ROLE OF DIRECT BONDING MOLAR TUBES IN FIXED APPLIANCES BY BEGG'S TECHNIC

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ABSTRACT

Use of direct bonding molar tubes saves chair side time in orthodontic treatment. It eliminates the need of painful procedure of tooth separation, and discomfort during band adaptation is avoided. By use of direct bonding tubes, oral hygiene improves and danger of decalcification of enamel is avoided.

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KEY WORDS : Dental bonding; Orthodontic appliances.

Introduction

In conventional orthodontic treatment a complicated mechanotherapy is essential where steel bands are prepared around individual teeth. Preparation of these bands demand painful process of tooth separation. Adaptation of bands around teeth causes discomfort to the patients [1]. The procedure of band preparation is time consuming and it also causes tissue injury. Subgingival placement of molar bands results in periodontal damage which takes a long time to heal [2]. Decalcification of enamel which may result due to loose fitting of bands is completely avoided by use of direct bonding molar tubes [3]. Cements employed for the purpose of cementation has its drawbacks too [4,5].

Now direct bonding attachments are used routinely on the anterior teeth but bands are still employed on molar teeth and their use results in many aforesaid problems. This study was undertaken to evaluate suitability of direct bonding attachments on molar teeth.

Material and Methods

Forty orthodontic patients comprising of both sexes between the age group from 12 to 16 years were included in this study. These patients were selected during their visits to

the dental centre. A brief medical and dental history was recorded. All the cases were belonging to either Angle's Class I or Class II malocclusion (Table 1).

TABLE 1
Sample differentiation on the basis of malocclusion
(Angle's Classification)

	Group A	Group B
Angle's Class I	8	7
Angle's Class II Div 1	9	11
Angle's Class II Div 2	3	2
	20	20

Out of the above sample 20 cases were placed in control group while remaining cases formed the test group on a random basis. The control group was provided with the conventional molar bands while the test group received direct bonding attachments including direct bonding molar tubes on first molar teeth.

For each member of both the groups deep zelgan impressions were taken and plaster models prepared. Necessary oral prophylaxis in the form of permanent fillings or scaling was provided on individual basis. In control

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group, brass separators were placed in order to facilitate separation of teeth. In the next appointment, which followed 3-4 days later, molar bands were prepared and cemented. Time was recorded on a stop watch for placement of brass separators, band preparation and its cementation.

In test group, direct bonding molar tubes were fixed on all first molar teeth [5]. These teeth were pumiced well [6]. No separators were needed in this group and thus one appointment was saved. Cheek retractors were used and teeth were isolated with the help of cotton rolls and dried air. Direct bonding molar tubes having a suitable mesh-base were bonded on molars keeping all precautions as required during bonding procedure. Time for the whole procedure viz preparing the tooth for bonding and actual time taken during the bonding procedure recorded with a stop watch.

Results

In control group, during band preparation, all orthodontic procedures such as placement and removal of brass separators, adaptation and cementation of bands on one molar tooth took 21 minutes and since in any given case this process was repeated on all four first molar teeth, time was 84 minutes for each case. Direct bonding molar tubes in test group employed different procedures namely pumicing of teeth, isolation of teeth, etching and bonding. These procedures are totally different from the control group and time taken for one tooth in this group came to eight minutes and 32 minutes in all for each case (Table 2).

Apart from the time saving, the number of visits are also reduced. In conventional bonding procedures tooth separation is a must which invariably takes one to two days. However, when direct bonding molar tubes are used, no tooth separation is needed and procedure can be completed at the same sitting.

Discussion

Direct bonding buccal tubes resulted in time saving. In this group it was possible to provide the entire appliance in one sitting

TABLE 2

Average time in minutes taken for different orthodontic procedures

<i>Control Group (n=20)</i>			
Orthodontic procedures	Average time	Cumulative time	Total time
Brass separators, its placement and removal	6	24	
Adaptation of bands	12	48	84
Cementation of bands	3	12	
<i>Test Group (n=20)</i>			
Orthodontic procedures	Average time	Cumulative time	Total time
Pumicing of teeth	2	8	
Isolation of teeth	1	4	32
Etching and bonding	5	20	

itself while in other group, minimum two sittings were required. The procedure of separating tooth was invariably painful and process of making bands on teeth also caused mild to moderate pain. A longitudinal clinical study of 49 adolescents treated with banded appliances [7] demonstrated that inspite of good cleaning with low plaque scores, most children developed generalized mild to moderate hyperplastic gingivitis within 1-2 months following the placement of appliances. These changes persisted through out the period of active treatment with slight increases during subsequent appointments.

Severe gingivitis was noted in exceptional cases with poor oral hygiene. Interproximal areas were always more affected than facial areas. Gingival health generally improved during the first month after band removal. Shrinkage of hyperplastic gingivae caused reduction in probing depth after treatment. Clinical findings were verified by histology [8].

When direct bonding attachments are used, gingival condition remained satisfactory particularly along lingual and interproximal tooth surfaces.

The effects of orthodontic bands on

periodontium have appeared frequently in literature. In a recent study, Hamp et al [2] found that the multiband treatment lead to the loss of periodontal support of 0.2 - 0.3 mm when good or excellent oral hygiene was maintained.

Reasons for the slight loss of attachment are not entirely understood. Despite a high level of supragingival plaque control subgingival plaque may have accumulated along bands and prove deleterious to the periodontal tissues. Another cause may be trauma caused by the subgingival placement of bands [2]. Due to increased awareness and interest of adults in orthodontics, more studies about marginal periodontal reactions to different hygienic situations during the orthodontic therapy are needed. It can be safely assumed that there is no need for periodontal damage during orthodontic treatment if only bonded attachments are used in anterior as well as posterior teeth alongwith good oral hygiene and preventive care [9].

To conclude direct bonding molar tubes allow time saving and they are friendly to the periodontium. Patient co-operation is likely

to be more as the procedure is painless and appliance is simple and easy to clean.

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