

PASSIVE BRACKETING FOR ADJUNCTIVE ORTHODONTICS

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With conventional orthodontics, it was difficult for the anchorage segments of the wire to be engaged passively in the brackets even with complicated bending. To overcome this limitation, a kind of indirect bonding, "passive bracketing", has been developed. The present article shows laboratory and clinical procedures of the passive bracketing

Key words: Passive Bracketing, Indirect Bonding, Adjunctive Orthodontics

Before orthodontic movement is initiated, it is necessary to determine which teeth are to be moved and which teeth will be the anchor unit. In adjunctive orthodontic treatment, tooth movement carried out to facilitate other dental procedures, distinction between the moving and anchor units is essential since the anchor unit should not be allowed to move.^{1,2}

In order to maximize anchorage control, various designs have been proposed.^{1,3} Most of them, however, employed bands and thus may be harmful to periodontal tissue⁴ or acrylic appliances and accordingly may interfere with speech and mastication or rely on unpredictable patient compliance.²

While using edgewise brackets on the anchor units is generally regarded as optimal technique in most situations of adjunctive orthodontics,² one problem has been that it has been difficult for the anchorage segments of the wire to be engaged "passively" in the brackets even with complicated bending. To overcome this limitation, a kind of indirect bonding, "passive bracketing", can be helpful.

STEP BY STEP

1. *Case analysis.* Determine which teeth will be moved

- and which teeth will be anchors. Using a case of usual molar uprighting as an example, both canines, first and second premolars will serve as anchor units while the second molar will be moved (Fig. 1).
2. *Model fabrication and preparation.* Take an alginate impression of the arch to be bonded, and fabricate a model in die stone. Once the model is dried, coat the surface to be bonded with separating medium. Allow the model to dry over night.
3. *Wiring of anchor part.* Choose a heavy rectangular wire that closely fits the bracket slot, and bend a stabilizing wire that will be engaged into the anchor unit (Fig. 2,3).
4. *Bracket preparation.* Ligate brackets on the stabilizing wire. It is possible to move brackets into their appropriate positions after ligating. Once the desired position is decided, tighten the ligature wire. Clean off the bracket bases with acetone. If available, do sandblasting with microetcher* for better retention of adhesive that will be placed hereafter (Fig. 4).
5. *Bonding the brackets on model.* Place adequate amount of light cured resin(TransbondTM XT**) on the back of each bracket. Place the brackets with wire on the model, position and press gently. Place all other attachments into their appropriate position with similar manner. Clean off any flash around the bracket base. At this point, an opposing arch may be used to check the vertical placement of the

* Danville Engineering Inc., 115-A Railroad Ave., Danville, CA 94256

** 3M Unitek, 2724 S. Peck Road, Monrovia, CA 91016

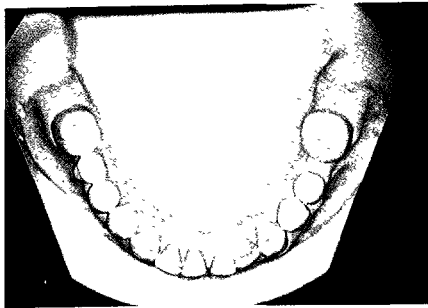


Fig. 1. Model fabrication and preparation.

