

Crossbite

Dr K Khalaf
Associate Professor and Consultant in Orthodontics

PhD, BDS, LDS (A), DAS (Orth.), FDS (Orth) RCS (Eng), FFDRCSI (Orth.), M Orth RCS (Eng), M Orth RCS (Edin), MFDSRCS (Eng), MFDSRCS (Edin), MFDSRCPS (Glasg), CASAP (T&L), FHEA, FFDT Edin

Overview

- Introduction
- Aetiology
- Treatment
 - Treatment of anterior crossbite
 - Treatment of unilateral buccal crossbite
 - Treatment of bilateral buccal crossbite
 - Treatment of lingual crossbite of single tooth
 - Treatment of unilateral lingual crossbite
 - Treatment of bilateral lingual crossbite

Introduction

- A crossbite is a **buccolingual malrelationship** of the upper and lower teeth
- It can be **anterior or posterior, unilateral or bilateral**
- May be associated with a mandibular displacement on closing such that an occlusal contact deflects the mandible laterally or anteriorly to allow maximum interdigitation

Introduction

- With a lateral displacement, there is often a **centreline shift**
- **By convention, the lower teeth are described relative to the upper** so where the lower teeth occlude buccal to the opposing teeth, a buccal crossbite exists. Conversely, where the lower teeth occlude lingual to the palatal cusps of the upper teeth, a lingual (scissors) crossbite exists

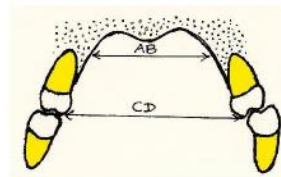
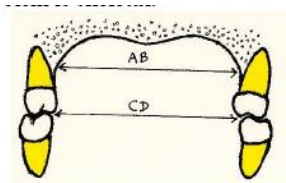


Aetiology

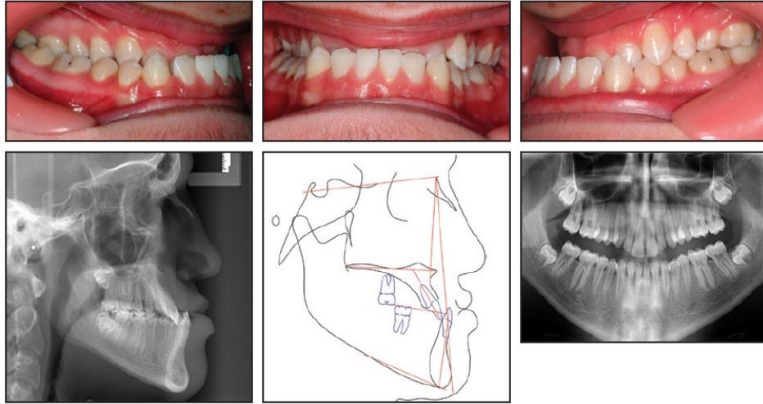
Skeletal factors

- A mismatch in the widths of the dental arches or an anteroposterior skeletal discrepancy may produce a crossbite of a complete arch segment
- A lingual crossbite commonly found in class II
- A buccal and/or anterior crossbite is often associated with a class III malocclusion
- Growth restriction of the maxilla following cleft repair or of the mandible secondary to condylar trauma can lead also to buccal segment crossbite

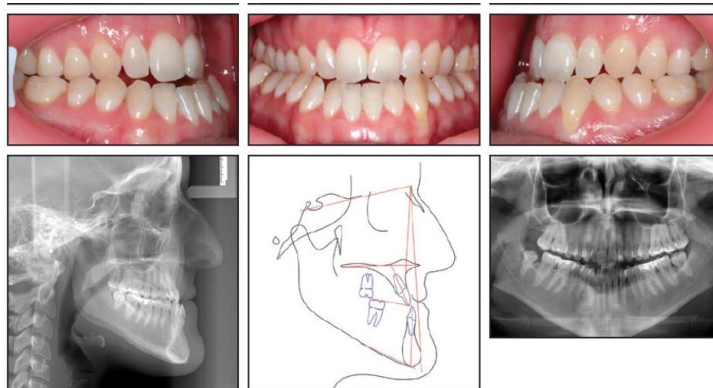
Skeletal factors



Skeletal factors



Skeletal factors



Soft tissue factors

- With a **digit-sucking habit**, the tongue position is lowered and contraction of the cheeks during sucking is unopposed. This displaces the upper posterior teeth palatally and often creates a crossbite



