EDITORIAL

Early diagnosis: Key to prevent malocclusion

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Abstract

Maloccluded teeth need orthodontic treatment. But in some cases, it seems difficult to justify the need for orthodontic treatment in the dental clinics and hospitals without using the diagnostic tools especially at the remote areas. This ultimately increases the number of orthodontic patients seeking treatment and depriving the genuine patients from receiving treatment in proper time. Proper diagnosis and early intervention of malocclusion in dental clinics and hospitals, with very minimum efforts could be a key to prevent this unwanted situation.

This article therefore was designed to discuss these practical oriented and frequently encountered problems in the dental clinics and hospitals of Bangladesh and to find out a guide line to an easy solution of it.

Keywords: *Malocclusion, Psychosocial problem, Oral function, Overbite (OB), Overjet (OJ)*

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Introduction

Normal occlusion and malocclusion are two opposite side of a coin. However, there are some cases where it is difficult to differentiate normal occlusion from malocclusion. Normally it is very easy to notice malocclusion in patients but in some cases other features make it difficult to identify as malocclusion. Before we discuss the present article, it would be logical to focus a little on different aspect of normal occlusion and malocclusion for easy understanding of the readers.

What is Normal Occlusion?

It is well known among the dentists that Angle's Class I molar relationship along with class I canine and incisor relationship with 2-3 mm overjet and overbite should be considered as normal or ideal occlusion. But there are some patients who have all class I dental features but some minor irregularities push them into malocclusion group. These types of cases sometimes put the dentists in dilemma to decide whether the patients need treatment or not.

What is Malocclusion?

An unacceptable deviation- esthetically and/or functionally from the ideal occlusion is called Malocclusion. (Fig:1a). However, the term "Unacceptable deviation" sometimes used to make the dentists confused to differentiate the malocclusion from that of normal occlusion as there was no such easy method to diagnose this type of case without the diagnostic tools like model casts, orthopantomogram and lateral cephalogram. But in practice sometimes it becomes very important to justify the case on the spot only by the visual appearance of the patient[1].

Therefore, it was inevitable that an easy method should be available in practice to find out who really needs orthodontic treatment.

Problems those lead the patients to seek for the orthodontic treatment:

1. The effects of malocclusion may extend beyond oral health and appearance. Noticeable dental irregularities can adversely affect an individual's self-confidence and may influence social interactions. Children and adolescents may experience unfavourable perceptions among peers at school, while adults may perceive disadvantages in employment-related situations or interpersonal relationships. Thus, the consequences of malocclusion should not be regarded as merely an aesthetic concern.

2. Marked malocclusion can interfere with several components of normal oral function. Individuals with severe occlusal discrepancies may experience difficulty in mastication and such functional limitations can improve substantially following appropriate orthodontic correction. Certain occlusal abnormalities may also interfere with the articulation of particular speech sounds, in which case orthodontic correction may complement speech therapy. Alterations in occlusion and functional adaptation have also been associated with temporomandibular disorders (TMDs), which may present with pain or discomfort in the temporomandibular joint and its surrounding structures.[1,2]
3. The pattern of occlusion may influence the susceptibility of teeth to trauma and other dental complications. Prominent maxillary incisors, particularly in Class II malocclusion, may be more vulnerable to traumatic injury, with severe trauma potentially resulting in fracture or pulpal devitalization. In patients with a pronounced overbite, the mandibular incisors may impinge on the palatal tissues, producing repeated trauma and, in difficult situations, contributing to damage or loss of the maxillary incisors. Excessive incisor wear may likewise be observed in patients with marked overbite. In addition, malaligned teeth can make effective plaque control more difficult, thereby potentially increasing the risk of dental caries and periodontal disease. Occlusal discrepancies may also contribute to traumatic occlusal forces.

How to diagnose the treatment need?

The extent of an occlusal abnormality is an important consideration when determining whether orthodontic treatment is indicated. Because visual assessment alone may not adequately distinguish minor irregularities from clinically significant malocclusion, several indices have been developed to quantify deviations from normal occlusion and assist in assessing treatment requirements. Among these, the Index of Orthodontic Treatment Need (IOTN), developed through work including that of Shaw and colleagues, provides a practical approach for evaluating orthodontic treatment need.

The IOTN categorizes patients into five levels, ranging from minimal or no requirement for orthodontic intervention to cases in which treatment is strongly indicated. It incorporates two principal components. The Dental Health Component (DHC) evaluates occlusal and dental characteristics associated with oral health, whereas the Aesthetic Component (AC) assesses dental appearance by comparison with standardized photographic references. Together, these components provide clinicians with a structured means of estimating the severity of malocclusion and determining the likely requirement for orthodontic treatment.

IOTN: Index of Orthodontic Treatment Need

Grade 5 (Extreme/ Need Treatment) Fig:1b, 1c

a) Increased Overjet (OJ) > 9mm.
b) Reverse OJ> 3.5 mm with masticatory / speech defects
c) Cleft lip and palate defects and craniofacial anomalies.

