

# **IOTN and Orthodontic Referral**

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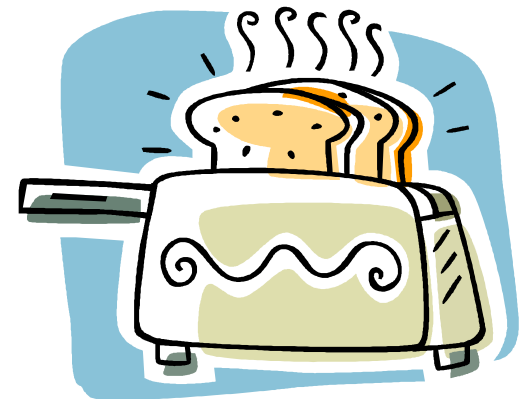
# What to learn?

- Need of IOTN
- Components of IOTN
- Referral Cases



## The use of occlusal indices:

- i. reduce subjective bias
- ii. standardise the criteria which judgement are made throughout the profession



# The requirements of indices are that they should be

- i. Clinically valid and reproducible
- ii. Objective and yield quantitative data which can be analysed.
- iii. Quick to apply
- iv. Acceptable to both the profession and the patient.

# Index of Orthodontic Treatment Need (IOTN)

This index attempts to rank malocclusion in terms of:

- ❑ The significance of various occlusal traits for an individual's dental health .
- ❑ Perceived aesthetic impairment. It intends to identify those individual who would most likely benefit from orthodontic treatment

## Components of IOTN:

- Aesthetic Component (AC)
- Dental Health Component (DHC)  
(Brook and Shaw, 1989)

# Aesthetic Components (AC)

- AC consists of a scale of ten colour photographs showing different levels of dental attractiveness (Evans and Shaw, 1987)
- The dental attractiveness of prospective patients can be rated with reference to this scale.
- Grade 1 represents the most and grade 10 the least attractive arrangements of teeth.
- The score reflects the aesthetic impairment.



(AC)  
Grade 1-10





# Dental Health Components (DHC)

- ❑ Records the the various occlusal traits of a malocclusion that would increase the morbidity of the dentition and surrounding structures.
- ❑ Each occlusal trait thought to contribute to the longevity and satisfactory functioning of the dentition is defined and placed into five grades, with clear cut-off points between the grades

# Dental Health Components (DHC)

- ❑ There are five grades categorising cases:
  - Grade 1 and 2: No need for treatment
  - Grade 3: Moderate/boarderline
  - Grades 4 and 5: Need treatment
  
- ❑ A fundamental premise of the the index is the recognition that dental diseases are site specific (eg. Severe displacement of a particular tooth represents a particular disadvantage for that site).

# Dental Health Components (DHC)

- ❑ The most severe trait identified is the basis for grading the individual's need for treatment on dental health grounds.
- ❑ There is no summing scores for a series of individual traits .
- ❑ Thus, multiple minor variations, each of which is unimportant - dental health, cannot be added together to place an individual in a higher grade.
- ❑ Only the **worst** occlusal feature is recorded.

# Dental Health Components (DHC)

## Grade 5 (Need treatment)

- **5.i:** Impeded eruption of teeth (with the exception of third molars) due to crowding, displacement, the presence supernumerary teeth, retained deciduous teeth and any pathological cause.
- **5.h:** Extensive hypodontia with restorative implications (more than one tooth missing in a quadrant) requiring preresorative orthodontics.
- **5.a:** Increased overjet greater than 9 mm.
- **5.m:** Reverse overjet greater than 3.5 mm with reported masticatory and speech difficulties.
- **5.p** Defects of cleft lip and palate and other caniofacial anomalies.
- **5.s** Submerged deciduous teeth.

# Dental Health Components (DHC)

## Grade 4 (great)

- **4.h:** Less extensive hypodontia requiring preresorative orthodontic or orthodontic space closure to obviate the need for a prosthesis.
- **4.a:** Increased overjet greater than 6 mm but less than or equal to 9 mm.
- **4.b:** Reverse overjet greater than 3.5 mm with no masticatory or speech difficulties.
- **4.m:** reverse overjet greater than 1 mm but less than 3.5 with recorded masticatory speech difficulties.
- **4.c:** Anterior or posterior crossbites with greater than 2 mm discrepancy between retruded contact position and intercuspal position.

