General Surgery - Topic 19 - Developmental anomalies of face, mouth and jaws

Cleft Lip and Cleft Palate

Development and Causes

- A cleft is a congenital gap produced when parts of the developing lip or palate do not unite normally.
- A cleft lip can occur with or without a cleft palate, and an isolated cleft palate can occur without a lip defect.
- The visible gap is only one part of the condition because feeding, hearing, speech, dentition and facial growth may also be affected.

Embryological Basis

A. Lip and Primary Palate

- The upper lip develops through union of the maxillary and medial nasal processes during early facial development.
- Failure of this union produces a cleft lip, which can extend into the alveolus and primary palate.
- The primary palate lies anterior to the incisive foramen.

B. Secondary Palate

- The secondary palate develops from the palatal shelves and lies posterior to the incisive foramen.
- Failure of elevation, contact or fusion of these shelves can produce a cleft of the hard and soft palate.
- In a cleft palate, the palatal muscles may attach abnormally instead of forming a functional transverse sling.
- This muscle abnormality helps explain why simply covering the gap does not reliably restore normal speech.

Aetiology and Associated Conditions

Genetic and Environmental Factors

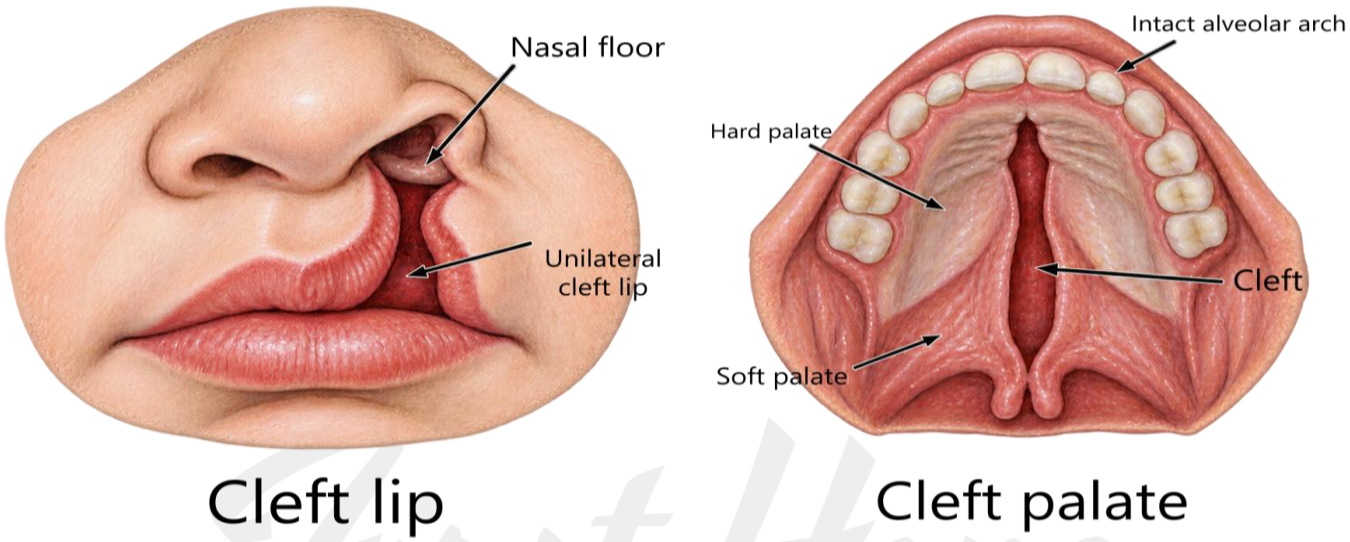
- Most clefts reflect a combination of genetic susceptibility and environmental influences rather than one identifiable cause.
- A family history can increase risk, but many affected children have no affected relatives.
- Maternal smoking, pre-existing diabetes and some medicine exposures are associated with increased risk.
- A medicine history should be reviewed without advising abrupt withdrawal of essential treatment.

