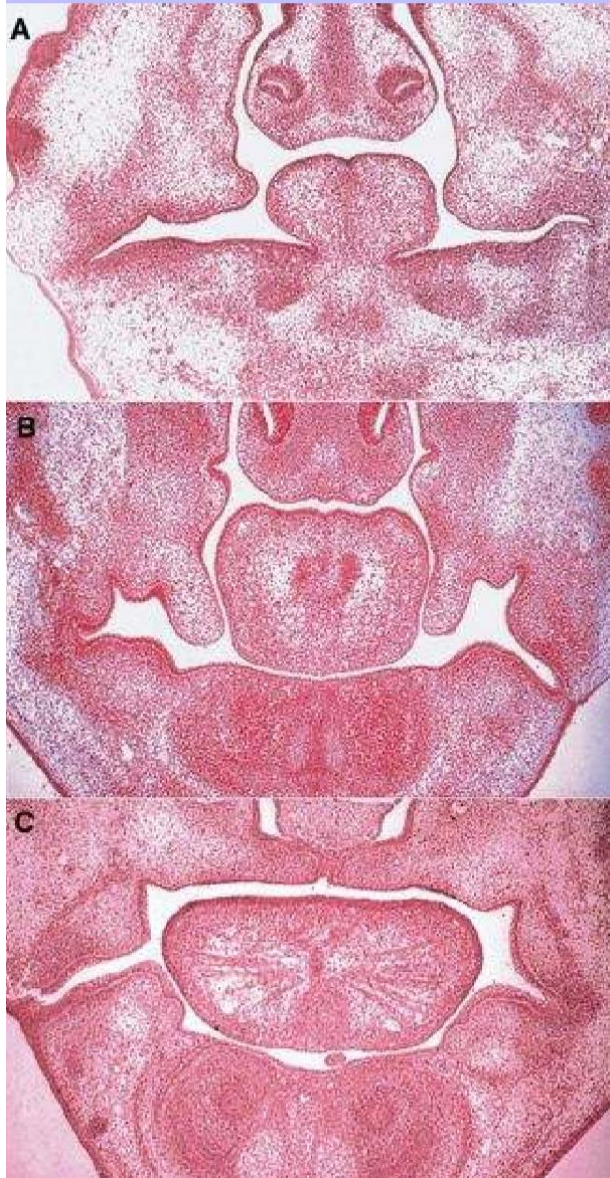
- Failure of medial frontonasal process fusion with maxillary process
- Complete failure of fusion leads to cleft lip and cleft alveolus (primary palate)

Simonart's band

- weblike **band** of tissue partially filling the gap between the medial and lateral portions of a cleft lip



CLEFT LIP AND/OR PALATE: EMBRYOLOGY

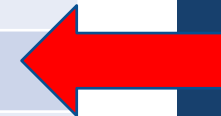
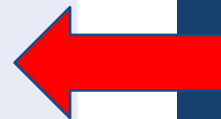


Cleft palate

- Failure of fusion bw palatal shelves of maxillary processes

Stage	Time (post-fertilization)	Related Syndromes
Germ layer formation and initial organization of craniofacial structures	Day 17	Fetal alcohol syndrome (FAS)
Neural Tube Formation	Days 18-23	Anencephaly, craniofacial microsomia
Origin, migration, interaction of cell populations	Days 19-28	Mandibulofacial Dysostosis (Treacher Collins Syndrome), Limb abnormalities
Organ system formation (pharyngeal arches, primary and secondary palate)	Days 28-38	Cleft lip a/o palate, facial clefts
	Days 42-55	Cleft palate
Final differentiation of tissues	Day 50-birth	Synostosis syndromes (Crouzon's, Apert's etc.)

