Malocclusion

A CONDITION IN WHICH THERE IS A DEFLECTION FROM THE NORMAL RELATION OF THE TEETH TO OTHER TEETH IN THE SAME ARCH AND/OR TO TEETH IN THE OPPOSING ARCH. (GARDINER, WHITE & LEIGHTON)

- Grouping of orthodontic problems.
- Location of problems to be treated.
- Diagnosis & treatment plan.
- Comparison of different types of malocclusion.
- For self-communication.
- Documentation of problems.
- Used for epidemiological studies.
- Assessment of treatment effects of orthodontic appliances.

The study of ancient Egyptian skeletons from Amarna, Egypt reveals extensive tooth wear but very little dental crowding, unlike in modern Americans. In the early 20th century, Percy Raymond Begg focused his research on extreme tooth wear coincident with traditional diets to justify teeth removal during ortho-dontic treatment. Anthropologists studying skeletons that were excavated along the Nile Valley in Egypt and the Sudan have demonstrated reductions in tooth size and changes in the face, including decreased robust-ness associated with the development of agriculture, but without any increase in the frequency of dental crowding and malocclusion. For thousands of years, facial and dental reduction stayed in step, more or less. These analyses suggest it was not the reduction in tooth wear that increased crowding and malocclusion, but rather the tremendous reduction

in the forces of mastication, which produced this extreme tooth wear and the subsequent reduced jaw involvement.

Thus, as modern food preparation techniques spread throughout the world during the 19th century, so did dental crowding. This research provides support for the development of orthodontic therapies that increase jaw dimensions rather than the use of tooth removal to relieve crowding.

Tremendous advancements have been made in orthodontic diagnostics and treatment in the last 150 years. However, significant limitations still remain predictably treating some malocclusions to optimal function, health, esthetics, and long-term stability. The need for overcoming these limitations is vast, with nearly two-thirds of the US population having some degree of malocclusion In contrast, most of modern society's ancestors naturally had ideal alignment without malocclusion and their third molars were fully erupted and functioning.

A common denominator today in the most difficult orthodontic problems appears to be a discrepancy between the volume of alveolar bone and tooth mass. In adults, these problems traditionally require longer treatment times in which the orthodontist may have to compromise relation- ships, esthetics, and stability through the extraction of teeth or by po-sitioning the teeth outside the confines of their supporting structures (Fig-ure 2D). To develop better treatment options, determining whether these discrepancies are a tooth-mass excess problem or an alveolar bone deficiency is needed first. Some of the solutions to orthodontic limitations may be found through a better understanding of the causes for the increase of dental crowding and malocclusions in modern society.

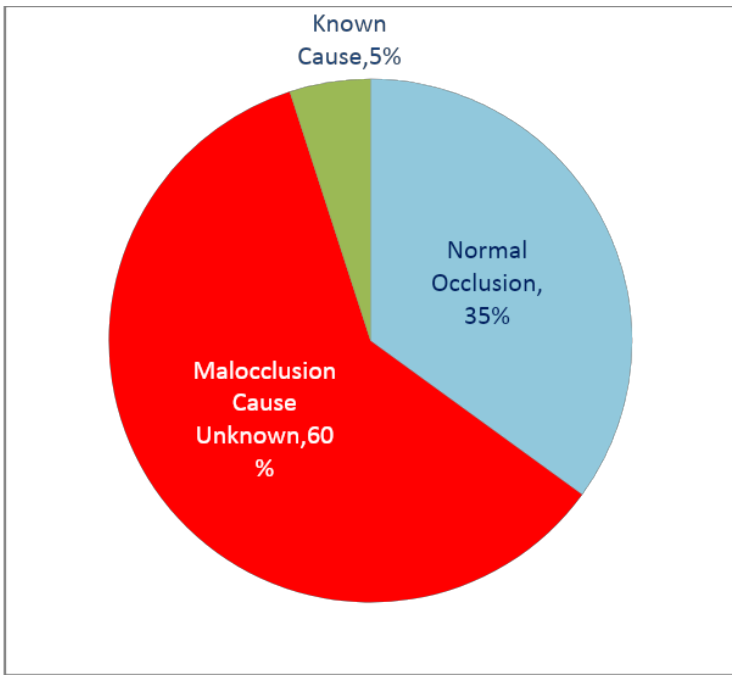

Figure SEQ Figure * ARABIC 1: From a broad perspective, only about one-third of the US population has normal occlusion, while two-thirds have some degree of malocclusion. In the malocclusion group, a small minority has problems attributable in a specific known cause. The remainder is the result of a complex and poorly understood combination of inherited and environ-mental influences. Used with permission from Profit et al Contemporary Orthodontics.