# Dental Health Components (DHC)

## Grade 4 (great) (cont'd)

- 4.l Posterior lingual crossbite with no functional occlusal contact in one or both buccal segments.
- 4.d Severe contact point displacements of teeth greater than 4 mm.
- 4.e Extreme lateral or anterior open bites greater than 4 mm.
- 4.f Increased and complete overbite with gingival or palatal trauma.
- 4.t Partially erupted tipped and impacted against adjacent
- 4.x Presence of supernumerary teeth.

# Dental Health Components (DHC)

## Grade 3 (Borderline need)

- **3.a:** Increased overjet greater than 3.5 but less than or equal to 6 mm with incompetent lips.
- **3.b:** Reverse overjet greater than 1 mm but less than or equal to 3.5 mm.
- **3.c:** Anterior or posterior crossbites with greater than 1mm but less than or equal to 2 mm discrepancy between retruded contact position and intercuspal position.
- **3.d:** Contact point displacement of teeth greater than 2 mm but less than or equal to 4mm.
- **3.e:** Lateral or anterior open bite greater than 2 mm but less than or equal to 4 mm.
- **3.f:** Deep overbite complete on gingival or palatal tissues but no trauma.

# Dental Health Components (DHC)

## Grade 2 (little)

- **2.a:** Increased overjet greater than 3.5 mm but less than or equal to 6 mm with competent lips.
- **2.b:** Reverse overjet greater than 0 mm but less than or equal to 1 mm.
- **2.c:** Anterior or posterior crossbite with less than or equal to 1 mm discrepancy between retruded contact position and intercuspal position.
- **2.d:** Contact point displacement of teeth greater than 1 mm but less than or equal to 2 mm.
- **2.e:** Anterior or posterior open bite greater than 1 mm but less than or equal to 2 mm.



# Dental Health Components (DHC)

## Grade 2 (little) (cont'd)

- **2.f:** Increased overbite greater than or equal to 3.5 mm without gingival contact.
- **2.g:** Pre-normal or post-normal occlusions with no other anomalies (includes up to half a unit discrepancy).

## Grade 1 (no need)

- **1:** Extremely minor occlusions including contact point displacements less than 1 mm.

# Dental Health Components (DHC)

## Grade 2 (little) (cont'd)

- **2.f:** Increased overbite greater than or equal to 3.5 mm without gingival contact.
- **2.g:** Pre-normal or post-normal occlusions with no other anomalies (includes up to half a unit discrepancy).

## Grade 1 (no need)

- **1:** Extremely minor occlusions including contact point displacements less than 1 mm.

# HIERARCHICAL SCALE

- A hierarchical scale of occlusal anomalies has been developed to help identify the worst occlusal feature.



# HIERARCHICAL SCALE

- To provide a guide which enables the examiner to survey the dentition in a systematic manner, and thus ensures all relevant occlusal anomalies are identified.
- When two or more occlusal anomalies are found to achieve the same DHC grade, the scale is employed to determine which feature should be recorded. In this situation, the occlusal anomaly higher up the order is recorded.

## The hierarchical scale is as follows:

- **M**issing teeth (including congenital absence, ectopic and impacted teeth).
- **O**verjets (including reverse overjets).
- **C**rossbites.
- **D**isplacement of contact points.
- **O**verbites (including openbites).

The acronym “**MOCDO**” constructed from the first letter of each category may be used to remember the hierarchical scale.

## The hierarchical scale is as follows:

- ❑ Record the grade only
- ❑ Record grade as well as the initiating feature.

Eg. An overjet greater than 9mm would be 5.a. (the grade being 5 and the overjet signified by the letter 'a')

- ❑ The second method provides more information regarding the prevalence of the specific occlusal traits

# VALIDATION OF THE AESTHETIC COMPONENT

- The AC gradings can be split into three main groups

## Grades :-

- 1 to 4      No need for treatment
- 5,6 and 7      Moderate/borderline need for treatment
- 8,9 and 10      Need orthodontic treatment





# VALIDATION OF THE DENTAL HEALTH COMPONENT

The DHC can also be categorised into three groups

## Grades

- 1 and 2 No need for treatment
- 3 Moderate/Borderline need for tx
- 4 and 5 Need treatment