STAGES OF CRANIOFACIAL DEVELOPMENT



Cleft type

- Cleft lip vs. Cleft Palate vs. Cleft Lip and Palate

Cleft Location: Primary Palate

- Lip
- Alveolus

Cleft Location: Secondary Palate

- Hard palate
- Soft palate
- Uvula

CLASSIFICATION AND ANATOMY

Laterality

- Unilateral
- Bilateral
- Midline

Severity

- Complete
- Incomplete

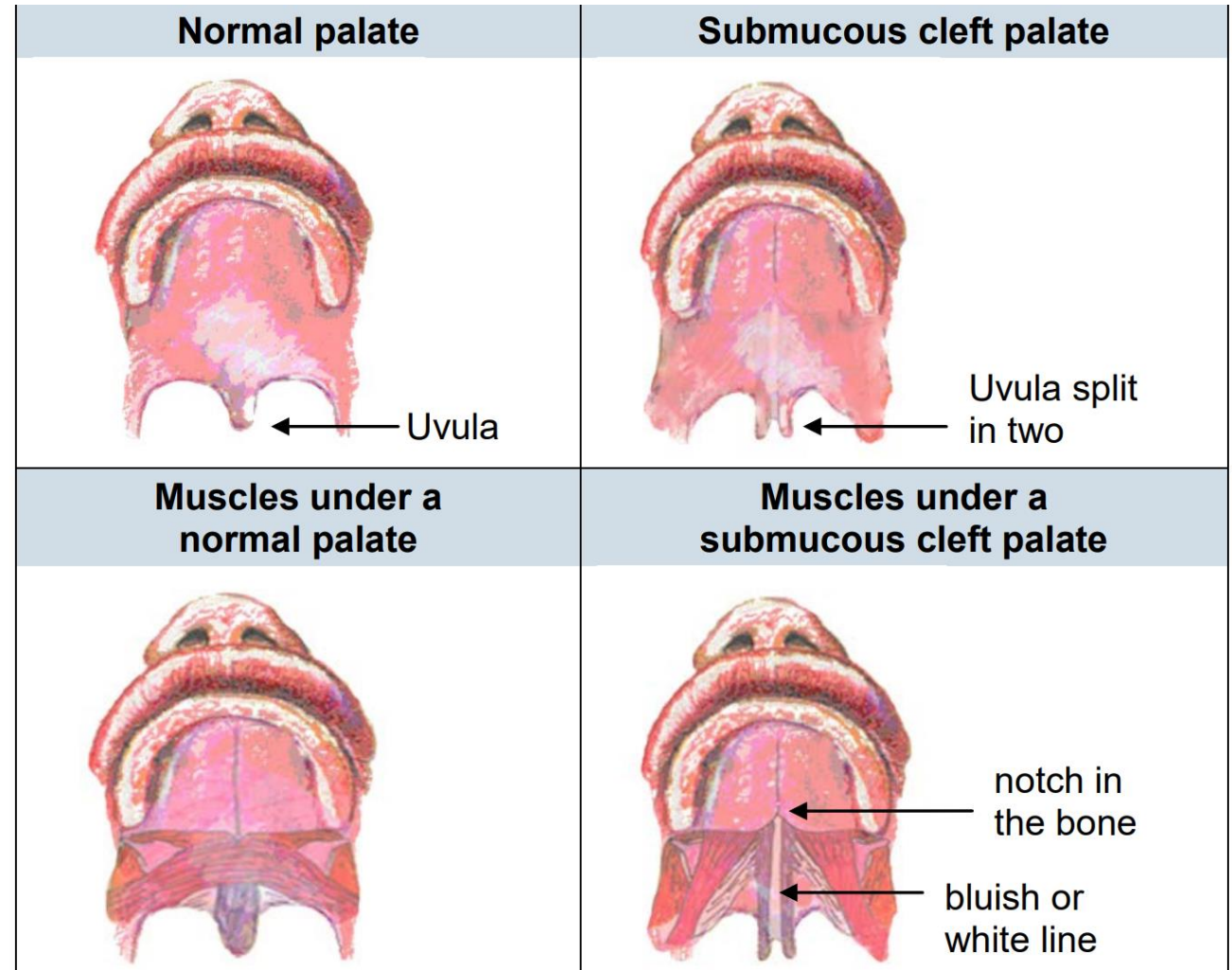
CLASSIFICATION AND ANATOMY

SUBMUCOUS CLEFT

Congenital defect under part or all of mucous membrane covering the soft palate

How to to diagnose:

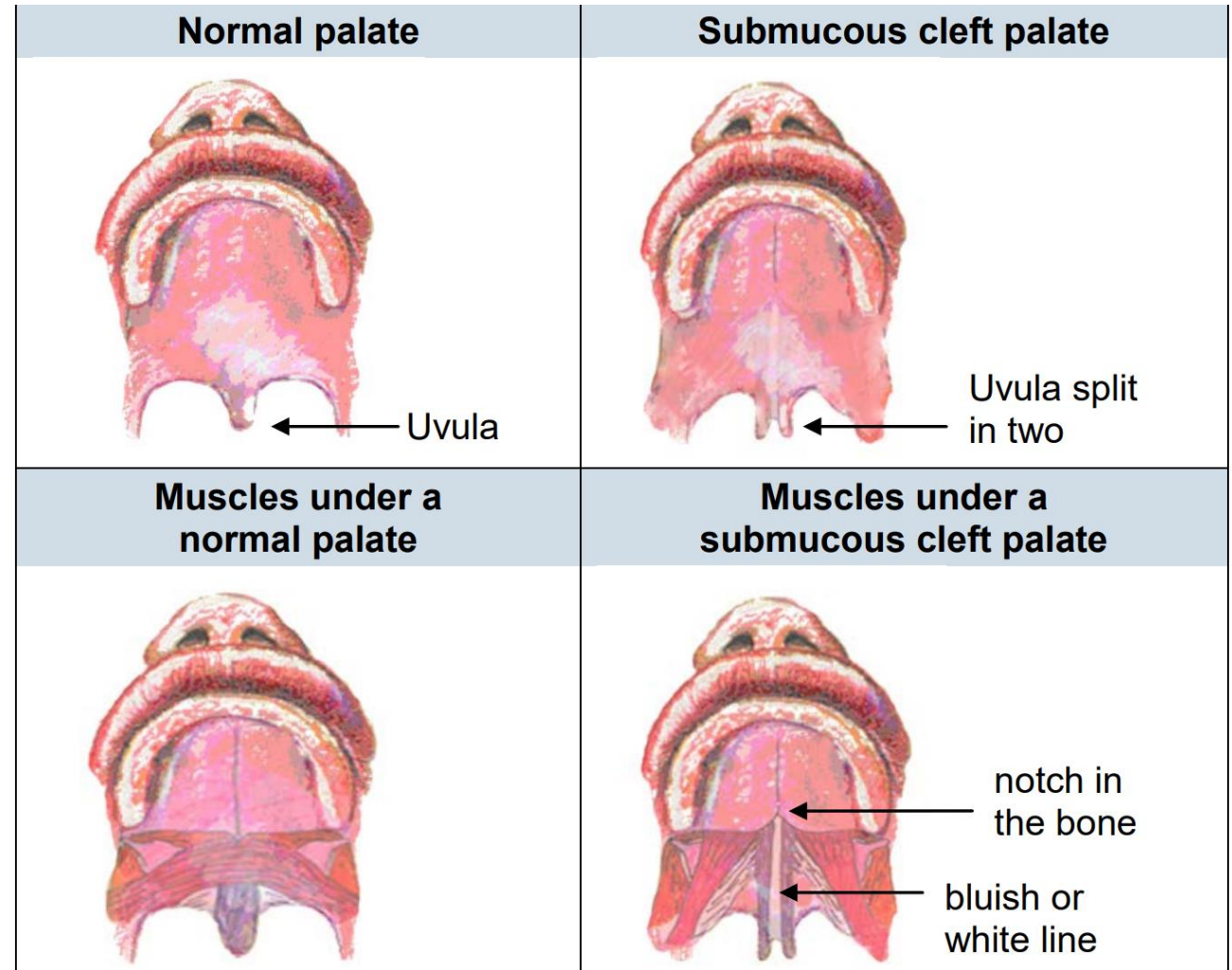
- bifid uvula
- Notch in hard palate
- Blue/white midpalatal line



SUBMUCOUS CLEFT

Problems

- Feeding
- Speech
- Ear



UNILATERAL COMPLETE CLEFT LIP AND PALATE



- Lip, alveolar ridge, palate
- More common than isolated cleft palate
- Less likely associated with syndrome
 - Van der Woude
- More common in males
- More common on Left

