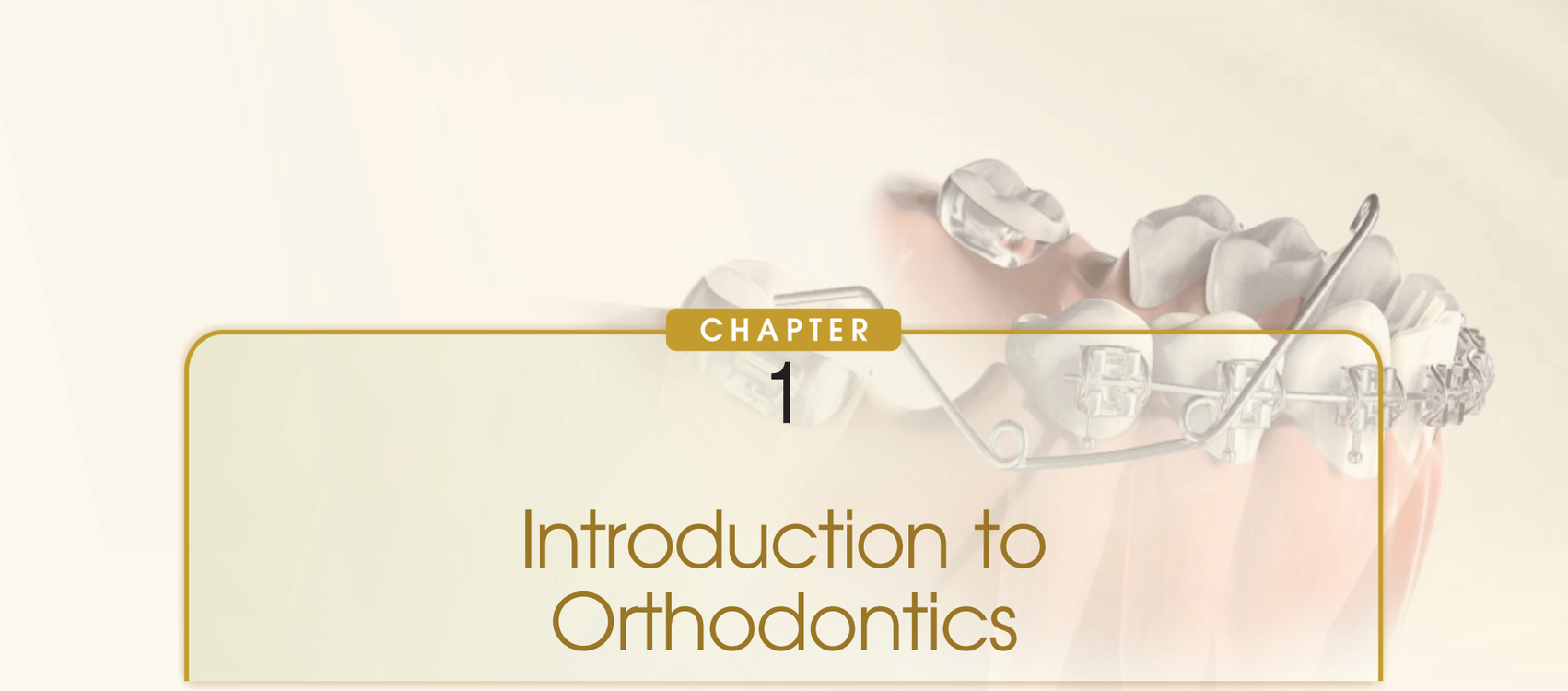

CHAPTER

1

Introduction to Orthodontics

Chapter Outline

- Introduction
- Definitions
- Benefits of orthodontic treatment
- Unfavorable sequelae of malocclusion
- Need for orthodontic treatment
- Branches of orthodontics

INTRODUCTION

Orthodontics is the branch of dentistry concerned with the growth of the face, development of occlusion and the prevention and correction of occlusal anomalies/abnormalities.

The term orthodontics comes from Greek; ***Ortho*** means right or correct and ***Odontos*** means tooth. The term orthodontics was first coined by LeFoulon of France in 1839. **Edward Hartley Angle** (1855-1930) is rightly regarded as the **father of modern orthodontics**. The term "malocclusion" was first coined by Guilford. Prior to 1900s, the speciality of orthodontics was referred as "regulation of teeth". The term orthodontics has been used up to 1970s and currently designated as "orthodontics and dentofacial orthopedics". **Carabelli** in the 19th century was probably the first to describe abnormal relationship of the upper and lower dental arches in a systemic way. The terms edge-to-edge bite and overbite are actually derived from "Carabelli" system of classification.

Occlusion: When the teeth in the mandibular arch come into contact with those in the maxillary arch in any functional relation are said to be in occlusion (Wheeler).

Malocclusion: It is a condition in which there is deflection from the normal relation of the teeth to other teeth in the same arch and/or to the teeth in the opposing arch **(Gardiner, White and Leighton)**.

