

# Esthetic Consideration for Long Free-end Removable Partial Denture

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**Key Word:** Esthetic; Long Free-end

## Abstract

Distal extension base or free-end Removable Partial Denture (Free-end RPD) always unstable, especially the length one. Furthermore unstable RPD will causes alveolar ridge resorption or lever up abutment tooth depend on retainer design. In handling the leverage problem, esthetics problem will emerge, and must conducted efforts to overcome it.

## Introduction

Denture function beside for mastication and phonetic, not less important is esthetics function. Esthetics very relates to what people felt to something nice, please, or attractive<sup>1</sup>. Esthetic sense is very individual, however in general there is normative esthetics for a population or certain society. Esthetic for a denture is it will look natural. The factors that influence esthetic for example are: vertical dimension, artificial tooth color, shape and inclination arrangement especially for anterior teeth.

Distal free-end denture has more problems compared to all tooth supported denture. Kennedy tooth lost classification which is based on the topographic area place it as first class and second class<sup>2-6</sup>. It indicates that distal free-end denture requires special handling. The problem is unstable denture because there is no abutment tooth distal of the free-end saddle<sup>3</sup>. Research of Machmud<sup>7</sup>. indicate that lower jaw mucosa compressibility on edentulous free-end area is the most compressive. Instability happened in vertical, horizontal, and distal direction.

In case of only six anterior teeth remain (Long Free-end), canines and incisives, or only four incisor units, even less than that usually the remain teeth are weak, which are two grades mobility, gingival recession, and alveolar ridge resorption. This condition also accompanied with growing of periodontal disease. Selection for aesthetic retainer will more and more decrease because the location for aesthetic retainer more and more limited.

To overcome the free-end RPD instability problem can be conducted ways in : Retainer design; Maximal posterior base extension; Selecting narrow artificial tooth surface in free-end saddle; Lessen the amount of artificial teeth; Add indirect retainer; Proximal support; Add second retention anterior to the first; Enlarge distance between retention point and fulcrum point; Stress breaker; Double impression technic; Implans; Splinting; Swing lock retainer ; More flexible retentif arm; Eliminate occlusal disharmony; Lessen mastication force; and others.

## Long Free-end RPD Esthetic Problem

When some one speaking, lower lip frequently moves until half part of lower jaws teeth is seen. When wide laughing anterior upper jaw teeth are seen nearly servical, and in lower jaw half of labial surface teeth are seen (Fig.1)<sup>8</sup>. In this situation metal retainer that reside in this part is seen and will bother esthetics.

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Fig. 1. Teeth appear when laughed, smile, and speaking <sup>8</sup>

On long free-end RPD the only one usable expectation for abutment is canine. Extracoronary metal retainer that reside at this teeth will be easy seen. In this condition esthetics is very detrimental. Occlusally approaching retainer at canine surface looks extrude, both which is come from distal or mesial direction, particularly more from mesial direction (Fig.2).

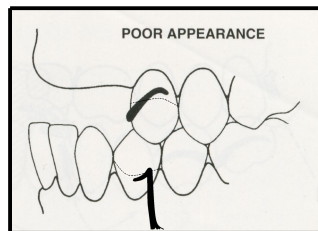


Fig.2. Retentive arm retainer on canine labial surface

## ESTHETIC CORRECTION

To overcome esthetics problem that happened on long free-end RPD can be conducted :

### 1. Gingival Approaching Retainer

Occlusal approaching retainer to undercut area on the mesio-buccal surface of canine will very bother esthetics. Esthetics of gingival approaching retainer will be better because the metal is more hidden. In the other hand it can be enhanced an indirect retainer at insisive. The indirect retainer that can be selected in the form of cingulum rest beside mesial occlusal surface of canine, embrasure hook, terminal rest, incisal rest; secondary lingual bar, and so on. This way will be more aesthetic, more stabilize, and the free-end saddle are not easy to lift up by sticky food.

If canine and insisive has weakened, strengthen this teeth by splinting. Splinting can be conducted with orthodontic wire, or with composite in interproximal area.<sup>6</sup> Splinting wire should place as low as possible in order to more aesthetic appearance.

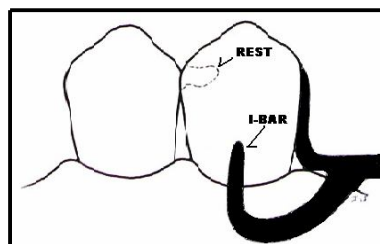


Fig..2. Gingival approaching retainer : I-Bar

## 2. Wrought Wire

Wrought wire is more flexible compared to casting retainer. Because of this characteristic the  $\frac{1}{3}$  tip of retentive arm can be placed more cervically to be more esthetic<sup>9</sup>. In the other hand for free-end RPD with retainer design first class lever, a more flexible retentive arm will decrease leverage to abutment teeth (act as shock absorber)<sup>8</sup>.