Risks of Malocclusion

There are several risks associated with teeth crowding, which include:

- Gum disease
- Tooth decay
- Ineffective teeth function
- Pain or discomfort
- Difficulty chewing or speaking
- The prevention of proper teeth cleaning
- Lack of self-confidence and desire to smile
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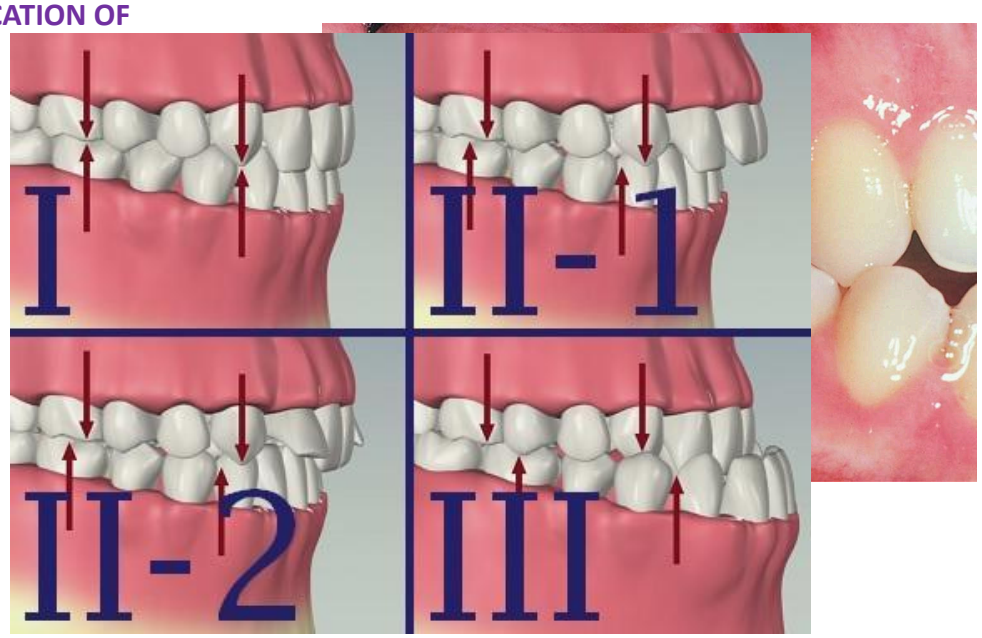
ANGLE'S CLASSIFICATION OF MALOCCLUSION



- In 1899 Edward H. Angle published the first classification of malocclusion.
- The classifications are based on the relationship of the mesiobuccal cusp of the maxillary first molar and the buccal groove of the mandibular first molar.

a classification of the various types of malocclusion. The classification is based on where the buccal groove of the mandibular first molar contacts the mesiobuccal cusp of the maxillary first molar: on the cusp (Class I, neutroclusion, or normal occlusion); distal to the cusp by at least the width of a premolar (Class II, distocclusion); or mesial to the cusp (Class III, mesiocclusion). Each class contains two or more types or divisions.

Class I

The normal anteroposterior relationship of the mandible to the maxillae. The mesiobuccal cusp of the permanent maxillary first molar occludes in the buccal groove of the permanent mandibular first molar.

Class II

A malocclusion where the molar relationship shows the buccal groove of the mandibular first molar distally positioned when in occlusion with the mesiobuccal cusp of the maxillary first molar.

Division 1

The maxillary anterior teeth are proclined and a large overjet is present

Division 2,

the maxillary anterior teeth are retroclined and a deep overbite exists

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Class III

A malocclusion where the molar relationship shows the buccal groove of the mandibular first molar mesially positioned to the mesiobuccal cusp of the maxillary first molar when the teeth are in occlusion.

CAUSES OF MALOCCLUSION

1. Disproportion between arch size and tooth size or arch length discrepancies
2. Prolonged retention of deciduous teeth
3. Altered path of eruption
4. Premature loss of deciduous teeth
5. Delayed eruption of permanent teeth
6. Presence of supernumerary teeth
7. Trauma
8. Localised abnormal size and shape of teeth. Ex: fusion of teeth
9. Late horizontal growth of mandible: due to late horizontal growth in the mandible, they are bounded by the upper anteriors as a result. They get uprighted resulting in crowding of lower anterior teeth.