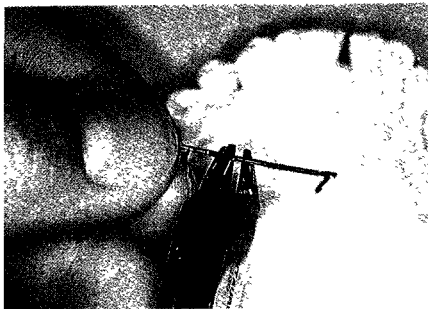


Fig. 2. Adjustment of canine to canine lingual retainer

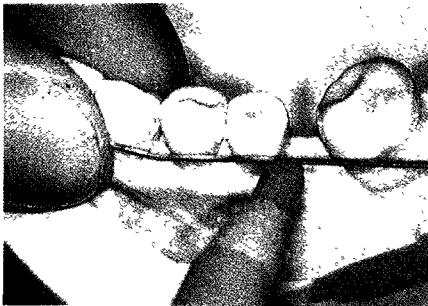


Fig. 3. Wiring of stabilization wire on anchor part

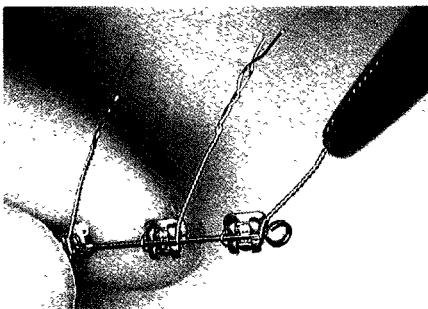
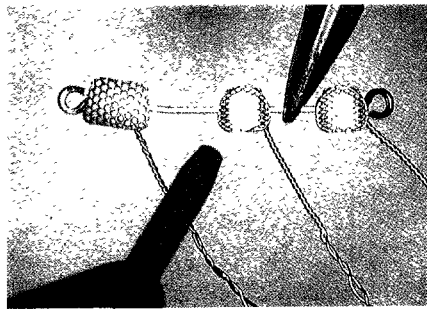


Fig. 4. Ligation of brackets and microetching of their bases



*** GC Corporation, 76-1 Hasunuma-cho, Itabashi-ku, Tokyo, Japan
 **** Reliance Orthodontic Products, Inc., P.O.Box 678, Itasca, IL 60143.

brackets. If any interference is noted, the position of bracket can be changed by means of a second order bend on the stabilizing wire (Fig. 7). Light-cure theresin after confirming all positions (Fig. 8).

6. *Wiring of moving part, if any.* Make an initial wire. This will reduce chair time at the insertion appointment (Fig. 9).

7. *Tray fabrication.* Make a transfer tray from sili-cone impression material (Exafine***) after removing all wire from the model. Apply light body material around the attachments, and then heavy body over that (Fig. 10). Once the tray material has set, soak the model, with the tray in place, in warm water for about 30 minutes to allow easy removal of the tray. Remove the tray from the model. You will have the brackets embedded in the tray, with light-cured resin on the bracket base. Clean the resin base surface of the bracket with acetone. If any die stone remains on the resin base or rough-ened border, remove it with an explorer or a low-speed green stone. Section the tray so it includes only four to six teeth (Fig. 11).

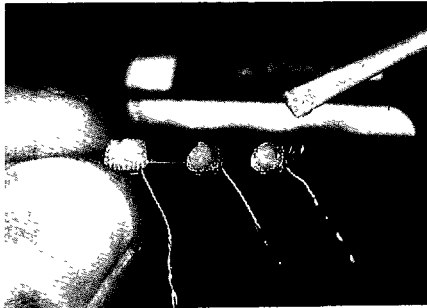


Fig. 5. Placing brackets with wire on the model using light cured resin adhesive.

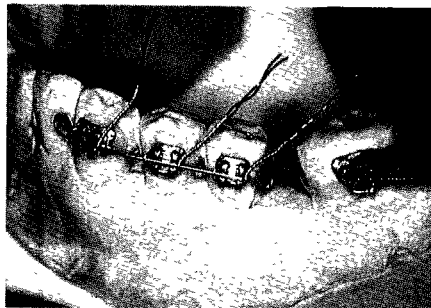
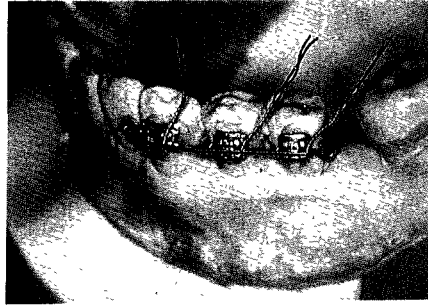


Fig. 6. Placing other attachments into Ideal position.

