

# Equipoise: An aesthetic solution for dentures

WHEN IT COMES TO

REMOVABLE PARTIAL

DENTURES, TOO OFTEN

FUNCTION AND THE

PRESERVATION OF

THE ABUTMENT TEETH

ARE OF SECONDARY

CONCERN TO

AESTHETICS, SAYS

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For most dentists and patients the removable prosthetic restoration is ugly, uncomfortable and actually destructive to the remaining natural dentition. For most dentists and patients the removable prosthetic restoration is a failure (Krajicek, 1972). Most dental schools teach removable partial dentures as an afterthought, with no uniform teaching procedures or exact rules of design. Unfortunately, most dentists know so little about removable partial denture design that they leave this process to the laboratory technician, whose only criteria for a successful restoration is that it holds tightly in the mouth (Goodman and Heil, 1948).

## BUCCAL METAL

The average removable restoration shows much buccal metal, whether it be the circumferential Akers clasp (Figure 1a) or the buccal I bar (Figure 1b).

The Equipoise system based on the Class II lever design, fulfills the three most important criteria - aesthetics, function and the preservation of abutment teeth - by directing all forces along the long axis of the tooth during function (Goodman, 1975a) (Figure 2a).

## PRIMARY DESIGN FLAW

The conventional Class I lever design system as illustrated in figure 2b is extremely unsightly, showing buccal arms and affords the patient minimum function and retention while destroying the abutment teeth. No amount of auxiliary hinges, stress breaking apparatus or soft

flexible material can correct the primary flaw in this design system. This flaw is the creation of a first class lever which will always have a mechanical advantage, placing extreme horizontal forces on the abutment teeth during function (Goodman, 1975b).

The Equipoise system is simple to understand and to apply to the design of removable partial restorations. The following are some simple rules for the dentist to follow when designing a removable Equipoise prosthesis (Goodman, 1977):

- All interproximal plates with rests are always on the side of the abutment tooth, away from the edentulous area (Figures 3a and 3b)
- All retentive units are placed next to the edentulous area
- All rests used to stabilize an edentulous area where extra retention is not necessary, are placed next to the edentulous area (Figure 4)
- All final master casts should be surveyed in the true horizontal. No tilting of the surveyor is necessary. If there is no undercut on the abutment tooth when surveyed with the cast in the horizontal position, then there will be no undercut in the mouth. When the cast is tilted, to find an undercut, the resulting restoration will be frictionally and not passively retained

- All final impressions should be taken in stock trays using either alginate or hydrocolloid. Custom trays are only indicated when the stock trays cannot be properly fitted over the dentition. The edentulous tissue area should be at rest position when the impression is taken, and

not in the load position

- The lower denture base should be shy of the mylohyoid ridge, shy of the mucuccal buccal fold, as thin as possible, and include the retro molar pad. The upper denture base should be shy of mucuccal buccal fold and include the tuberosity for restorations with posterior free-end saddles (Figure 5). With the Equipoise system, there is only one design possible for each configuration of missing teeth (Goodman, 1989). Dentists from all schools and locations given the same diagnostic materials when using the Equipoise system will fabricate their restoration with the same design, eliminating all guesswork for removable aesthetic restorations. With this system, there are only four basic designs. These are:
  - The single or double free-end saddle removable prosthesis, whether anterior or posterior free-end saddles (Figure 6)
  - The free-end saddle on one side, all toothborne on the other side restoration (Figure 7)
  - One edentulous area or two edentulous areas, all toothborne. Free-end tips always face the edentulous area. (Figure 8)
  - Three edentulous areas, or more, all toothborne. The free-end tips always face the same direction (Figure 9).

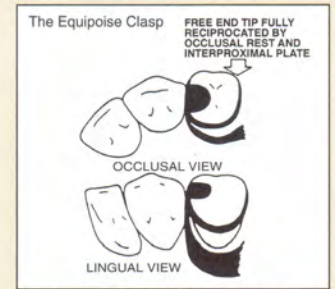
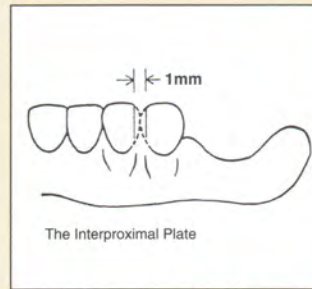
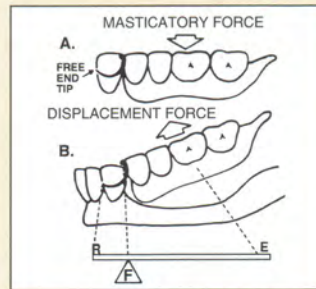
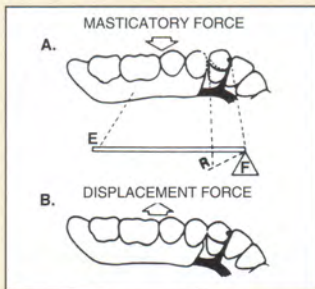
## MINOR TOOTH PREPARATIONS

To fabricate a properly designed removable prosthesis which will be aesthetic, functional and protect and preserve the abutment teeth, minor tooth preparation is necessary. The new Equipoise Analyzer is an

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Figure 1a: (Far left) Conventional partial upper and conventional lower dentures showing buccal arms  
 Figure 1b: (middle) RPI type partial denture design showing buccal I bar  
 Figure 1c: (Left) Equipoise partial upper and lower denture, showing no metal on buccal of teeth



Figures 2a and 2b: Comparison of class 1 lever design and Equipoise class II lever design on typical free-end saddle restoration

Figures 3a and 3b: Plate and rest are placed on the side of the tooth away from the edentulous area

