Delayed bracket placement in orthodontic treatment

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ABSTRACT

Background: Beside bracket position, the timing of bracket placement is one of the most essential in orthodontic treatment with fixed appliances. Even it seems simple the timing of bracket placement can be crucial and significantly influence the result of orthodontic treatment. However it is often found brackets are placed without complete understanding of its purpose and effects, which could be useless and even detrimental for the case. Purpose: The aim of this case report is to show that the timing of bracket placement could be different depending on the cases. Case management: On these cases, brackets were placed on the upper arch first, on the lower arch first, or even only on some teeth first. Good and efficient orthodontic treatment results were achieved. Conclusion: For every orthodontic case, from the very beginning of treatment, bracket should be placed with the end result in mind. If brackets are correctly placed at a correct time, better treatment result could be achieved without unnecessary round tripping tooth movement.

Key words: bracket placement, various orthodontic cases, delayed placement

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INTRODUCTION

Setting up the case is the most important aspect of the treatment, after the correct diagnosis and treatment planning. Banding and bonding should therefore not be delegated and should be managed by the orthodontist, to ensure accuracy of appliance placement.1 In bracket placement there are two things to be considered: the position and the timing of bracket placement. Of these, only the timing of bracket placement will be discussed in this article.

For many patients, it is correct to place all the brackets and bands at the start of treatment so that any discomfort is limited to one episode and all the teeth start to be corrected from the outset. However, in some situations, it may be beneficial to consider partially setting up the case, leaving individual teeth, and in some instances groups of teeth, without attachments. If individual teeth are vertically or horizontally displaced from the primary arch form (Figure 1), it is often good technique to delay bracketing the displaced tooth until the other teeth are well aligned, and space has been made available.2

If bracket placement on individual teeth interferes with tooth movements of their antagonist, then it is better to left those teeth not bracketed.3 In deep-bite cases, when it has been decided not to use a bite plate or occlusal build-up, upper arch should be bonded first, later, after the overbite has started to correct, it will be possible to place the lower incisor brackets without discomfort to the patient or risk
of damage to the enamel or the newly placed brackets. In cases where the incisors would inevitably procline if they are bracketed at the start of treatment, as in non-extraction case with triangular-shaped incisors, it is better not to bond the incisors until space become available. Where a sliding jig is used to control or distalize molars, upper bicuspids and sometimes upper canines are normally not bracketed. In many mixed dentition treatments, only the permanent teeth are included in the set-up. Primary teeth may be included in some cases, either to improve the strength and stability of the appliance, or to influence the position of the primary teeth. Nowadays, with the increasing popularity of self ligating brackets, every system must be thoroughly understood, as in some cases the timing of bracket placement can be different depending on the system. With Damon system, it is always advisable to bond and engage as many teeth as possible so lateral adaption can start as early as possible.

It is clear that there are so many variations in the timing of bracket placement, which can greatly influence the treatment outcome and length of treatment. Unfortunately it is often found brackets were placed without complete understanding of their purpose and effects, making undesirable side effects and lengthen treatment time. The aim of this case report is to show some alternatives of the correct timing of bracket placement, so that best orthodontic treatment outcome could be achieved without unnecessary round tripping tooth movement. Hopefully more patients would get benefit from good orthodontic treatment, by correct timing of bracket placement with the most efficient time.

CASES

Five different cases are shown to illustrate the effect of different timing of bracket placement. Besides the careful mechanics chosen, some bracket placements were delayed to get the best treatment outcome in an efficient time.

Case I: A 15 year-old male with class I malocclusion, severe crowding, 33 was impacted, and 36 had a severe cavity (Figure 2). Case II: A 15 year-old female with class III malocclusion, anterior and posterior cross bite, severe crowding (Figure 3). Case III: A 12 year-old male with class I malocclusion, moderate crowding, 21 protruded, and 15 missing (Figure 4). Case IV: A 11 year-old female with class I malocclusion, moderate crowding and impacted upper left canine (Figure 5). Case V: A 13 year-old female with class I malocclusion, constricted maxillary arch, and severe upper and lower crowding (Figure 6).
CASE MANAGEMENT

Case management I: 12, 24, 34, 36, and 44 were extracted. Fixed appliance were placed in the upper dentition first while waiting for the 37 to erupt fully. Brackets were bonded on the lower arch 8 months after bracket placement on the upper arch (Figure 3). The case finished after 28 months of treatment (Figure 4).

Case management II: 14, 24, 34, 44 were extracted. Brackets were bonded on upper and lower teeth, except on 31, 32, 41, 42 (Figure 6). After 33 and 43 were uprighted, brackets were bonded on 31, 32, 41 and 42 (Figure 7). The case was finished after 39 months of treatment (Figure 8).

Case management III: 24, 34, 44 were extracted. Brackets were bonded on upper teeth except on 21
The case was finished after twenty months of treatment (Figure 11).

Case management IV: treated with extraction of 63, 14, 24, 35, 45. Brackets were bonded on upper and lower dentition except on 22, bracket was bonded on 22 after 23 moved away from 22 (Figure 13). The case was finished after 48 months of treatment (Figure 14).

Case management V: treated with extraction of 14, 24, 34, 44. Rapid palatal expander was placed on the maxillary arch to expand the constricted maxilla. Brackets placement
on upper teeth were delayed until expansion completed and upper first bicuspids were extracted (Figure 16). The case was finished after 44 months of treatment (Figure 17).

**DISCUSSION**

In case I, bracket placement in the lower arch was delayed 8 months after the brackets were placed on upper arch. The delay was mainly caused by the time needed for 37 to fully erupt so that a tube can be bonded on it. According to Alexander,\(^3\) in an extraction case the mandibular anterior teeth have a tendency to drift distally, while the mandibular posterior teeth drift mesially, but much more slowly. The mandibular anterior crowding has a tendency to treat itself during the first few months of therapy. The late placement of mandibular appliances is referred to as “driftdontics”. The treatment is usually completed in both arches at approximately the same time, despite the fact that the maxillary arch was bonded earlier in treatment. In this case delayed bracket placement on the lower arch made the crowding in the lower dentition less severe as the anterior lower teeth unraveled and moved distally, the impacted 33 could erupt spontaneously. Careful attention must be considered in cases where maximum anchorage is needed.

In case II, the 33 and 43 were distally inclined, if lower incisors were bonded and archwire was tied, the effects would be bite deepening and proclination of the incisors, which were not favorable for this case. With this in mind, brackets placement on lower incisors were delayed until the position of canines were more upright and had moved