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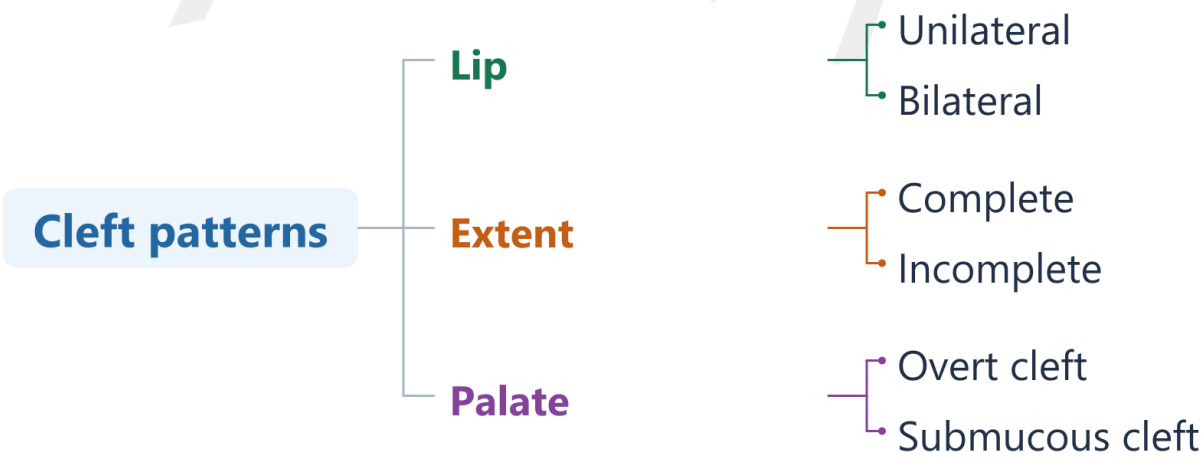
Associated Conditions and Counselling

- Some clefts occur as part of a genetic syndrome, so associated cardiac, limb, hearing or developmental findings deserve assessment.
- Robin sequence includes a small lower jaw and backward displacement of the tongue, with airway obstruction and often a cleft palate.
- Explain that parents did not cause the condition through ordinary daily activities and should not be blamed.

Classification



A unilateral cleft lip and an isolated secondary-palate cleft illustrate different developmental defects



1. Cleft Lip

Unilateral and Bilateral Defects

- A cleft lip may be unilateral or bilateral.
- Laterality describes the number and side of the lip defects, while completeness describes the vertical extent of each defect.

Incomplete and Complete Defects

- An incomplete cleft does not extend through the whole height of the lip into the nostril floor.

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- A complete cleft extends through the lip and nasal floor and may involve the alveolus and primary palate.
- In a bilateral cleft, the central lip segment and premaxilla may be separated from the lateral segments.
- Record the side, completeness, nasal deformity and associated alveolar or palatal involvement.

2. Cleft Palate

A. Overt Cleft Palate

- A cleft palate may involve only the soft palate or extend forwards through the hard palate.
- A complete secondary-palate cleft reaches the incisive foramen but does not necessarily involve the lip or anterior alveolus.
- A combined cleft of the lip, alveolus and palate may be unilateral or bilateral.

B. Submucous Cleft Palate

- In a submucous cleft, the mucosa can look intact while the underlying muscles or bone are deficient.
- A bifid uvula, a translucent midline zone and a posterior hard-palate notch are classical clues, but all three need not be present.
- Persistent hypernasal speech or nasal regurgitation can reveal an otherwise missed palatal problem.

Veau Classification of Palatal Clefts

Group	Extent of the defect
I	The cleft is confined to the soft palate.
II	The hard and soft palate are involved, with the defect confined to the secondary palate.
III	There is a complete unilateral cleft involving the lip, alveolus and palate.
IV	There is a complete bilateral cleft involving the lip, alveolus and palate.

- This familiar classification is useful for an examination answer, but submucous and unusual defects still need a clear anatomical description.