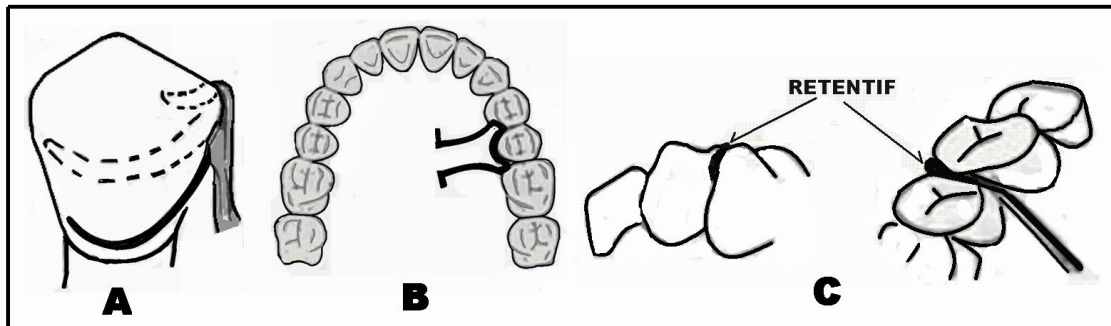


Fig.3. Wrought Wire Retainer<sup>9</sup>

A. Combination cast and wrought wire B. Meacock C. Rush Angker

## 3. Special Design Labial Bow for Retainer

This retainer look like labial bow in orthodontic treatment, but there some differences that is (Fig.4):

- Loop part is smaller
- Wire that patch at anterior teeth should place as low as possible near gingival margin, and for better esthetic the wire close over by red acrylic base. The other advantage of Labial Bow like this will united anterior teeth in mastication when distal extension base lever up, so it is act as splint for anterior teeth. The disadvantage is in the early patient feels bothered its lower lip<sup>8</sup>.

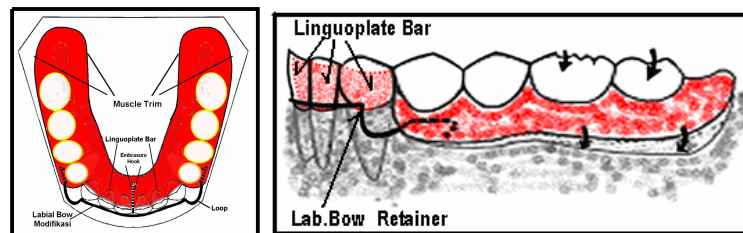


Fig.4. Special Design Labial Bow for Retainer<sup>8</sup>

## 4. Over Denture<sup>10, 11</sup>

Some remain teeth that still healthy enough but overeruption, tipping, degree one mobility, and considered not to extracted and conducted for root canal treatment. For this remain teeth its clinical crown is lessened, then made a dowel-core or dowel with layers that close over clinical crown remains. Restoration will be functioned to give support, stability, and retention for overdenture that made on it. In the other hand it also give informational proprioceptif, and lessen resorption alveolar ridge. Overdenture should be control to plaque and periodontal disease.

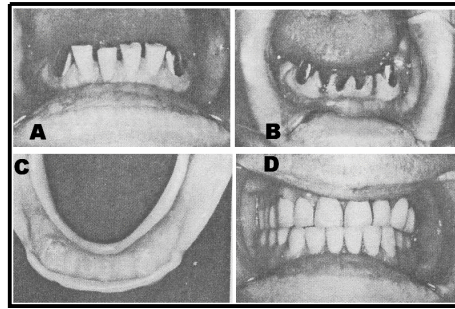
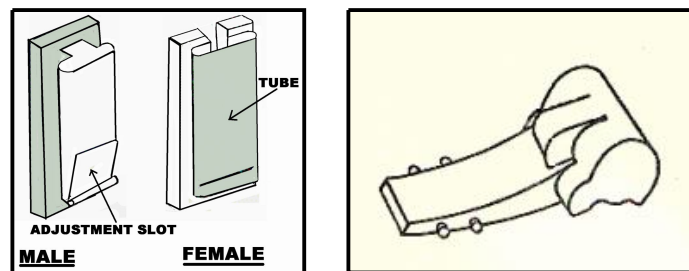


Fig.5. Overdenture: A. Remain teeth      B. Dowel and Core  
C. Denture anatomical surface  
D. Denture in its place

### 1. Internal Attachment / Precision Attachment

Precision Attachment or Internal Attachment is an Intrakoronar Retainer type. Principle work of Internal Attachment is interlocking between part that stick at abutment and the other part at RPD <sup>12, 13</sup>.

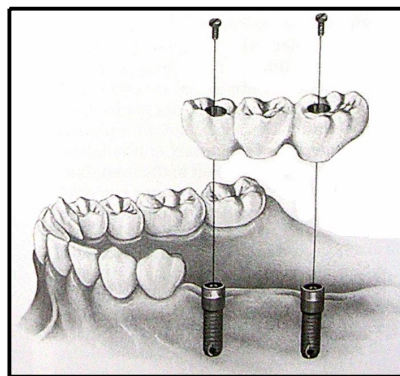
Its advantage is to give stabilization, retention, esthetics, abutment stabilization, and directed mastication force to abutment axial <sup>5</sup>. Its disadvantages are: 1. It need preparation; 2. Complicated clinic and laboratory procedure; 3. Timeworn and become diffuse; 4. Repair and replacement difficult; 5. Less effective for short abutment 6. Crown reduction may endanger teeth vitality; 7. High cost; 8. Unfavourable prevent horizontal displacement.



Gb.6. *Internal Attachment*

### 2. Osseointegrated Implants <sup>13</sup>

Osseointegrated implant made of pure titanium material offer stabilizing effect through rigid connection to bone. Long-term clinical reseach has demonstrated good result for the treatment of complete and partially edentulous patient. However because its complex surgical procedure and expensive surgical material, its need high cost.



Gb.7. Osseointegrated Implants Brånemark <sup>13</sup>

## CONCLUSION

Leverage in free-end RPD cause the denture always unstable. Especially in long free-end unstable denture may cause alveolar ridge resorption and lever to the abutment. In handling the leverage problem, esthetics problem will emerge, and must conducted efforts to overcome it. There are some choice to overcome esthetic problem in free-end RPD, begin at simple way with low expense, till complex procedure with high cost.

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