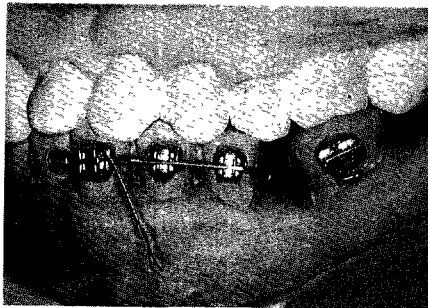
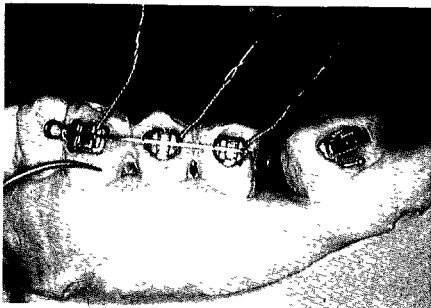


Fig. 7. Cleaning off flash and occlusal interference check-up.

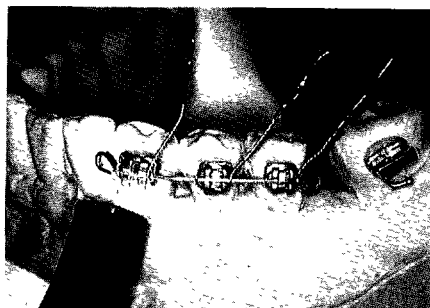
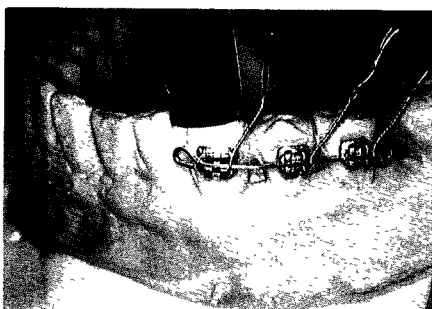


Fig. 8. Light-curing resin.

teeth to be bonded as usual - prophy, etch, rinse, and dry. Mix Maxi Cure**** sealants A and B and apply to the surfaces to be bonded and the resin bases. Insert the tray into the mouth and allow mixed sealants to set. Hold for 2-3 minutes then release and allow to remain in place for an additional 4 minutes. All wires can be placed immediately after removal of the transfer trays (Fig. 12).

DISCUSSION

The method presented represents a modification of the method proposed by Thomas⁵ and is useful in cases where only certain teeth or segments of teeth are to be moved. I find this technique is very useful for following cases:

1. Molar uprighting
2. Forced eruption
3. Alignment of crowded, rotated, and displaced incisors
4. Anterior space closure or redistribution without movement of posterior teeth
5. Placing of surgical arch wires for orthognathic surgery cases that do not need presurgical orthodontic treatment

8. *Chairside bonding.* Apply a plastic bracket conditioner**** on the resin bases according to the direction of manufacturer. Prepare the surfaces of the

6. Lingual orthodontic treatment

Of the three kinds of adhesive, chemical, thermal

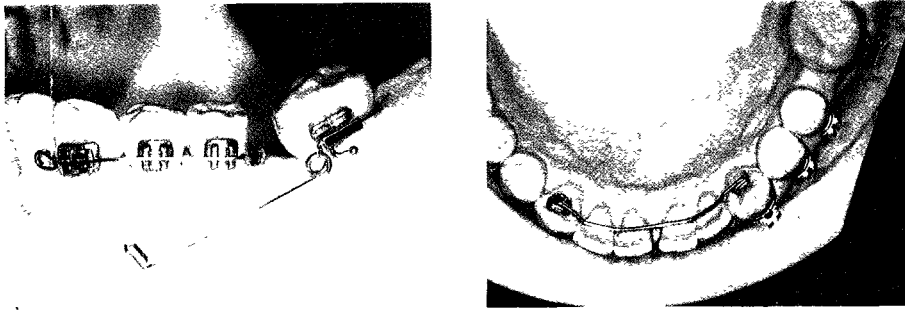


Fig. 9. Wiring of moving part and removal of all wires.