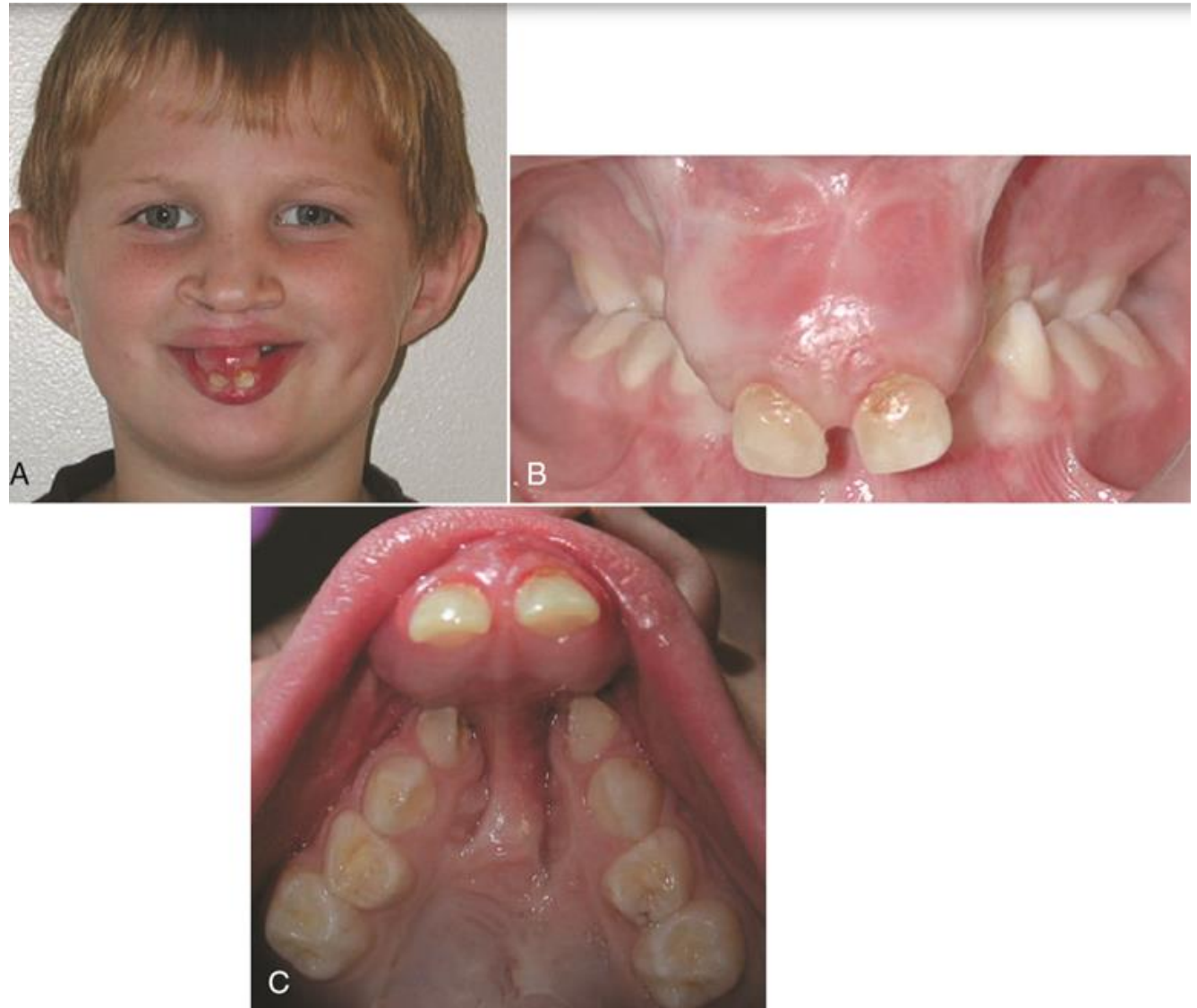
BILATERAL COMPLETE CLEFT LIP AND PALATE

- Most severe classification
- Maxilla separated into 3 parts:
 - premaxilla + prolabium
 - 2 lateral segments



BILATERAL COMPLETE CLEFT LIP AND PALATE

- Severe maxillary constriction
- Increased premaxillary prognathism
- Severe extrusion premaxillary segment
- Need for premaxillary osteotomy



ISOLATED INCOMPLETE CLEFT PALATE

- Less common than cleft lip/palate
- More likely associated with syndrome
 - Stickler
- More common in females
- More challenging prenatal diagnosis



ISOLATED COMPLETE CLEFT PALATE

- Less common than cleft lip/palate
- More common in females
- More likely associated with syndrome
 - Stickler
- More challenging prenatal diagnosis



DENTAL PROBLEMS ASSOCIATED WITH CLEFT LIP AND OR PALATE

Neonatal teeth

Ectopic eruption

Supernumerary teeth

Anomalies of tooth shape and size

Micro and macro dontia

Fused teeth

Enamel hypoplasia

Deep bite

Maxillary transverse deficiency

Crowding or spacing

PRENATAL DIAGNOSIS



- Cleft lip and or palate can be diagnosed via ultrasound
- 2D ultrasound –
 - 16-75% detection rate
- 3D ultrasound –
 - Up to 100% detection rate

** isolated cleft lip difficult to diagnose prenatally

PRENATAL DIAGNOSIS



- Factors that limit sensitivity of diagnosis:
 - Unfavorable fetal position
 - Maternal obesity
 - Multiple gestation (twins, triplets etc.)
 - Prior abdominal surgeries

