

## Case Report

# Alternative universal clip design for bar and clip retained implant overdentures

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Bar and clip is one of the most popular retention aid for an implant-retained overdenture. Different bar systems with corresponding metal/plastic clips are available. The clip snaps over the bar and forms the connecting link between the rigid bar and the overlying denture. In this study, we shall review Bar-and-clip retention mechanism and discuss a technique to design an alternate clip for bar-retained implant overdenture.

**Key words:** Bar-and-clip-retained overdenture, bar-clip

Various modes of anchorage are available for the implant-retained overdentures, e.g., stud and cap, keeper and magnet, bar and clip/sleeve and cone and coping. Out of these, the improved retention and stability associated with bar-and-clip-retained overdenture has resulted in their popularity.<sup>[1]</sup> Two or more implants are linked by a bar; this further provides retention to the overlying denture by means of a retentive attachment called as the “clip” or “sleeve.” This clip is contained in the denture base that snaps over the bar when the denture is inserted. A variety of clips of desirable length are available corresponding to their respective bar systems in plastic and metal forms.<sup>[1,2]</sup> The implants need to be spaced so that there is sufficient room for the clips between the implants. In this paper, we have presented a technique to design an alternate customized clip made of stainless steel wire to be used with any bar system.

### MECHANISM OF FUNCTIONING OF BAR AND CLIP<sup>[3]</sup>

The bar and clip serve as the connecting elements between the implants and the overlying denture, where the bar connects and splints the implants and the clip is present on the fitting surface of the denture. The bar should be constructed with reference to the anterior tooth position and the contour of the denture and should have a passive fit on the implant abutments. Clip or the sleeve is mainly used for placing the bar in such a manner that the sleeve confirms to the superior surface of the bar without contacting the tapering sides of the bar with its elastic flanges. The

clip can be attached to the denture by direct or indirect techniques. The direct technique involves picking up the clip attached to the bar intraorally using an autopolymerising resin or impression plaster.<sup>[4]</sup> In the indirect technique, a new impression is taken, the bar is removed and the clip is placed directly on to the denture base.<sup>[5,6]</sup>

### Technique

1. Take a 4 cm length of O16” Australian stainless steel wire (A. J. Wilcock, Australia) [Figure 1].
2. Hold the wire from its centre along its length using universal orthodontic pliers and bend it to form a U-loop with each arm spaced at approximately 0.5 to 1 mm depending on the thickness of bar [Figure 2].
3. Bend one of the arms of the U-loop in the outward