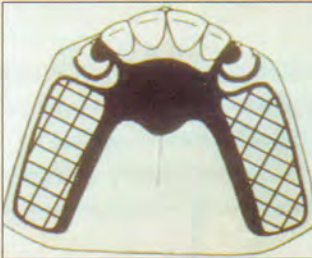
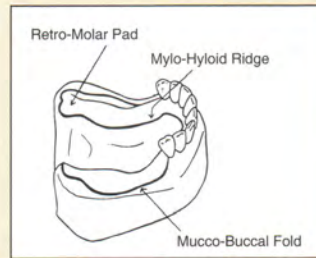
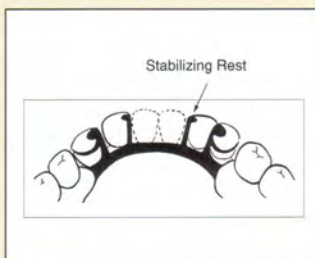


Figure 4: Stabilising rests placed next to edentulous area

Figure 5: Lower denture base design

Figure 6: Free-end saddle removable partial denture

Figure 7: Free-end saddle one side, toothborne the other side

essential tool to facilitate proper preparation (Figure 10a). Rests must be prepared in the conventional manner, at least 1-1.5mm deep (McCracken, 1964). All rests must be prepared on the mesial or distal of the abutment tooth away from the edentulous area. An interproximal plate 1mm thick must be cut between the abutment tooth and the tooth adjacent to it (Figure 10b). This plate affords the prosthesis stabilization and reciprocates the free-end bar of the retention device. The interproximal plates must always be parallel (Figure 10c).

### RETENTIVE DEVICE

The retentive device is never placed well below the survey line, but rather should be placed on the bottom of the survey line

and the thickness of the clasp below it. These two minor tooth preparations are done using no anaesthesia. They do not make the teeth sensitive and when properly contoured, will cause little or no decay on the abutment teeth, even in mouths that are not properly cared for. The Equipoise system for precision cast clasp prosthesis can be used with every conceivable configuration of teeth in the mouth (Figures 11a and 11b). The C & L attachment is the Equipoise precision functional attachment. It is the only precision attachment specifically developed to be used with single abutments for free-end saddle restorations. The attachment affords the dentist and patient the most aesthetic and trouble-free restoration available in

dentistry today (Goodman J and Goodman H, 1963; Shohet, 1969) (Figure 12). The attachment consists of a 10% iridium platinum male and female which substitutes for the interproximal plate and rest of the precision cast clasp prosthesis. These attachments are called counterpoise C-rests (Figure 13). The removable L-spring, held in place by spring action in the prosthesis, substitutes for the retentive lingual back-action bar of the precision-cast class prosthesis (Goodman, H and Goodman, J, 1973). The L-spring can be replaced easily with a new spring, should wear occur and the prosthesis becomes loose (Figure 14). Because the Equipoise C & L attachment parts are so small (Figure 15) there is never a

need to over-build the crown on the abutment tooth, again affording the dentist and patient excellent aesthetic results (Shohet, 1969).

### CONCLUSION

The removable prosthesis restoration need no longer be unsightly and should not damage or destroy the abutment teeth. If the Equipoise principles of partial denture design and the Equipoise system are incorporated into your treatment planning, then the removable prosthesis need no longer be an enigma, or the lost art of dentistry. **ID**

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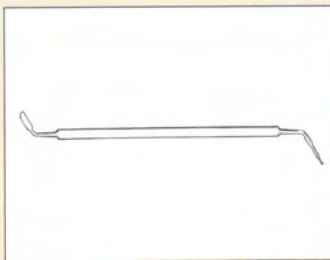
Goodman, Herman W and Heil, Louis M (1948) The design of



Figure 8: One or two edentulous areas, all toothborne



Figure 9: Three edentulous areas, all toothborne



10a: Equipoise Analyzer



Figure 10b: Measuring the interproximal plate

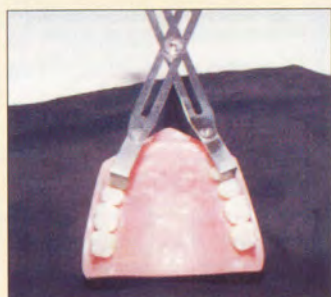


Figure 10c: Equipoise Paralleler is used to check the parallelism of the interproximal plates



Figure 11a: Completed Equipoise prosthesis



Figure 11b: Labial view of prosthesis



Figure 12: C & L attachment showing single and double abutment attachments

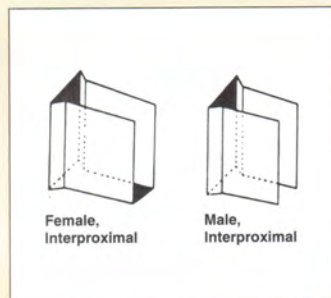


Figure 13a: Interproximal C-rests showing shape of 10% iridium platinum male and female attachments

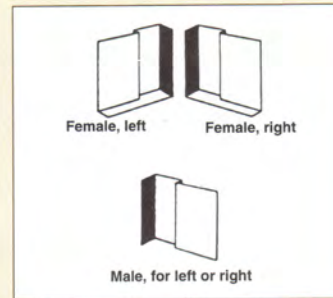


Figure 13b: Right and left showing shape of 10% iridium platinum male and female attachments

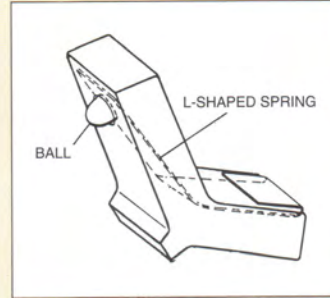


Figure 14: Schematic drawing of an L-spring



Figure 15: Completed C & L attachment case - a picture of the prosthesis

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