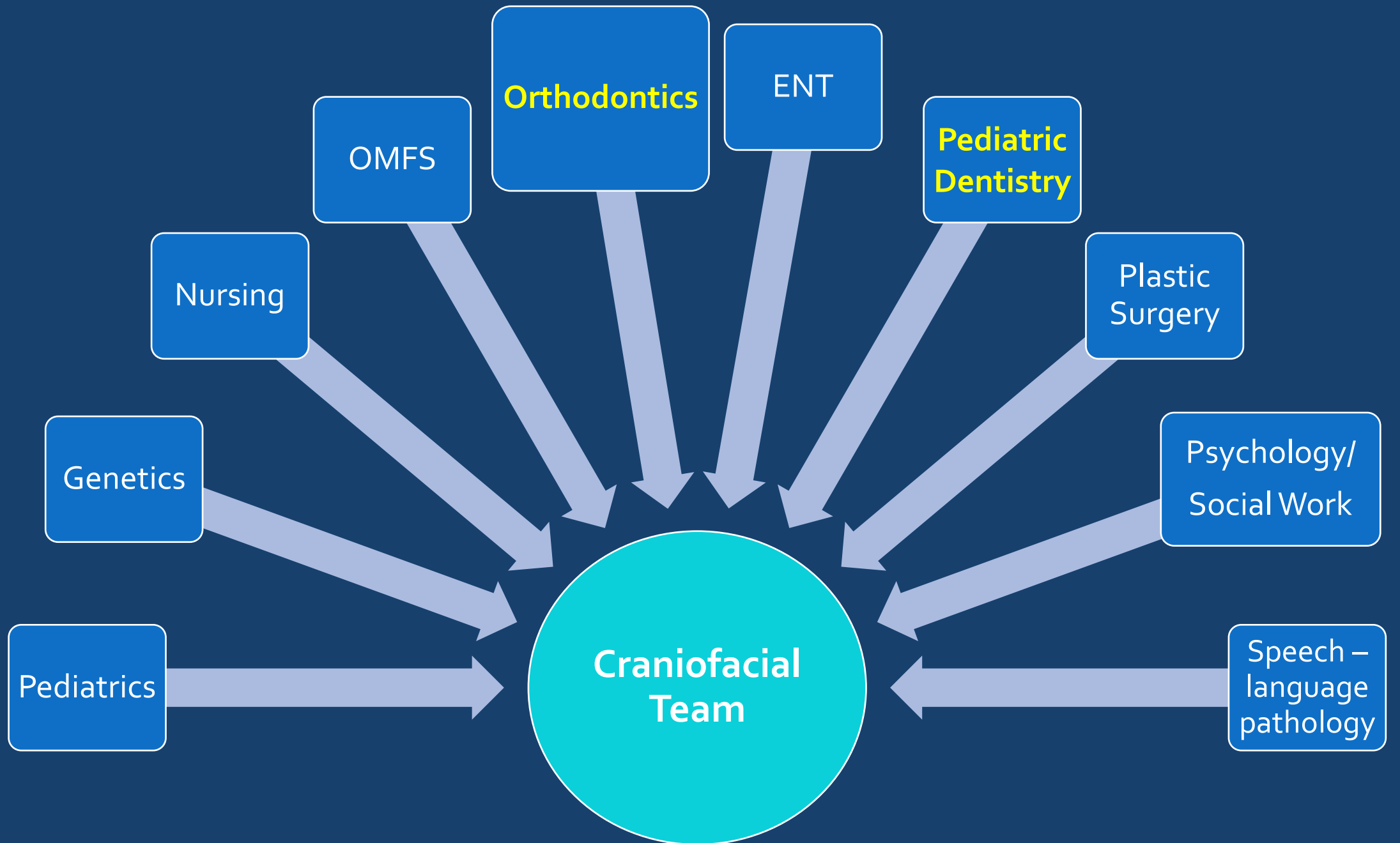
PRENATAL DIAGNOSIS

Advantages

- Psychological preparation
- Opportunity to provide parents with prenatal education on clefts
- Preparation for care and feeding
- Impetus to test for other abnormalities
- Fetal surgery (?)

Disadvantages

- High maternal anxiety
- Potential for false positive
- Increased termination of pregnancy





DENTAL ROLE: PRENATAL

- Orthodontics
 - Nothing
- Pediatric Dentistry
 - Supportive care
 - Inform parent re :neonatal tx options (presurgical infant orthopedics)
 - Minimize transmission cariogenic bacteria from parent to child

CONCERNS IN INFANCY



- Airway maintenance
 - Cleft lip and/or cleft palate – no concerns
- Feeding and Nutrition
 - Isolated cleft lip
 - May be able to breast feed
 - Isolated cleft palate
 - Feed by bottle

DENTAL ROLE: NEONATE AND INFANT

Orthodontist and/or Pediatric Dentist

Pre-surgical infant orthopedics

- Aligns maxillary segments, creates less tension on surgical closure, reduces severity of clefts
 - Latham appliance
 - Nasoalveolar molding (NAM)
 - Taping

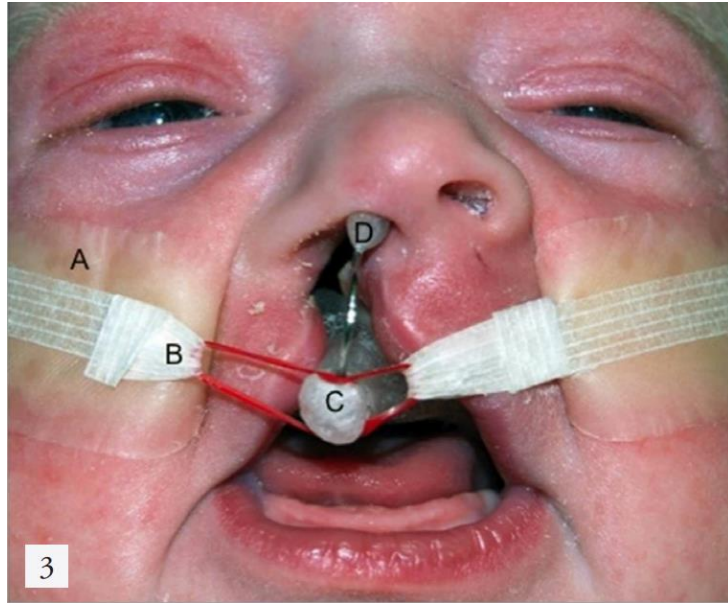


DENTAL ROLE: NEONATE AND INFANT

- Initiated in first week of birth
- Appliance inserted and secured with surgical tape
- Weekly adjustments to bring segments closer
- Includes nasal stent
- Treatment lasts 3-5 months