Dental factors/ Crowding

- Where the arch is inherently crowded, the **upper lateral incisor** may be displaced palatally and the **upper second or third molar** pushed into a scissors bite

Dental factors/ Local causes

- Retention of a primary tooth or early loss of a primary second molar in a crowded arch can lead to the permanent successor erupting in crossbite.

Treatment

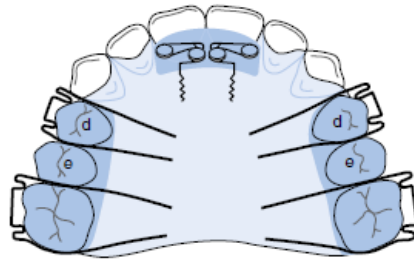
Rationale

- It is important to realise that where a crossbite is **associated with a mandibular displacement**, there is a functional indication for its correction, as displacing occlusal contacts may predispose to **temporomandibular joint problems** in susceptible individuals
- In addition, a **traumatic displacing anterior occlusion** may deflect a lower incisor labially and **compromise periodontal support**



Treatment of anterior crossbite

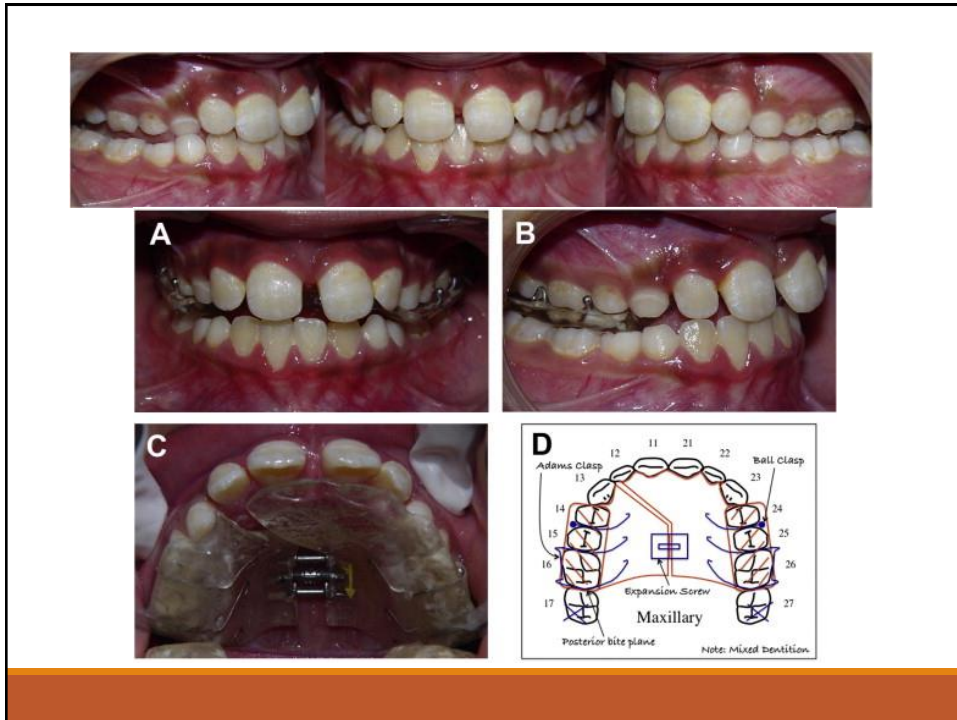
- Where one or two incisors are in crossbite. There is usually a mandibular displacement, and correction **early in the mixed dentition is advisable** provided **adequate overbite** exists to maintain correction
- Space must be present in the arch** (or can be created by extraction) to allow alignment of the tooth.
- If the tooth inclination is amenable to tipping, an **upper removable appliance** with buccal capping to free the occlusion and a Z-spring for proclination may be used



