

# A Useful Solution to a Space Problem – A Striking Plate

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**Abstract:** The natural dentition can be of fundamental importance to the prognosis of a partial denture when the teeth are within the same arch as the prosthesis. However, when the natural teeth oppose the edentulous area, a number of problems can present. One such problem can be the decrease of space for standard denture components. Solutions to this problem may involve increasing the vertical dimension or reducing the crown height of the opposing natural dentition. Both of these methods have significant disadvantages and this article describes an alternative solution using a 'striking plate' constructed in cobalt chromium.

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**Clinical Relevance:** This article describes a method of effectively restoring edentulous areas that have a reduced vertical space due to the opposing dentition.

When designing a partial denture, the remaining dentition can usually be used to retain and/or support and/or brace the prosthesis.<sup>1</sup> In these cases, the natural dentition is considered to be a great help to the patient and the dentist. However, when the natural dentition opposes rather than abuts an edentulous area, it can be a hindrance. In the absence of a prosthesis restoring the edentulous area, the unopposed dentition can over-erupt towards the

opposing soft tissue. If restored, the natural dentition can present dynamic and static occlusal interferences and it can be difficult to gain enough space for the standard denture components. This article deals with treatment options for these situations where, in addition, there are index teeth and the freeway space is normal (and the patient is not overclosed).

Such space issues may arise when there are bulky maxillary tuberosities (Figure 1), a deep overbite (Figure 2) or overerupted teeth (Figures 2 and 3). In a number of these cases the connector that would be preferable when considering retention, stability and support is a plate design. In many cases, and certainly in patients requiring full dentures, polymethylmethacrylate is the material of choice. However, this material requires sufficient bulk for durability, which would increase the occlusal vertical dimension, thus reducing (or obliterating) the freeway space. Although it is possible to construct the connector in cobalt-

chromium alloy, the result would be a very expensive and heavy prosthesis that would be difficult to alter (ease) or rebase. Many options exist to deal with these situations.

1. Extract the opposing teeth.
2. Reduce the clinical crown height by removing some enamel from the opposing tooth/teeth.
3. Reduce the clinical crown height of the opposing tooth/teeth and place a full-coverage crown.
4. Remove the clinical crown (in some cases elective endodontics will be required) and prepare the root face to be an overdenture abutment.
5. Orthodontically intrude the opposing teeth.
6. Surgically reduce the size of the maxillary tuberosity.
7. Accept an increase in vertical dimension.

These options are invasive to varying degrees, in some cases



**Figure 1.** Study casts before provision of a removable prosthesis. The close approximation of the last lower molar with the maxillary tuberosity can be seen clearly.

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**Figure 2.** The increased vertical overlap of the anterior teeth limits the space available for partial denture components.



**Figure 3.** Over-eruption of the lower teeth to contact the maxillary edentulous ridge.

unacceptable to the patient and/or dentist and in others very difficult or impossible to do. To avoid the disadvantages of the above list, a particular design feature can be incorporated into polymethylmethacrylate partial dentures or full dentures – the ‘striking plate’.

**THE ‘STRIKING PLATE’**

This design feature is incorporated into the connector and opposes the natural dentition where vertical space is restricted. The area opposing the natural dentition is covered with 0.5 mm cast cobalt–chromium alloy (Figure 4). This has the advantage of being thin in cross-section, but very strong. Beyond the problem area the plate is mechanically attached to polymethylmethacrylate (Figure 5).

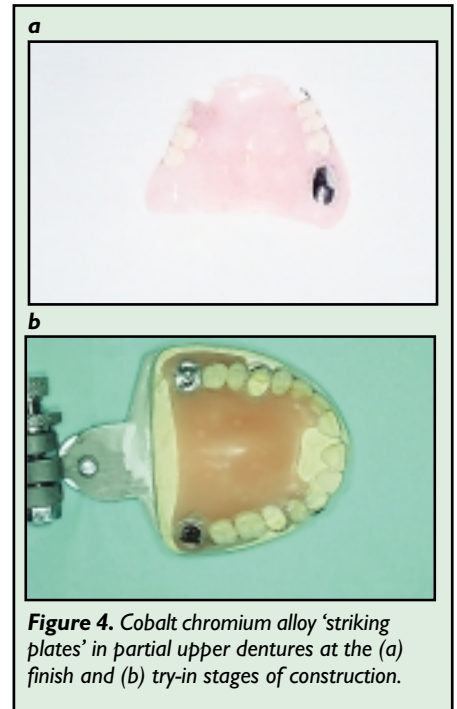
**LABORATORY PROCEDURE**

1. The casts are articulated.
2. Separation medium is applied to the casts.
3. The ‘striking plate’ is waxed up between the edentulous ridge and the opposing tooth/teeth. The area of proposed striking plate is outlined on the master cast by the clinician. A finishing bead and loops or mesh are added for mechanical retention (peripherally because the space is limited).
4. The wax pattern of the ‘striking plate’ is now removed from the model, wax sprues are added and the pattern is put on a cone former.
5. The wax pattern is painted with a liquid investment (to give a smooth casting) and a casting ring is placed around the cone and wax pattern. Cobalt–chrome investment material is vibrated into the ring, poured out and then vibrated in a second time.
6. When the investment is set, the wax pattern is burned out and then cast.
7. The casting is devested, and prepared to be incorporated into the wax try-in. It is glued in the correct position to the plaster mould in the flask. The glue can be removed when finishing the denture.

**THEORETICAL AND PRACTICAL JUSTIFICATION**

The technique has been used by us on numerous occasions over a period of many years and appears to be successful. It is often of great use in the following situations:

- Replacing anterior teeth in the presence of a deep overbite.
- Managing the long-term unopposed molar which has overerupted, and where the freeway space is normal (and the



**Figure 4.** Cobalt chromium alloy ‘striking plates’ in partial upper dentures at the (a) finish and (b) try-in stages of construction.



**Figure 5.** Mechanical retention of a striking plate to an acrylic connector.

patient is not overclosed).

In these situations the technique avoids potentially invasive treatment and is relatively easy to carry out clinically and technically.

**REFERENCE**

1. Davenport JC, Basker RM, Heath JR, Ralph JP, Glantz PO. *A Clinical Guide to Removable Partial Denture Design*. London: British Dental Association, 2000.