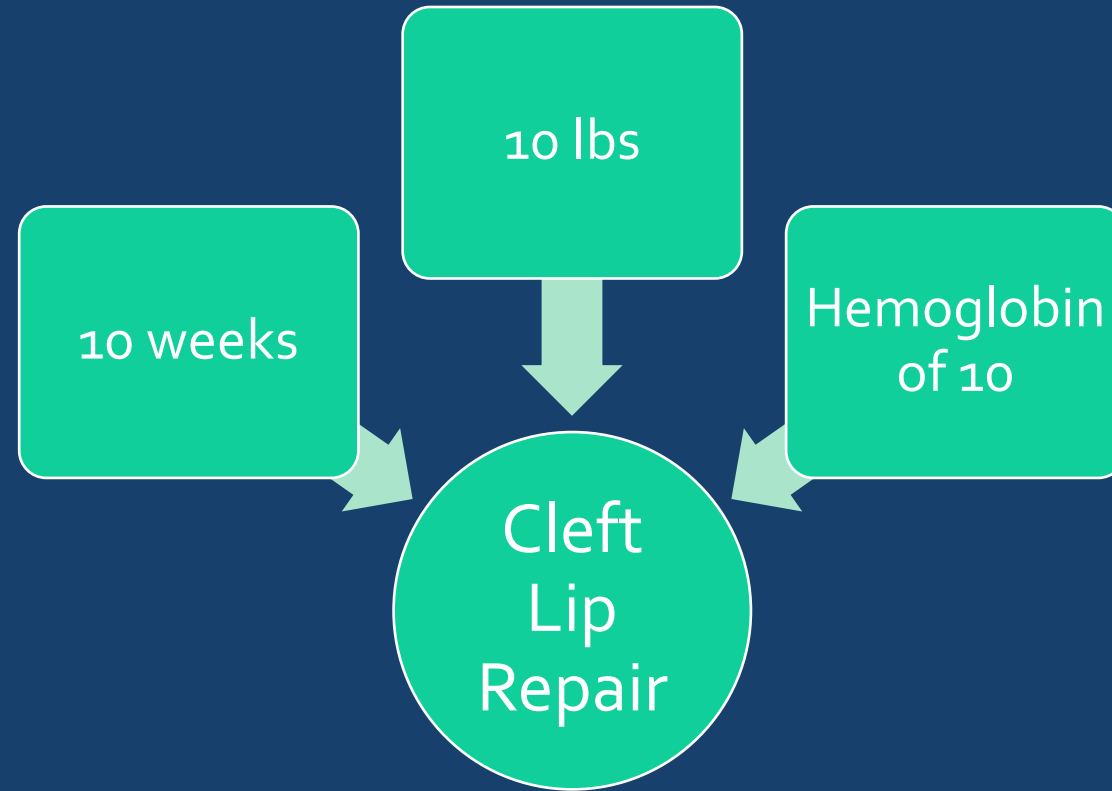


DENTAL ROLE: NEONATE AND INFANT



Presurgical infant orthodontics: Controversy

- No long-term benefit on growth of midface and dentoalveolus
- Occlusal results are similar to those without early intervention if assessed at 10 years of age



LIP REPAIR

DENTAL ROLE: NEONATE AND INFANT



- Palatal closure can occur when child is
 - 6 months – 18 months of age
 - Depends on size of cleft
 - Depends on speech, nasal regurgitation

DENTAL ROLE: PRIMARY DENTITION

Orthodontist

- Monitor

Pediatric Dentist

- Reassure, inform, prevent, acclimatize
- Encourage proper diet and oral hygiene techniques
 - Avoid early extraction of primary teeth
- Keep up with medications
- Communicate with craniofacial team

DENTAL ROLE: MIXED DENTITION



- Orthodontist
 - Interceptive orthodontics
 - Expansion prior to secondary alveolar bone graft
 - Anterior crossbite correction (facemask, removable appliance)
- Pediatric Dentist
 - Maintain oral hygiene **
 - Support during tooth brushign
 - Pit and fissure sealants



DENTAL ROLE: MIXED DENTITION

- 7 year old male
- Early mixed dentition
- Unilateral left lip and palate

DENTAL ROLE: MIXED DENTITION



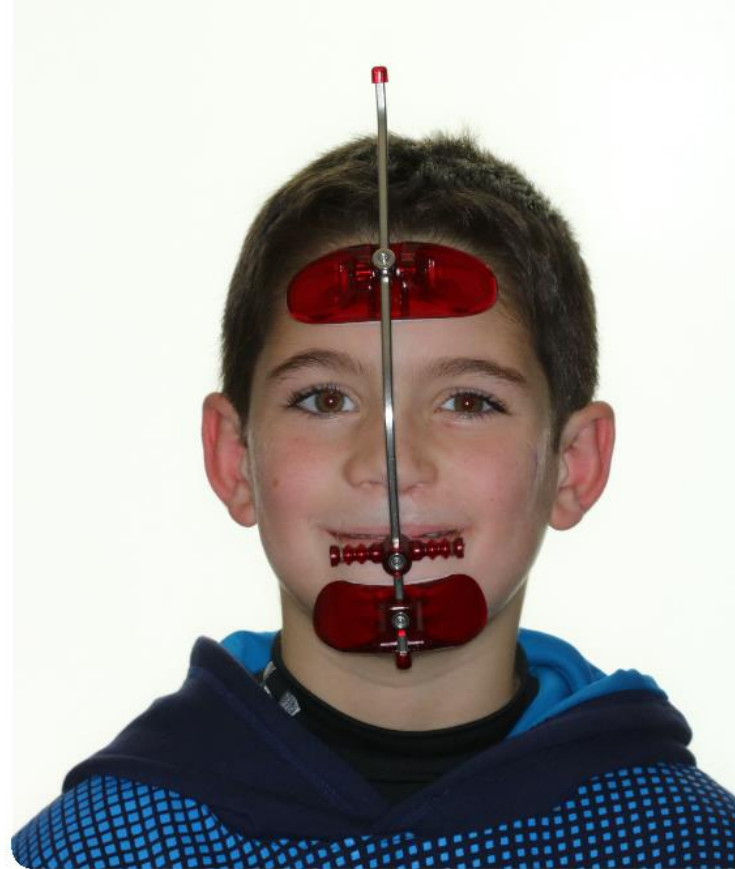
- Early mixed dentition
- Missing both upper permanent lateral incisors



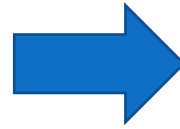
DENTAL ROLE: MIXED DENTITION

Fan-shaped rapid palatal
expander

DENTAL ROLE: MIXED DENTITION



- Reverse-pull headgear (aka facemask)



