



"A Stitch In Time Saves Nine" (Significance of Timely Orthodontic Intervention)

KEYWORDS

Interceptive treatment; Developing malocclusion; Timely intervention.

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ABSTRACT Dental problems like early shedding of milk teeth, delayed eruption of permanent teeth, altered growth patterns etc if left untreated, can often result in development of full fledged malocclusion requiring extensive orthodontic treatment at a later age. The purpose of this paper is to exemplify one such case wherein timely intervention in a developing Class II patient gave excellent growth correction in a short time of treatment, saving from more extensive treatment later.

INTRODUCTION

An orthodontist can enhance an individual's smile at any age. However, there is an optimal time period to begin treatment which ensures timely and best results, with least amount of expense. It is widely accepted that the initial orthodontic evaluation should occur at the first sign of orthodontic problems or no later than 7 years of age. At this early age, though orthodontic treatment may not always be necessary, but vigilant examination can anticipate the most advantageous time to begin treatment depending on the nature and severity of malocclusion.¹

Early screening not only provides timely detection of orthodontic problems, it also presents increased opportunities to provide more effective orthodontic treatment. Timely intervention can help to gently guide growth and development and prevent more serious problems from developing. For example, careful removal of selected primary teeth can temporarily borrow space for successful eruption of permanent teeth.

Interceptive Orthodontics has traditionally been defined as the prompt treatment of unfavorable features of a developing occlusion that may make the difference between achieving a satisfactory result by simple mechanics later, thus reducing overall treatment time and providing better stability with functional and aesthetic results.² The percentage of children who could benefit from interceptive orthodontics has been reported from 14% to 49%.¹⁻⁵

Interceptive treatment presents the opportunity to:

- Create more room to relieve crowded, erupting teeth
- Create facial balance by harmonizing jaw growth
- Reduce risk of trauma to protruding front teeth
- Preserve or gain space for un-erupted teeth
- Reduce the need for permanent tooth removal
- Simplify and reduce treatment time with full braces
- Improve the self-image of children

Years ago, orthodontic treatment consultation was not sought until age 12-14 when all permanent teeth were erupted. It was often necessary to extract permanent teeth to correct / camouflage the malocclusion when growth was nearly complete. Especially in cases with a deficient lower jaw, the profile correction is often limited on completion of growth. Cooperation in wearing headgear and elastics is

also often lacking in older adolescents.

CASE REPORT

An 11½ year old female presented with the chief complaint of forward placement of upper front teeth (Fig. 1a-d). There was no significant medical or dental history. Extraoral examination revealed incompetent lips, with considerable lip strain on closure, slightly acute naso-labial angle, deep mentolabial angle and everted lower lip due to lip trap and continuous trauma by upper central incisor. She was highly conscious of her smile and exhibited low self-esteem.

On clinical examination she had a narrow, V-shaped maxillary arch, proclined maxillary anteriors, 4.5mm overjet, traumatic over bite, 5mm lower anterior crowding. Functional retrusion of mandible was noted on closure (due to narrow maxillary arch), leading to an end-on molar relationship (Fig. 2a-c, 3a,b). Radiographic evaluation revealed a Class I skeletal base, proclined maxillary dentoalveolar segment and mildly retroclined mandibular dentoalveolar segment. (Fig. 4a,b)

The patient was diagnosed as Class I type 2 malocclusion with narrow maxillary arch and functional retrusion.

Treatment Objectives

1. To expand maxillary arch
2. To eliminate functional retrusion of mandible
3. To correct maxillary protrusion and relieve crowding
4. To eliminate lip trap and lip strain on closure
5. To establish adequate overjet and overbite
6. To establish stable Class I molar and Canine relationship

Treatment Plan / Progress

It was planned to start treatment using MBT 0.022 slot pre-adjusted appliance. Ashley Howe's cast analysis indicated the need for expansion of maxillary arch, which was achieved by use of wide arch form NiTi wires, during alignment stage.⁶ Treatment was started with 0.016 inch NiTi, followed by 0.016 × 0.022 inch NiTi wire. 1.5 mm of anterior mandibular tooth material excess (as indicated by Bolton's cast analysis), was corrected by proximal reduction of lower incisors. After initial alignment and expansion, arches were consolidated with 0.017 × 0.025 inch stainless steel

wires. Expansion of maxillary arch resulted in elimination of functional retrusion and spontaneous forward shift of the mandible. After settling of posterior occlusion and 11 months of active treatment, the case was debonded. (Fig 5a-d, 6a-c, 7a-b)

RESULT AND DISCUSSION

11 months of active treatment gave excellent correction of malocclusion. Since only mild maxillary arch expansion was needed, it was decided not to give any expansion appliance. Rather the required expansion was achieved, only with the assistance of NiTi wires, which resulted in great arch form and occlusal stability.

The only active movement needed was maxillary expansion and alignment of arches. Nature and growth took care of the rest. Failure to do so at the right age would most certainly have led to further functional retrusion and deficient mandibular growth, leading to a class II situation and increased maxillary procumbency with continuous risk of trauma.

Benefits of timely intervention

1. Significant improvement in self esteem of patient.
2. Reduced risk of trauma to procumbent incisors.
3. Create facial balance by giving a more normal dental environment to allow appropriate skeletal and soft tissue growth.
4. Simplify and reduce overall duration of orthodontic treatment.
5. Reduce the chances for permanent tooth removal

Possible Effects / Sequelae of Failure to give timely Treatment

1. Low self esteem throughout the child's adolescence
2. Continued risk of possible trauma to procumbent incisors
3. Mandible trapped in functionally retruded position leading to development of more severe Class II condition
4. Need for more extensive and longer duration of treatment at a later stage, which may likely involve procedures like: fixed functional appliance, extraction of maxillary premolars or surgical alternative, depending upon the age of presentation and severity of developed malocclusion.

The case highlights one simple clinical situation wherein timely intervention was helpful in normalization of growth, giving excellent results with minimum effort and time. Similarly many other situations can also benefit from the same. Procedures like arch expansion and orthopaedic growth appliances can often intercept the altered growth process and allow more normal development. This in turn may eliminate or reduce the timing and complexity of treatment required with fixed braces.

CONCLUSION

Timely orthodontic intervention can significantly reduce the overall duration of orthodontic treatment. Working with growth often reduces the required efforts for successful results. Merely creating the right environment for growth allows nature to take the best course of action, yielding most favourable result. Failure to do so may lead to continued growth imbalance ending in a more severe malocclusion. Timely intervention and effort will prevent more complex work later.

As has been rightly said – 'A stitch in time saves nine'.

6. LEGEND OF FIGURES

Figure 1 a – d: Pre-treatment Extraoral photographs

Figure 2 a – c: Pre-treatment Intraoral photographs

Figure 3 a, b: Pre-treatment Occlusal photographs

Figure 4 a, b: Pre-treatment OPG and Lateral Cephaogram

Figure 5 a – d: Post-treatment Extraoral photographs

Figure 6 a – c: Post-treatment Intraoral photographs

Figure 7 a, b: Post-treatment Occlusal photographs



Figure 1 a – d



Figure 2 a – c



Figure 3 a, b



Figure 4 a, b



Figure 5 a – d



Figure 6 a – c



Figure 7 a, b

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