Grade 4 (Severe/ Need Treatment) Fig: 1d, 1e

a) Increased OJ > 6 mm but 9 mm.
b) Increased and complete OB with gingival or palatal trauma.
c) Reverse OJ > 3.5 mm with no masticatory / speech defects.
d) Anterior or lateral open bite > 4 mm.
e) Anterior or posterior cross bite.

Grade 3 (Moderate / Borderline Need) Fig: 1f, 1g

a) Increased OJ > 3.5 mm but 6 mm with incompetent lips.
b) Increased and complete OB on gingiva / palate but no trauma.
c) Reverse OJ > 1 mm but 3.5 mm.
d) Anterior or posterior cross bite.
e) Anterior or lateral open bite > 2 mm but 4 mm.

Grade 2 (Mild / Little Need) Fig: 8 & 9

a) Increased OJ >3.5 mm but 6 mm with competent lips.
b) Increased OB 3.5 mm without gingival contact.
c) Reverse OJ > 0 mm but 1 mm.
d) Pre-normal or post-normal occlusal relationships without additional anomalies.

Grade 1: No treatment need [Fig. 1j]

Very minor occlusal irregularities, including contact-point displacement of less than 1 mm.

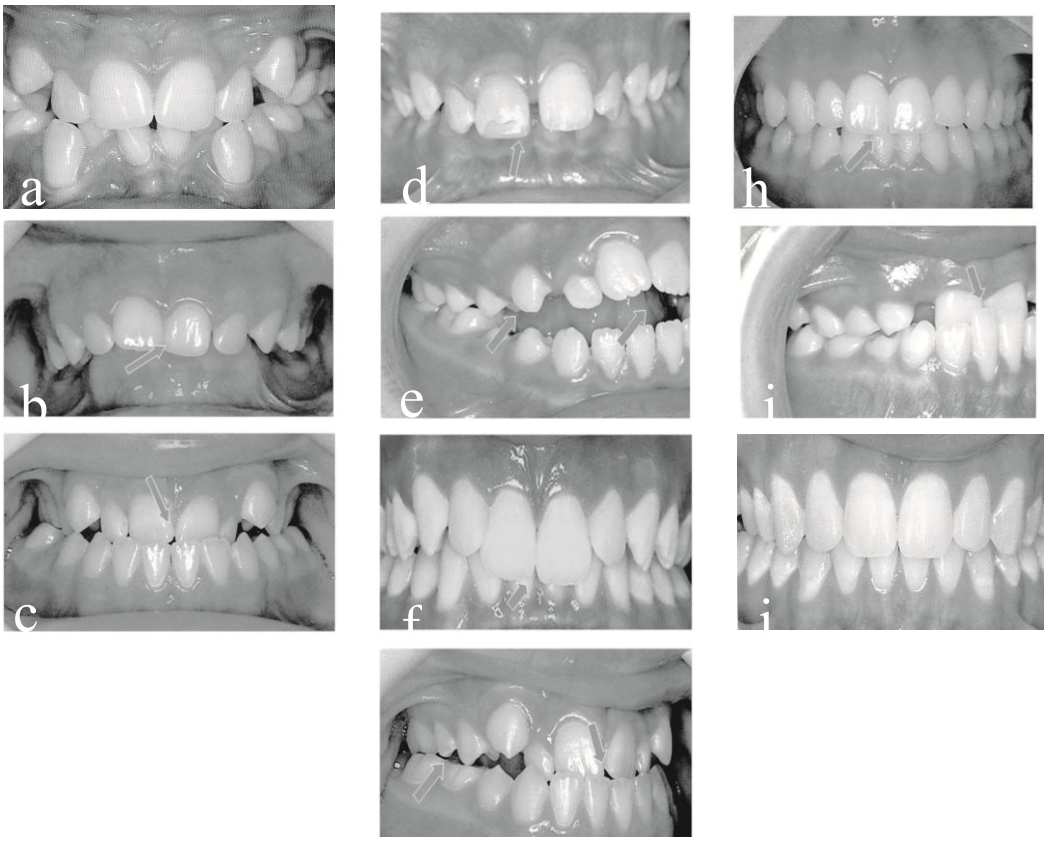

Figure 1: a) Malocclusion, b & c (Grade: 5), d & e (Grade: 4), f & g (Grade: 3), h & i (Grade: 2), j (Grade:1)

Conclusion:

In the present article an effort was made for easy and handy "On the spot diagnosis" of the patients who need orthodontic treatment on the basis of some series of photographs. It might be expected that this widely used method would be proved useful for the dentists in the dental clinics and hospitals in remote areas of our country where the diagnostic tools are not readily available for early diagnosis and proper intervention. Therefore, proper utilization of this easy method would help a great number of orthodontic patients to be diagnosed early to receive the proper treatment thereafter.

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