4 MONTHS REVERSE PULL HEADGEAR

Dental Role: Mixed Dentition

DENTAL ROLE: PERMANENT DENTITION

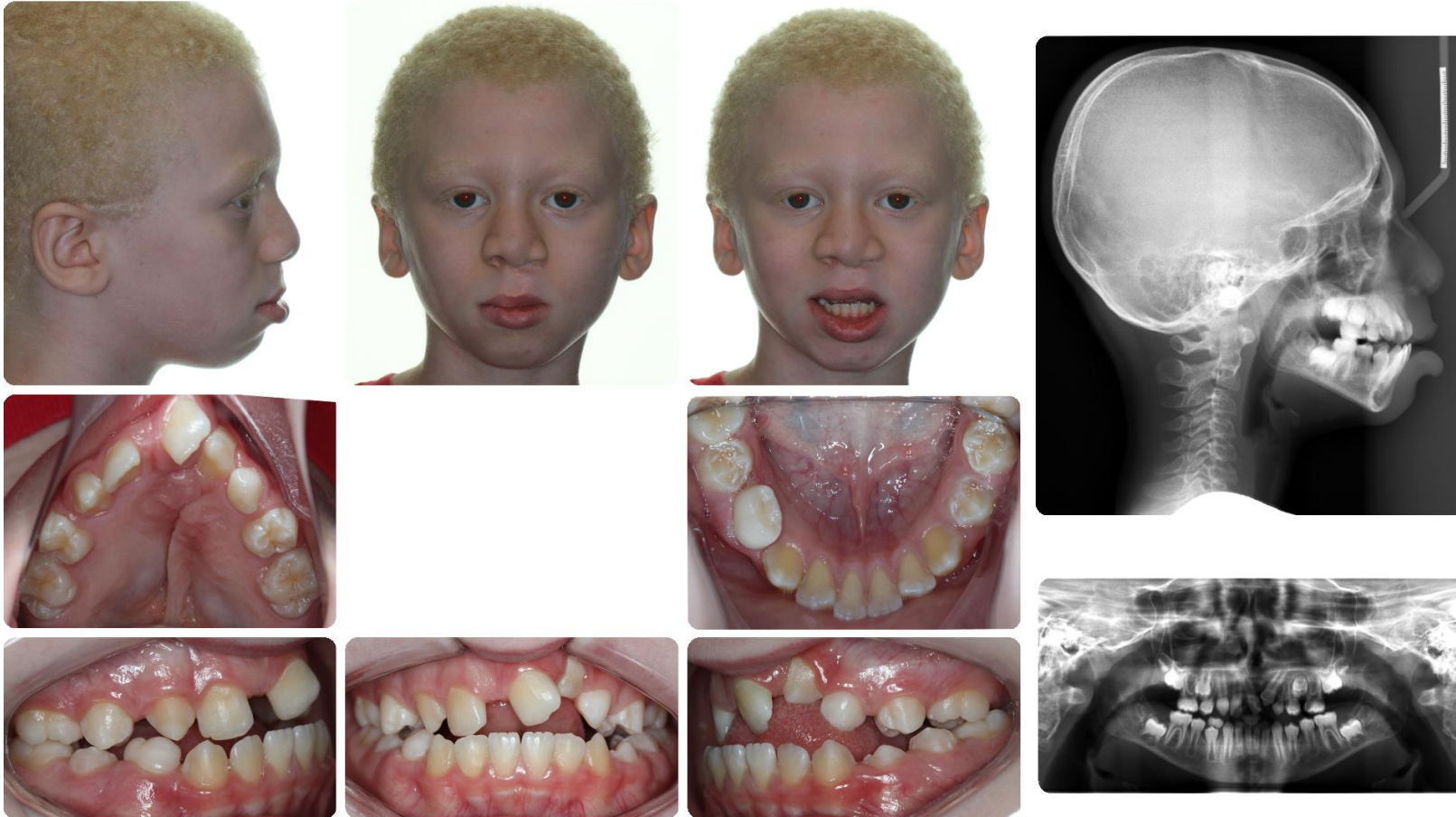
- Orthodontist
 - Comprehensive Orthodontics
 - Presurgical orthodontics
 - Maxillary distraction, segmental maxillary distraction, orthognathic surgery
- Pediatric Dentist
 - Maintain oral hygiene during ortho tx
 - Educate about hypocalcification



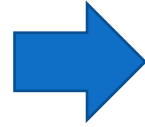
DENTAL ROLE: PERMANENT DENTITION

- 10 yo male
- Unilateral CLP
- Oculocutaneous albinism

DENTAL ROLE: PERMANENT DENTITION



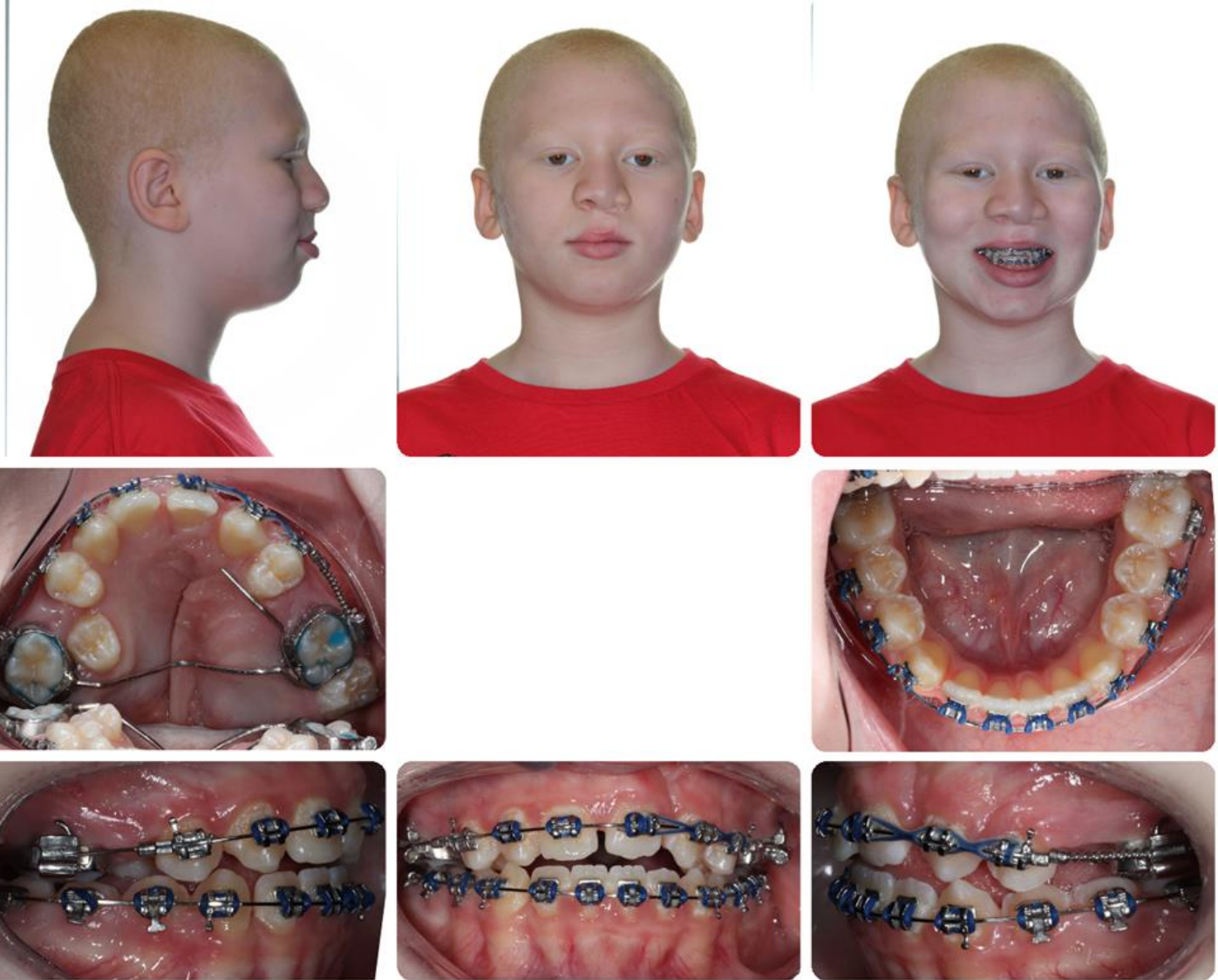
- Maxillary transverse deficiency
- Missing maxillary lateral incisors
- Palatally impacted upper second premolars