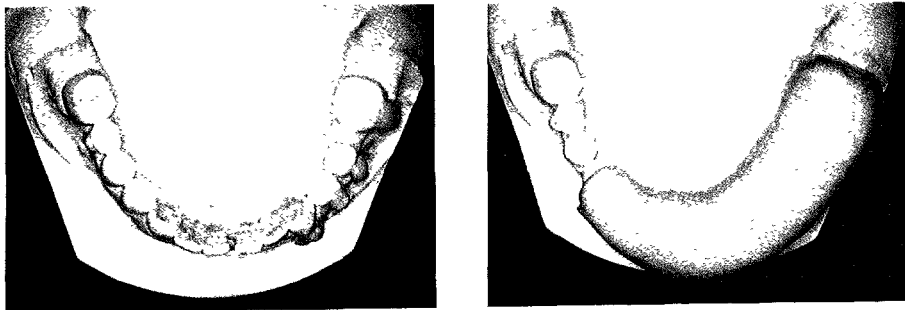


Fig. 10. Tray fabrication with silicone impression material.

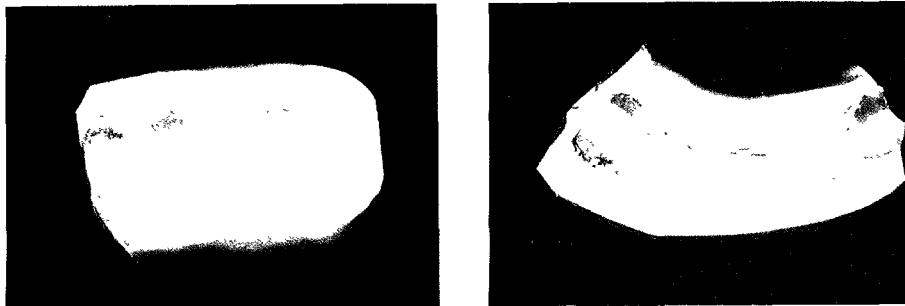


Fig. 11. Sectioning of tray and cleaning of resin base

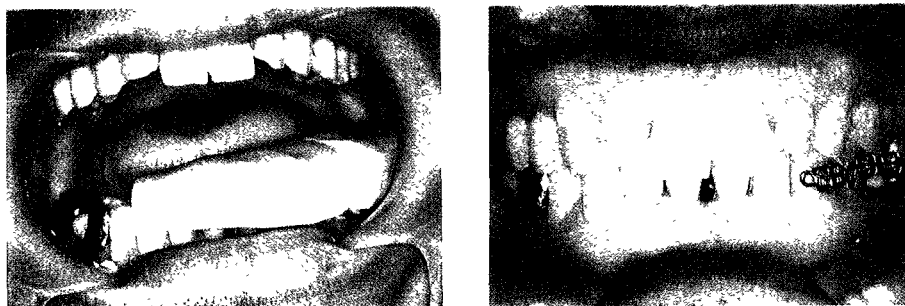


Fig. 12. Chairside bonding and immediate wire insertion.

and light cured, any kind of resin can be used for the custom base in the present technique, I prefer the light or thermal cured resin. They have the advantage of increased or unlimited working time when positioning the brackets over the chemical cured

agents.

While various materials are available for the fabrication of the transfer trays, silicone impression material is highly recommended for passive bracketing. It is possible to use the transfer tray as an individual transfer tray for indirect bonding for replacement of brackets lost or loosened during treatment. Sectioned silicone transfer trays make it possible to rebond a bracket into its original position on the tooth, although the involved tooth has been moved.

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