# DENTAL HEALTH COMPONENT

- Missing
- Overjet
- Crossbite
- Displacement
- Overbite

Grade	1	2	3	4	5
<b>Missing</b>				4h: one tooth missing/quadrant with restorative ortho required	5i: tooth has less than or equal to 4mm space in which to erupt  5h: more than 1 tooth / quadrant missing, but pre-restorative ortho needed
<b>Overjet</b>		2a: 3.5-6mm (competent lips)	3a: 3.5-6mm (incompetent lips)  3b: 0-1mm	4a: 6.1-9mm  4m: 1-3.5mm (with speech and masticatory dysfunction)  4b: 1-3.5mm	5a: >9mm  5m: >3.5mm (with speech and masticatory dysfunction)
<b>Crossbite</b>		2c: <1mm displacement	3e: lateral/anterior 2.1-4mm	4c: >2mm displacement	
<b>Displacement</b>		2d: 1-2mm	3d: 2.1-4mm	4d: >4mm	
<b>Overbite</b>		2f: Overbite >3.5mm no trauma  2e: anterior/posterior 1.1-2mm	3f: deep complete without trauma  3e: lateral/anterior 2.1-4mm	4f: Increased complete with gingival trauma (labial/palatal)  4e: Extreme lateral/anterior >4mm	

Referral Case!

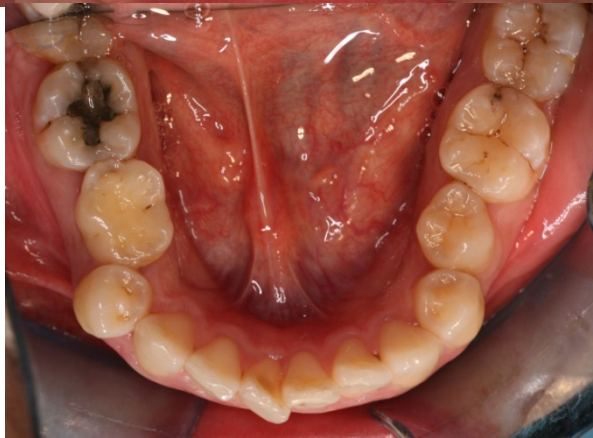
IOTN

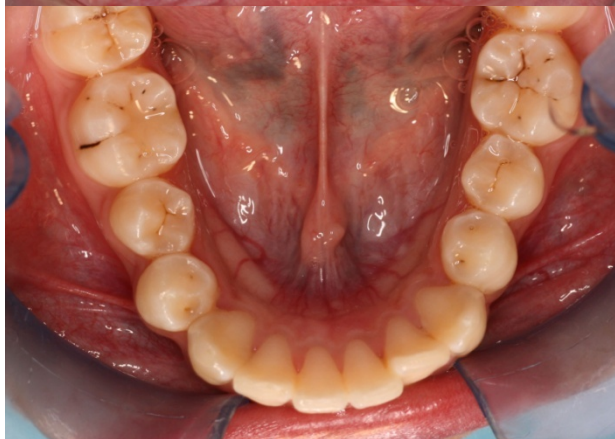
Grade 4 & 5

# Modified IOTN

# Orthodontic Referral

- Good oral hygiene
- Caries Free

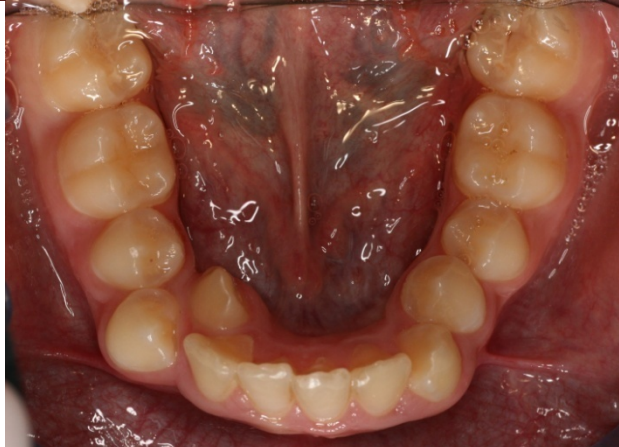
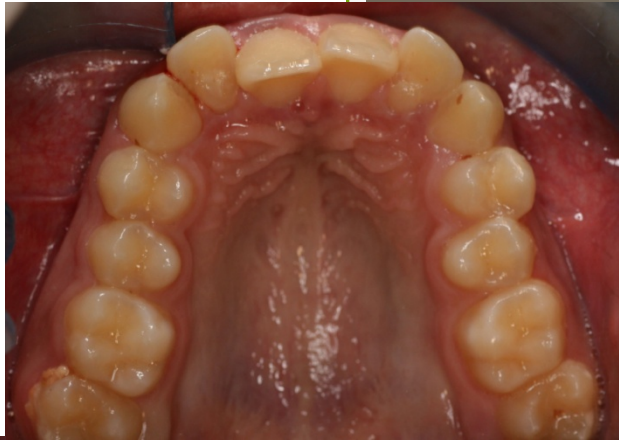