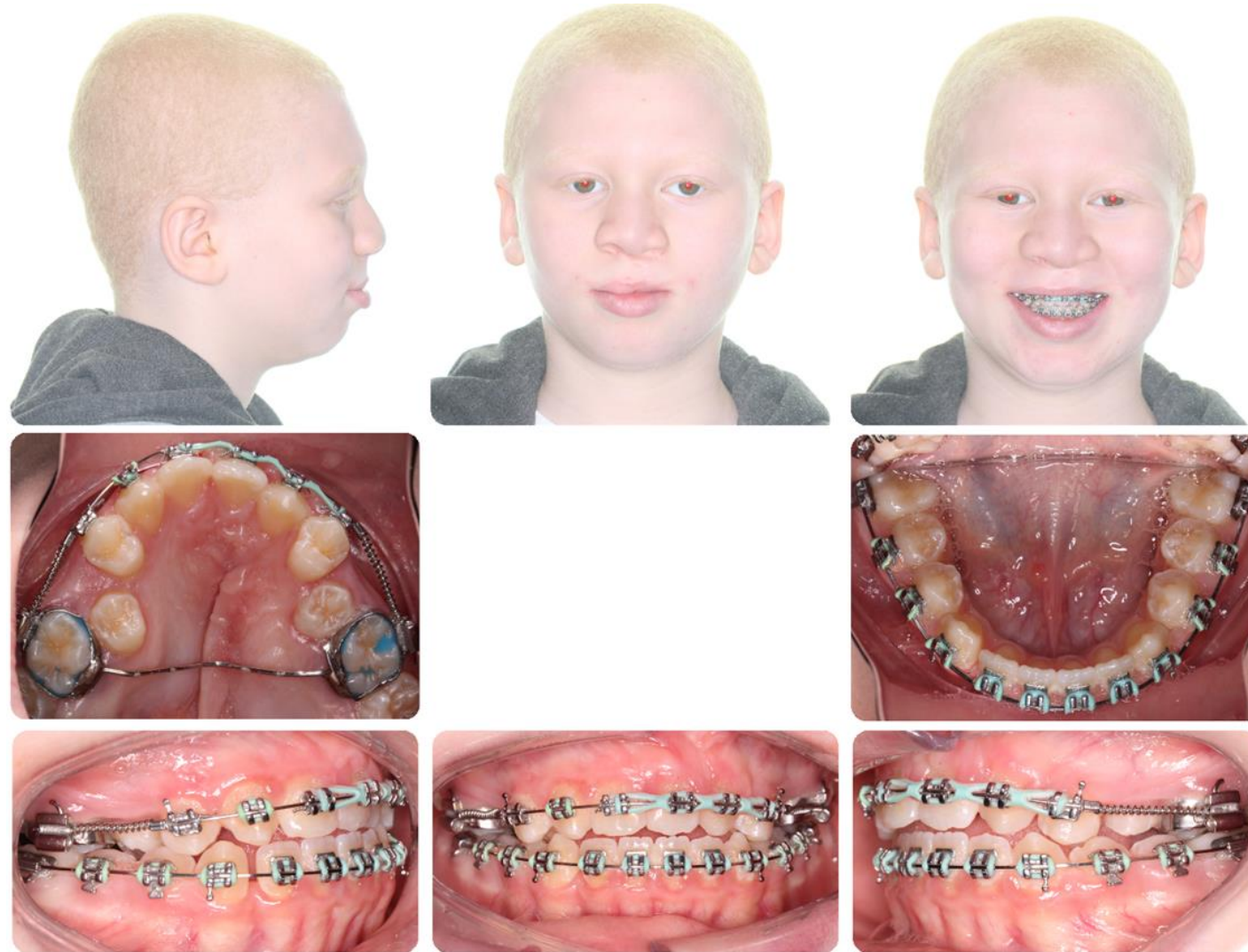
DENTAL ROLE: PERMANENT DENTITION



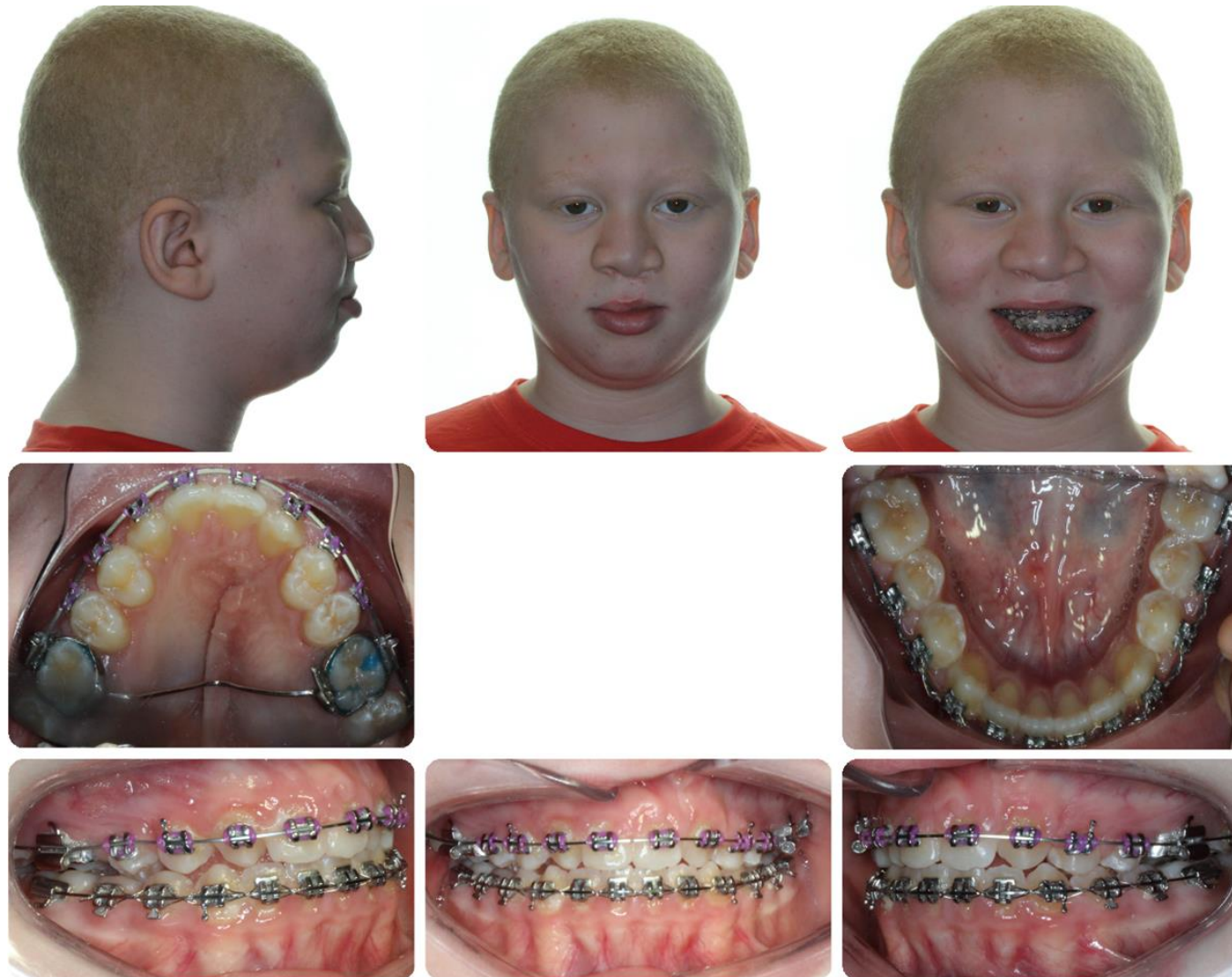
DENTAL ROLE: PERMANENT DENTITION



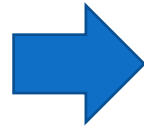
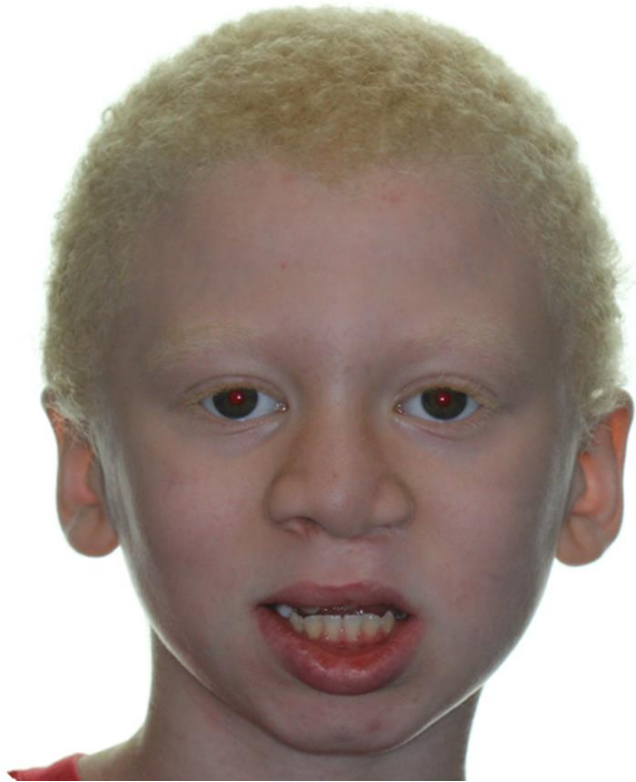
DENTAL ROLE: PERMANENT DENTITION



DENTAL ROLE: PERMANENT DENTITION



DENTAL ROLE: PERMANENT DENTITION

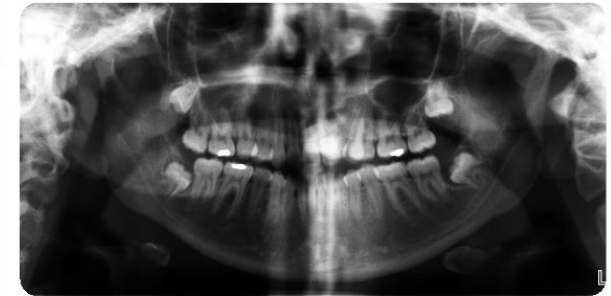


DENTAL ROLE: PERMANENT DENTITION

DENTAL ROLE: PERMANENT DENTITION

- 15 yo female
- Unilateral CLP
- Hx of failed bone graft





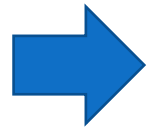
DENTAL ROLE: PERMANENT DENTITION

DENTAL ROLE: PERMANENT DENTITION

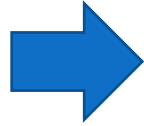
- Missing upper left lateral incisor

**Which tooth/teeth
would you remove?**

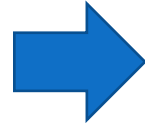




DENTAL ROLE: PERMANENT DENTITION



DENTAL ROLE: PERMANENT DENTITION



DENTAL ROLE: PERMANENT DENTITION

END