ORTHodontics  PGI

COURSE ID:  ODO.32
MECHANICS OF TOOTH MOVEMENT

INCLUDES:
OVERVIEW ON THE BASICS OF THE GENERAL PHYSICS OF FORCES
TYPES OF TOOTH MOVEMENT
TECHNIQUES IN TOOTH MOVEMENTS
ANCHORAGE CONTROL

FACULTY: Bilal Koleilat, DDS.

Goals: This series of lectures should enable the resident to:
1. Fully understand the concepts of forces applied in orthodontics.
2. Apply the proper mechanical system for various orthodontic tooth movements.
3. Understand the concept of anchorage.
4. Master the proper technique for space closure in extraction cases.
5. Control the side effects and unwanted reactions in every step of the orthodontic movements.

Objectives: At the end of this series, the resident should:
1. How to apply forces, understand their characteristics and way of application.
   a. Plan the proper type of tooth movement (tipping, translation, root movements etc…)
   b. Understand the effect and the reaction of forces in accordance with the center of rotation and the surrounding structure.
2. Learn through hypothetical exercises the appropriate amount, direction and way of application of moments and forces.
3. Learn the different techniques that allow achieving tooth movements.
4. Compare between different techniques.
5. Anticipate tooth movement and plan future mechanotherapy.
COURSE DURATION: This course is scheduled between Mid-November and March for the first year residents. It is given every Tuesday at a 1.5-hour session between 8:00 a.m. and 9:30 a.m. It includes fundamental knowledge on the different types and techniques of orthodontic tooth movements, with the appropriate ways applied to control anchorage.

EXAMINATIONS: One examination is scheduled for this course; it is usually given at the final examination in July. During the course, any number of progress tests or assignments may be given. Their cumulative weight in proportion to the final grade may not exceed 50%.

MECHANICS OF TOOTH MOVEMENT

- INTRODUCTION
- DEFINITIONS
- TYPE OF TOOTH MOVEMENTS
- IDENTIFICATION OF CENTER OF ROTATION ACCORDING TO TYPE OF TOOTH MOVEMENT
- MOMENT TO FORCE RATIO: CONCEPT AND USE

1. INTRODUCTION

   A. What is mechanics?
   B. Why do we need mechanics
   C. What is an orthodontic system

2. DEFINITIONS

   A. Force
   B. Moment
   C. Couple
   D. Rotation
   E. Center of rotation
   F. Center of resistance (with exercises on the identification of the center of
resistance of:
  a. Tooth
  b. Segment of teeth
  c. Bone

3. TYPE OF TOOTH MOVEMENTS
   A. Uncontrolled tipping
   B. Controlled tipping
   C. Translation
   D. Root movement

4. IDENTIFICATION OF CENTER OF ROTATION ACCORDING TO TYPE OF TOOTH MOVEMENT (with exercises)

5. MOMENT TO FORCE RATIO: CONCEPT AND USE (with exercises)

6. ANCHORAGE IN ORTHODONTICS
   A. Types of anchorage
      a. Maximum
      b. Moderate
      c. Minimum
   B. Intraoral appliances for anchorage
      a. Lingual arch
      b. Trans-palatal bar
      c. Nance button
      d. Intraoral elastics
      e. Bite jumping appliances
   C. Extraoral appliances for anchorage
      a. Head gear
      b. Face mask
      c. Reverse pull head gear
      d. J-hook

7. SLIDING TECHNIQUE IN ORTHODONTICS
   A. Definition
   B. Types of friction
      C. Factors that affect friction
         a. Physical
b. Biological
D. Clinical significance of friction

8. SEGMENTED TECHNIQUE IN ORTHODONTICS

A. Definition
B. T loop system: Fabrication and activation

9. V-BENDS

A. Toe in
B. Toe out
C. Center and off center bends
D. Expansion
E. V bend for anchorage

10. SPECIAL CLINICAL CONSIDERATIONS

A. Deep overbite correction
   a. Definition and types of overbite
   b. Deep overbite correction by intrusion
   c. Control of active and reactive forces during intrusion
B. Canine retraction
C. En masse incisor retraction

REFERENCES