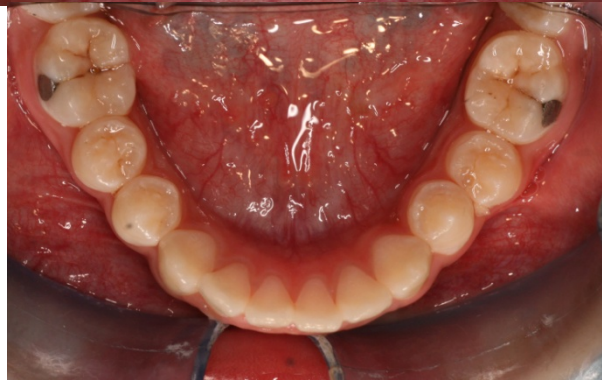






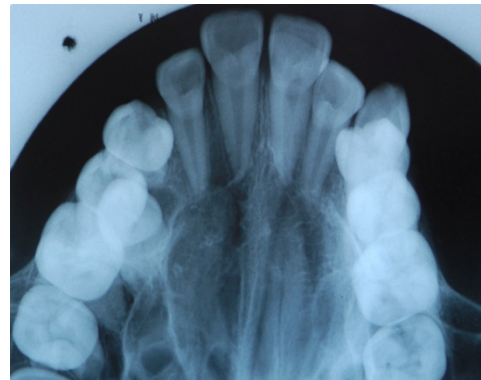
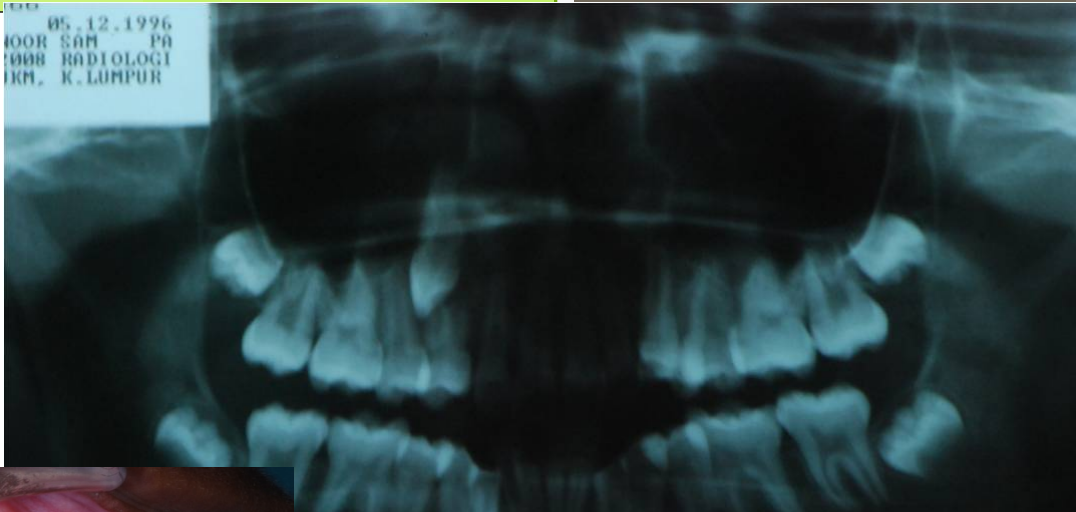


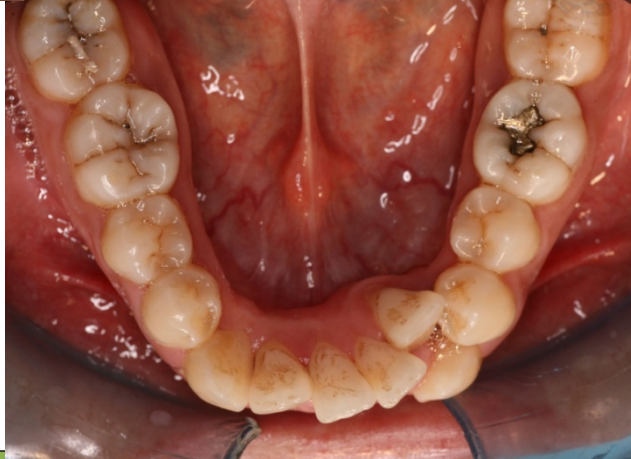






05.12.1996  
MOOR SAM PA  
RADIOLOGI  
KEM. K. LUMPUR













OJ = 14 mm



Class II div 2 on skeletal I base, high lip line & gummy smile, Overbite very deep & traumatic, low OJ & low F/M angle