Describing the Defect Clearly

- Describe the actual structures involved rather than relying on an unexplained classification number.
- The incisive foramen is a useful landmark separating primary-palate and secondary-palate defects.

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- Documentation should include photographs only after appropriate consent and secure handling.

Assessment and Early Problems

Initial Clinical Assessment

- Assess breathing, colour, oxygenation where indicated, feeding effectiveness, hydration and weight gain.
- Inspect the entire palate with good light because an isolated posterior cleft can be missed by looking at the lip alone.
- Examine for associated congenital abnormalities and arrange paediatric and genetic assessment when indicated.
- Ask about choking, prolonged feeds, noisy breathing, apnoea, nasal milk escape and recurrent respiratory symptoms.
- Assess the family's concerns, support network and ability to reach the specialist centre.
- Refer early to a multidisciplinary cleft team rather than waiting until the child is old enough for surgery.

Airway and Feeding



1. Feeding Support

- A child with an isolated cleft lip may still form an effective seal for feeding.
- A cleft palate often prevents adequate suction, so feeding can be slow and tiring even when swallowing is otherwise effective.
- A trained feeding team can advise suitable positioning, pacing and a specialist bottle or teat.
- Expressed breast milk can be used when direct breastfeeding does not provide adequate intake.
- Monitor weight, wet nappies and feed duration rather than judging success from appearance alone.

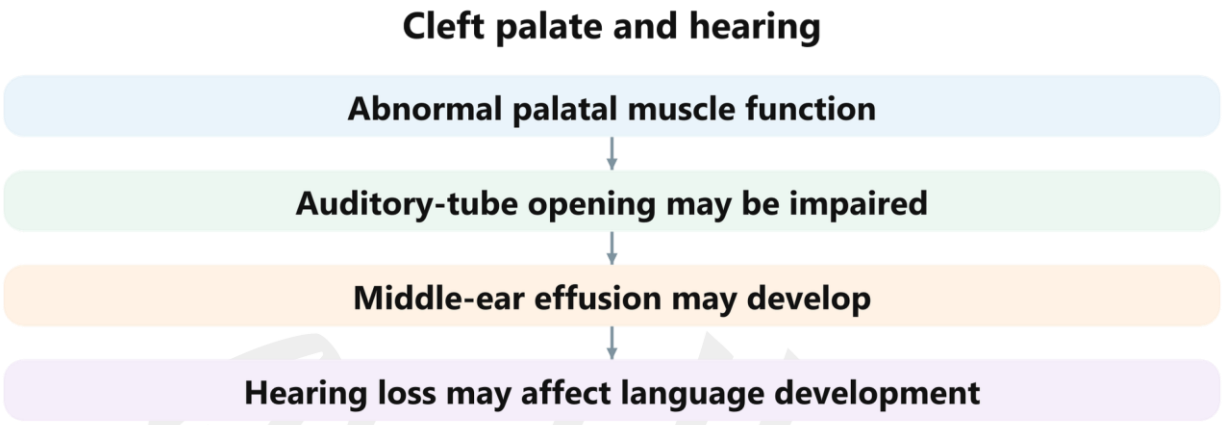
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- Some children need temporary tube feeding when oral intake is unsafe or insufficient.

2. Airway Safety

- Airway obstruction, especially with Robin sequence, needs prompt specialist assessment and an individualized airway plan.
- Do not prescribe unsupervised prone sleeping as a routine home remedy for a cleft.
- Nasal regurgitation does not by itself prove pulmonary aspiration, but choking or respiratory compromise requires assessment.

Hearing, Speech and Teeth



1. Eustachian Tube Function and Hearing

- Abnormal palatal muscle function can impair opening of the auditory tube and predispose to middle-ear effusion.
- Regular hearing assessment is important because hearing loss can worsen language development.

2. Speech and Dental Development

- Speech assessment distinguishes articulation errors from inadequate closure between the soft palate and pharynx.
- Dental abnormalities may include missing, extra or displaced teeth near the cleft.
- Early dental prevention and later orthodontic care help preserve oral health and prepare for reconstruction.

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