Malrelationship: It refers to any deviation from normal relationship of mandible to maxilla in centric occlusion.

DEFINITIONS

Noyes (1911): "The study of the relation of the teeth to the development of the face and the correction of arrested and perverted development".

BSSO (British Society for the Study of Orthodontics) (1922): "The study of growth and development of the jaws and face particularly, and the body generally as influencing the position of the teeth; the study of action and reaction of internal and external influences on the development and prevention and correction of arrested and perverted development".

The American Board of Orthodontics (ABO) and the American Association of Orthodontist (AAO): Orthodontics is that specific area of dental practice that has as its responsibility, the study and supervision of the growth and development of the dentition and its related anatomical structures from birth to dental maturity, including all preventive and corrective procedures of dental irregularities requiring the repositioning of teeth by functional or mechanical means to establish normal occlusion and pleasing facial contour.

Aims

Jackson has summarized the aims of orthodontic treatment that are popularly known as **Jackson's triad** (Fig. 1.1).

They are:

Functional efficiency: Dentocraniofacial structures are involved in a number of functions like mastication, swallowing, respiration and speech. Any disturbance in the normal relationship of various structures should be analyzed for smooth functioning. Orthodontic treatment should increase the efficiency of the functions such as mastication and phonation.

Structural balance: By removing the factors causing disturbances of equilibrium of various forces, a structural balance can be achieved. Orthodontic treatment not only corrects the teeth but also the soft tissue and associated skeletal structures.

Esthetic harmony: Many malocclusions lead to poor esthetics and thus affect the person's psychological status. Orthodontic treatment should enhance the overall appeal of the individual and self-confidence of the person.

BENEFITS OF ORTHODONTIC TREATMENT

- It improves self-confidence.
- Easy to maintain the oral hygiene after proper aligning.
- The space closure after orthodontic treatment obviates the need for prosthetic work.
- It improves stomatognathic system

UNFAVORABLE SEQUELAE OF MALOCCLUSION

- It gives poor facial appearance.
- The patient cannot maintain oral hygiene.
- Poor oral hygiene leads to risk of periodontal diseases.
- Accumulation of food in crowded teeth leads to dental caries.
- Abnormalities of function.
- The patient faces psychosocial problems with malocclusion.

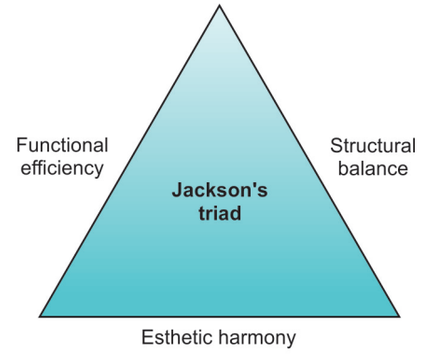

Fig. 1.1: Jackson's triad

- The most proclined anterior teeth are vulnerable for risk of trauma to the teeth.
- TMJ problem.

NEED FOR ORTHODONTIC TREATMENT

- It improves dental esthetics.
- It improves facial esthetics.
- It improves masticatory efficiency.
- It relieves traumatic bite.
- It facilitates restorative treatment.
- It improves access for tooth brushing.
- It helps correction of speech problems.
- It improves respiration in sleep apnea syndrome.

BRANCHES OF ORTHODONTICS

- Preventive orthodontics.
- Interceptive orthodontics.
- Corrective orthodontics.
- Surgical orthodontics.

Certain procedures undertaken may be common to both preventive and interceptive orthodontics. The preventive orthodontic procedures are carried out before the manifestation of a malocclusion, but the interceptive procedures are to intercept a malocclusion that has been developed already.

Preventive Orthodontics

It may be defined as the action taken to preserve "the integrity of what appears to be normal occlusion at a specific time". These actions are generally undertaken during primary dentition period. Some of the preventive procedures are as follows:

- Restoration of carious lesions of deciduous dentition that might change the arch length.
- Monitoring of eruption and shedding time table of tooth.
- Early recognition and elimination of oral habits that might interfere with the normal development of the teeth and jaws.
- Removal of retained deciduous teeth.
- Maintenance of space following premature loss of deciduous teeth to allow proper eruption of their successors.

Interceptive Orthodontics

It involves the procedures used to recognize and eliminate or reduce the severity of the potential developing irregularities and malpositions in the developing dentofacial complex. These actions are

undertaken during mixed dentition period especially growth phase. Following are the interceptive procedures:

- Serial extraction.
- Correction of developing anterior crossbite.
- Control of abnormal pressure habits.
- Elimination of bony or soft tissue barrier that prevents the teeth eruption.
- Removal of supernumerary and ankylosed teeth.

Corrective Orthodontics

It recognizes the existence of malocclusion and deals with procedures utilizing mechanical appliances to reduce or correct the malocclusion and to eliminate the possible sequelae of malocclusion.

Surgical Orthodontics

It deals with minor surgical orthodontic procedures as an adjunct to orthodontic therapy and major procedures such as orthognathic surgery.

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