10. Mesial migration of buccal segments : due to premature loss of deciduous molars the permanent molars migrate mesially and occupy the space of underlying unerupted premolar position resulting in crowding in cuspid and bicuspid regions..
11. Cleft lip and palate
12. Frequent use of a pacifier after the age of 3
13. Prolonged use of bottle feeding in early childhood
14. Thumb sucking in early childhood
15. Injuries that result in the misalignment of the jaw
16. Tumours in the mouth or jaw
17. Abnormally shaped or impacted teeth
18. Poor dental care that results in improperly fitting dental fillings, crowns, or braces
19. Airway obstruction (mouth breathing), potentially caused by allergies or by enlarged adenoids or tonsil

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Causes of Malocclusion

Does a child have large teeth, narrow jaws or breach of oral muscles?

- The normal form of the upper dentition provided palatal position of the tongue at rest, which compensates for the pressure on the cheek tooth rows outside. The predominance of the external pressure leads to a narrowing of the dental arches and crowding of the teeth.

- When the lips and tongue are working correctly, this inevitably arises narrowing jaws and crowding of the teeth. These are called functional disorders Dysfunction soft tissues.
- If the function of the muscles and the form of the dental arches are correct, the place is always tough enough.

If the dental arch and jaw child underdeveloped facial structures may not develop properly.

Effect of somatic problems, such as allergies, asthma, incorrect posture and poor child nutrition affects the development of craniofacial structures. Type swallowing also affects the shape of dentition.

Side effects associated with dysfunction of soft tissues

Studies have shown signs of temporomandibular joint dysfunction (TMJ) in many children. Myofunctional orthodontics can address the entire range of these issues.

Dysfunctions and correction of bad habits is necessary in any case, because, in addition to crowding of the teeth and the general underdevelopment of maxillofacial skeleton, they lead to painful syndromes of the face.

TMJ can cause chronic headaches and neck pain, pain in the ears and jaw.

Children often have a variety of bad habits – thumb sucking, mouth breathing, infantile swallowing – all lead to underdevelopment of craniofacial structures and crowding of the teeth. And earlier preventive treatment is the best way to prevent these violations.

Timely elimination of harmful Myofunctional habits at an early age helps to correct personal development; the smooth growth of the teeth, jaws, and the correct proportions improves overall appearance.

Limited than traditional orthodontic treatment?

- Braces only move teeth, but do not give stable results of treatment, and they affect the integrity of the tooth enamel and lead to root resorption.
- Spread misconception that the crowding of the teeth – it is solely a genetic problem. And most orthodontists offer to wait until the change of teeth to fix brackets.

- Fixed arcs and braces are effective only for alignment of the dentition, but do not eliminate the causes of crowding of the teeth and jaws of underdevelopment, and do not correct their relative.
- Children often have a variety of bad habits – thumb sucking, mouth breathing, infantile swallowing – all lead to underdevelopment of craniofacial structures and crowding of the teeth. And earlier preventive treatment is the best way to prevent these violations.
- Timely elimination of harmful Myofunctional habits at an early age helps to correct personal development; the smooth growth of the teeth, jaws, and the correct proportions improves overall appearance.

Relapse and lifetime retention – eternal companions braces treatment due to the instability of the results of treatment.

Thus, the traditional approach is not justified because it eliminates the cause of crowding of the teeth, the effect of which continues even after the removal of braces, reversing the results of expensive and prolonged treatment.

The musculature of the lips and tongue exerts a powerful influence on the dentition. Only the removal of the excess of influence can help to avoid the relapse. This is confirmed by rigorous scientific research.

TREATMENT

A. Mild Crowding

Teeth can be aligned with removable orthodontic appliances incorporating labial bow and springs such as “Z” spring finger spring or “T” spring flapper spring etc. after gaining space using expansion or proximal stripping.

B. Moderate Crowding

Teeth can be aligned using removable or fixed appliances after gaining the space appropriately.

C. Severe Crowding

If the crowding is severe enough to warrant extraction of a tooth and the case has to be managed by a removable appliance, then the choice of tooth extraction is first premolar. Following extraction of first premolars, the stages of treatment are as follows:

1. Stage I: retraction of canine using canine retractor
2. Stage II: alignment of anterior teeth using suitable labial bow.
3. Retention of the teeth using a retention appliance. Ex: Hawley's retainer.

D. Fixed appliance therapy:

In severe crowding or moderate crowding of teeth where extraction is warranted, the case can be managed by removable or fixed appliances. Extractions other than first premolars are difficult to be managed by removable appliances, hence in such cases, fixed appliances are indicated. In cases of first premolar extraction, where the roots of the canines are mesially inclined. Fixed appliance is indicated.

While using fixed appliances to manage the case, the different tooth movements are carried out simultaneously.