

Dental Crowding

Malalignment of teeth is caused by inadequate space. The crowded tooth is displaced labially or lingually and/or rotated. The last tooth to erupt within an arch tends to be the most affected. Dental crowding makes cleaning teeth harder (leads to caries/periodontal disease), prevent achievement of ideal occlusion, and provides an unattractive smile (leads to low self-esteem).

Aetiology of Crowding

A. Hereditary

- Tooth size – jaw size discrepancy

B. Environmental

- Premature loss of primary teeth/ Trauma
- Proximal caries leading to deficiency in dental arch
- Prolonged retention of primary teeth/ Ankylosis
- Altered eruption sequence
- Discrepancy in individual tooth size
- Abnormal shape of teeth
- Abnormal eruption path
- Transposition of teeth
- Iatrogenic treatment

Classification of Crowding

A. According to Source

1. Hereditary Crowding
2. Environmental Crowding

B. According to Time of Appearance

1. **Primary Crowding:** determined **genetically** and caused by disproportion between jaw size and teeth size.
2. **Secondary Crowding:** acquired and caused by loss of arch length due to **environmental** cause (premature loss of deciduous teeth)
3. **Tertiary Crowding:** late lower incisor crowding during and after adolescence and caused primarily by:
 - a. Forward mandibular growth
 - b. Soft tissue pressure
 - c. Mesial migration of posterior teeth
 - d. +/- Eruption of 3rd Molar

C. According to Severity

1. **Mild:** up to 4mm crowding
2. **Moderation:** 4—8mm crowding
3. **Severe:** >8mm crowding

Management of Crowding

A. Treatment of Crowding: Mixed Dentition (After 21/12 Eruption)

| Type of Crowding | Timing | Treatment |
|-------------------|---------------------------------------|---|
| Mild Crowding | Wait and watch | No treatment |
| Moderate Crowding | Wait until premolar eruption or treat | - Expansion - Eruption Guidance |
| Severe Crowding | Immediate treatment | - Expansion - Eruption Guidance - Serial Extraction - Extraction and Ortho Tx. |

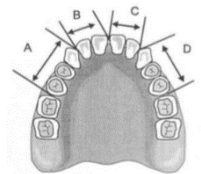
B. Treatment of Crowding: Permanent Dentition

Space analysis should be carried out (**Carey's Analysis**)

$$\text{Degree of Crowding} = \text{Space Required} - \text{Space Available}$$

Space Required: Total mesiodistal tooth mass

Space Available = A + B C + D



| Type of Crowding | Treatment |
|-----------------------------|--|
| Mild to Moderate Crowding | - Expansion - Distalization - Stripping / Proximal Reduction |
| Moderate to Severe Crowding | - Expansion - Extraction |

Proximal Reduction

- Mild crowding
- Removable/fixed appliance
- Not more than 0.25mm from each proximal surface to remain within enamel

Distalization lower arch – Lip Bumper

- Mild crowding
- Proclined lower incisors
- Keeps permanent molars at correct position after eruption to prevent chance of crowding within premolars.

Arch Expansion

- Mild to moderate crowding
- Removable/fixed appliance

Extraction

- Moderate to severe crowding
- Usually 1st or 2nd premolars if all other teeth have good long-term prognosis