Treatment of anterior crossbite

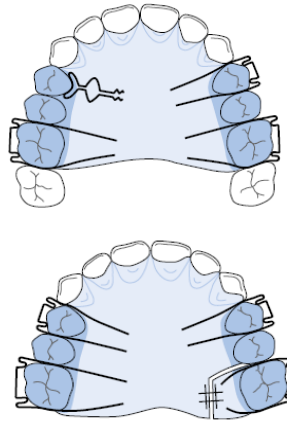
- Anterior retention must be good** to resist the displacing force caused by the action of the spring. Alternatively, an appliance with a screw section, clasping the teeth to be moved, overcomes this problem
- Where **insufficient overbite** is likely to exist posttreatment, or **the incisor is bodily displaced**, treatment is better carried out with a **fixed appliance in the permanent dentition**





Treatment of unilateral buccal crossbite

- An upper removable appliance incorporating a T-spring or screw section may often be considered for correcting a crossbite on a premolar or molar, respectively



Treatment of unilateral buccal crossbite

- However, where reciprocal movement of opposing teeth is needed, fixed attachments should be placed and cross-elastics used to achieve the desired movement
- Where a single tooth is mildly displaced from the arch, relief of crowding may be necessary to aid crossbite correction
- In those with more marked tooth displacement, extraction rather than orthodontic alignment may be a better option

Treatment of unilateral buccal crossbite

- Where a unilateral buccal segment crossbite is associated with a mandibular displacement, this usually results from a mild mismatch in widths of the dental bases, sometimes as a result of narrowing of the upper arch caused by digit sucking
- **Grinding of the relevant primary teeth**, where a premature contact results in a **mandibular displacement**, is advised to prevent the associated posterior crossbite from being carried forward to the permanent dentition.
- Otherwise, **upper arch expansion** using a **removable appliance** with midline expansion screw and buccal capping, or by a **quadhelix appliance**, may be used

Treatment of unilateral buccal crossbite

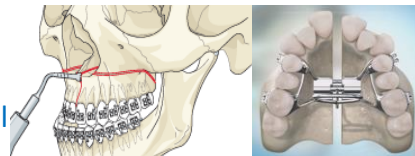


Treatment of bilateral buccal crossbite

- A bilateral buccal crossbite is **seldom associated with functional problems**
- Generally, as its existence indicates an underlying symmetrical transverse skeletal discrepancy, it is **best accepted unless correction is planned as part of overall treatment**, when **rapid expansion of the midpalatal suture** should be attempted only by a specialist

Treatment of bilateral buccal crossbite

- This is achieved by turning a midline screw **twice daily for 2 weeks**
- Expansion of the suture must be carried out no later than in **early teenage years** but, based on limited data, it appears that only **25% of the expansion achieved is stable long term**
- Surgically-assisted rapid palatal expansion (SARPE) may be considered in the adult



Treatment of lingual crossbite of single tooth

- Crowding may displace a single tooth into lingual crossbite
- Once the crowding is relieved, the crossbite may be corrected, often by palatal movement of the upper unit using a buccally approaching spring on a removable appliance, provided the occlusion is disengaged

Treatment of unilateral lingual crossbite

- Where a complete unilateral lingual crossbite is associated with a mandibular displacement, lower arch expansion and upper arch contraction with either removable or fixed appliances can produce a stable result provided a good buccal intercuspation is achieved
- Surgical correction may be indicated to correct a unilateral lingual crossbite with no displacement

Treatment of bilateral lingual crossbite

- **Surgical correction** may be indicated to correct a complete bilateral lingual crossbite