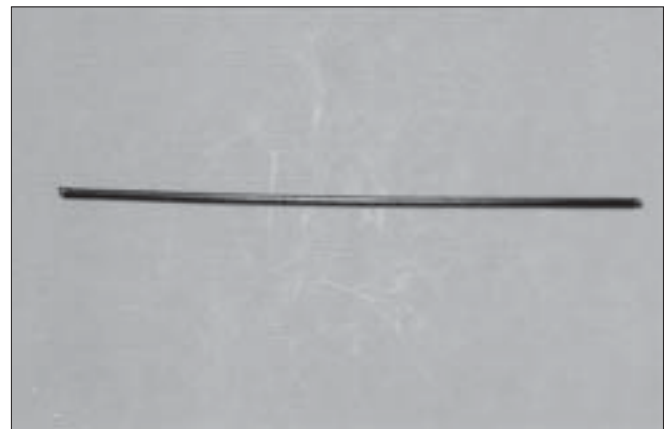


Figure 1: Step 1



Figure 2: Step 2

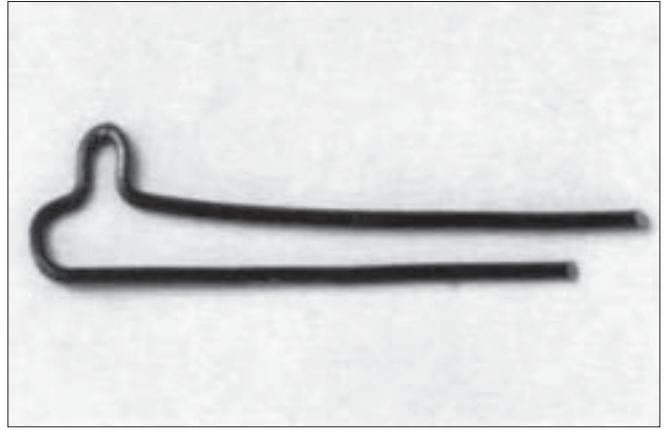


Figure 5: Step 5

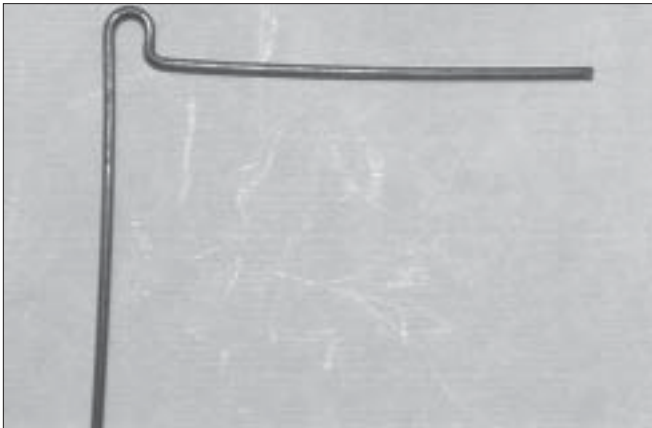


Figure 3: Step 3

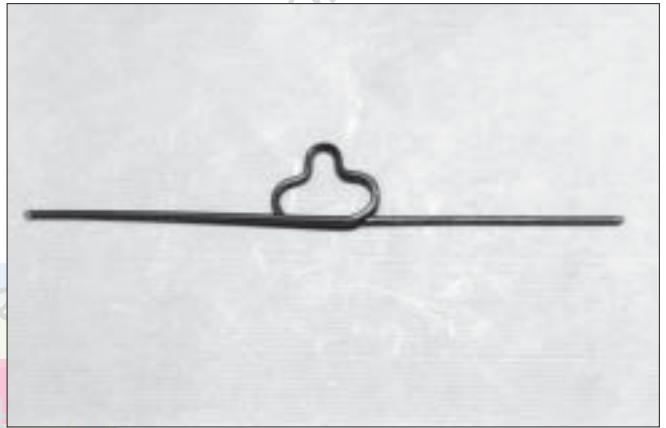


Figure 6: Step 6

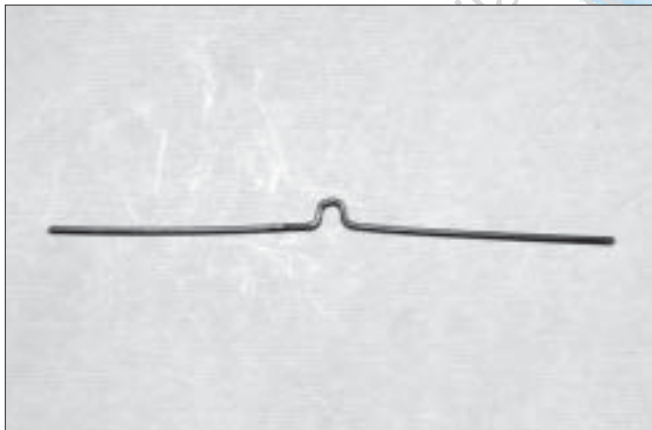


Figure 4: Step 4



Figure 7: Step 7

direction at 90 degree at a distance of 2 mm from the loop [Figure 3].

4. Bend the other arm of the loop outwards at 90 degrees from the loop at the same distance as the other arm so that the loop is in the center and at right angles to the open arms of the wire that lie in a single straight line [Figure 4].
5. Take one of the straight arms of the wire and make

a U-loop perpendicular to the first loop by holding the universal pliers at the junction of first loop and straight arm of the wire in such a manner that the diameter of the bar and the "U" of the prepared loop is same [Figure 5].

6. Repeat the above step at the other arm such that we now have three loops and straight arms of the wire crisscrossed [Figure 6].



**Figure 8:** Clips collapsed to different sizes based on the diameter of the bar



**Figure 9:** Clips locked onto the bar



**Figure 10:** Custom clips embedded into the tissue surface of the denture

7. Cut the straight arms of the wire at the junction of loop and the straight wires [Figure 7].
8. Take a trial of this three-looped clip on the selected bar.
9. Cut and collapse the formed loop based on the diameter of the bar so as to achieve a snap fit of the clip over the bar [Figure 8].
10. Chairside direct incorporation of the clip to the

intaglio surface of the denture is carried out using an autopolymerising resin [Figures 9, 10].

### Advantages

1. The clip is easy to fabricate and economical to use.
2. Smaller size and lesser bulk enable the clip to be used in cases where implants are closely placed.
3. Greater flexibility and longer working life in comparison to conventional plastic clips.
4. Replacement is easy when required without affecting the overlying denture.
5. The extent of retention can be adjusted chairside by collapsing/expanding the loops depending on the requirements of the individual patient.
6. It provides a more hygienic fitting surface with less plaque accumulation and therefore the maintenance is easy.

### Disadvantages

1. Requires greater operator skill for wire bending.

### CONCLUSION

A variety of clips are available in different materials, sizes and shapes to be used with their corresponding bar systems. An alternate retentive clip made in O16" Australian stainless steel wire (A.J. Wilcock) has been designed following a simple technique that can be used with any bar system and provides adequate retention to the implant-retained overdentures for a prolonged period of time and also can be adjusted for retention to any extent at any given time. These clips are considerably hygienic than the conventional clips because of less surface area and less irregularities on the fitting of surface denture. It is simple to fabricate and can be easily changed when required.

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