CLINICAL PEDIATRIC DENTISTRY I

DEVELOPMENT OF OCCLUSION

(Ch. 6. Principles and Practice of PEDODONTICS by Arathi Rao, JAYPEE, 2008)

Tuesday, 25\11\1434
1 OCT 2013
1:00 pm-2:00 pm

OTHMAN AL-AJLOUNI
LECTURE OUTLINE

1. INTRODUCTION:

2. PRE-DENTAL \ DENTATE PERIOD:

3. DECIDUOUS DENTITION PERIOD:

4. MIXED DENTITION PERIOD:

5. PERMANENT DENTITION PERIOD:

6. TRANSIENT MALOCCLUSION:
PREREQUISITE KNOWLEDGE

- Growth & Development of Face and Jaws Both Prenatal and Postnatal
- Eruption of Teeth Timing and Sequence
- Morphology of Teeth Both Primary and Permanent
- Terminology of Key Words
- Masticatory Movements and Path of Closure of the Mandible
OBJECTIVE OF LECTURE

YOU SHOULD BE ABLE TO ANSWER THE FOLLOWING QUESTIONS AT THE END OF THIS LECTURE:

1. TO KNOW STAGES OF OCCLUSION DEVELOPMENT
2. TO KNOW ARCH RELATIONSHIP AT BIRTH
3. TO KNOW TYPICAL FEATURES OF OCCLUSION IN PRIMARY DENTITION
4. TRANSIENT MALOCCLUSION IN MIXED DENTITION
5. FEATURES OF NORMAL OCCLUSION
DEFINITION OF TERMS USED

- DECIDUOUS DENTITION
- MIXED DENTITION
- PERMANENT DENTITION
- PREDECESSOR
- SUCCESSOR
DEVELOPMENT OF OCCLUSION

DECIDUOUS DENTITION

AT BIRTH - GUM PADS

Upper horseshoe – shaped

Lower U - shaped

covered with thick fibrous muco periosteum.

Contain 24 crypts of developing teeth.

Separated, tongue lies in between
- During the first year, the gum pads enlarge and arches widen to provide space for erupting incisors.

- Timing of eruption 6 month variation.

- Natal and neonatal teeth.
PRIMATE SPACING/ANTHROPOID SPACES/SIMIAN SPACES
TERMINAL PLANE

The mesio-distal relation between the distal surfaces of upper and lower second primary molars.

Baumgartner’s classification

1. FLUSH TERMINAL PLANE (Normal) 37%
TERMINAL PLANE
DISTAL STEP TERMINAL PLANE 14%
TERMINAL PLANE
MESIAL STEP TERMINAL PLANE 49%
TYPICAL FEATURES OF OCCLUSION OF PRIMARY DENTITION

1. SPACING: Primate Space Present
2. TERMINAL PLANE:
3. DEEP BITE: Positive over jet and over bite
3. WIDE DENTAL ARCHES:
4. FLAT CURVE OF SPEE:
5. SHALLOW CUSPAL INTERDIGITATION:
6. VERTICAL PLACED INCISORS: Incisors are upright
7. EACH MAXILLARY TOOTH OCCLUDE WITH TWO MANDIBULAR TEETH.
AGE CHANGES FROM THREE TO SIX YEARS

1. Spacing begin to appear or existing spaces increase due to growth

2. Occlusal attrition

3. Incisor position become edge to edge

4. Distal surfaces of second molar may not remain in same vertical plane
DEVELOPMENT OF DECIDUOUS DENTITION.

- **Birth**
- **6–9 months**
- **3 years**
- **5–6 years**
DEVELOPMENT OF OCCLUSION

MIXED DENTITION STAGE  6-12 YEARS:

1. FIRST TRANSITIONAL PERIOD

2. INTER TRANSITIONAL PERIOD

3. SECOND TRANSITIONAL PERIOD
MIXED DENTITION STAGE  6-12 YEARS

1. FIRST TRANSITIONAL PERIOD

EMERGENCE OF 1ST PERMANENT MOLARS AND EXCHANGE PRIMARY INCISORS WITH PERMANENT INCISORS.
MIXED DENTITION STAGE 6-12 YEARS

2. INTER TRANSITIONAL PERIOD

RELATIVELY QUITE AND NO ACTIVE TOOTH ERUPTION IS SEEN
MIXED DENTITION STAGE 6-12 YEARS

3. SECOND TRANSITIONAL PERIOD:

REPLACEMENT AND ALIGNMENT OF PRIMARY MOLARS AND CANINES BY PREMOLARS AND PERMANENT CUSPIDS

FEATURES:

1. LEEWAY SPACE OF NANCE.

2. UGLY DUCKLING STAGE.
LEEWAY SPACE

DIFFERENCE BETWEEN TOTAL MESIO -DISTAL SIZE OF PRIMARY CANINE AND BOTH PRIMARY MOLARS ALWAYS LARGER THAN TOTAL SIZE OF PERMANENT CANINE FIRST PREMOLAR AND SECOND PREMOLAR

\[ C+D+E > 3+4+5 \]

➢ IN MAXILLARY \((C+D+E) - (3+4+5) = 0.9\) MM ON EACH SIDE
➢ IN MANDIBULAR \((C+D+E) - (3+4+5) = 0.7\) MM ON EACH SIDE

LEEWAY SPACE  = \((C+D+E ) - (3+4+5)\)
MIXED DENTITION STAGE  6-12 YEARS

3. SECOND TRANSITIONAL PERIOD:

REPLACEMENT AND ALIGNMENT OF PRIMARY MOLARS AND CANINES BY PREMOLARS AND PERMANENT CUSPIDS

FEATURES:

1. LEEWAY SPACE OF NANCE.

2. UGLY DUCKLING STAGE (BROADBENT PHENOMENON)
PHYSIOLOGICAL DIASTEMA
ESSENTIAL FACTORS FOR A SMOOTH TRANSITION FROM PRIMARY TO PERMANENT DENTITION

1. PRIMATE SPACE

2. GENERAL SPACING

3. PRESERVATION OF “LEEWAY SPACE”

4. SEQUENCES OF ERUPTION

5. TOOTH SIZE AND JAW IN HARMONY
At birth

Adult
OCCLUSAL FEATURES

- No rotations
- No crowding or spacing
- Correct inclinations
- class I occlusion
- occlusal plane has a slight curve
- Curve of spee and Curve of Monson
Thank You