Abutment teeth Preparation

Part II: Anterior teeth preparation

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Lingual or cingulum rests on anterior teeth are often utilized when no posterior teeth are present or when indirect retention is necessary. The anterior tooth most readily adaptable to a cingulum rest is the canine, due to its well-developed cingulum. When a canine is not available, the cingulum of an incisor may be used. In some instances, multiple rests spread over the cingula of several teeth may be required, in order to minimize stress on the teeth.

Root form, root length, inclination of the tooth, and the crown-root ratio must be considered in the planning for the use of such rests.
A. The rest seat, from the lingual aspect assumes the form of a broad inverted "V" maintaining the natural contour often seen in the canine cingulum. From the incisal view the rest seat is broadest at the central aspect of the canine (approximately 1 mm). The proximal view demonstrates the correct angulation of the floor of the rest seat (< 90°). The borders of the rest seat are slightly rounded to avoid sharp line angles in its preparation. As with occlusal rest seats, a preparation will test as ‘positive’ if an explorer tip does not slip off the rest seat when pulled lingually from the base of the rest seat.
Correct Preparation

The cingulum rest seat should be prepared in the bulk of the cingulum to minimize tooth reduction. The cavosurface should be less than 90° to prevent orthodontic movements of the tooth.
Preparation Too High

Unnecessary Reduction
If the preparation is started too high above the cingulum proper, much of the lingual surface of the tooth above the cingulum will need to be reduced, in order to obtain sufficient width for support. On maxillary anteriors, this may also cause the rest to interfere with the opposing tooth.
Preparation Too Low

Excessive cingulum reduction
If the preparation is started too low, much of the cingulum will need to be reduced, in order to obtain sufficient width for support. Enamel is thinner in this area, and preparation could result in dentinal exposure, resulting in sensitivity. If correction of the outline form or depth is required, there will be little tooth structure remaining to make such changes.
B. Care must be taken not to create an enamel undercut that would interfere with the placement of the denture. A medium or large diameter cylindrical fissure bur should be utilized approaching along the long axis of the tooth. Approach from a horizontal direction will often result in creation of an undercut incisal to the rest seat.
INCISAL APPROACH

LINGUAL APPROACH
A rest placed on an unprepared cingulum results in force being applied in a labial direction. Orthodontic movement will occur with osteoclastic activity around the centre of rotation of the root. A rest seat prepared in the cingulum of the tooth results in the forces being directed along the long axis of the tooth.
The following factors should be considered prior to the preparation of a cingulum rest seat on a natural tooth:

1. The prominence and shape of the natural cingulum. Cingulum rest seats must be placed in sound tooth structure or restorations. Where the ideal position of the rest seat would be upon an amalgam restoration it is advisable to select a different tooth surface or replace the restoration with an onlay or crown, since the flow characteristics and relatively low yield strength of the material make the possibility of fracture high. Where the cingulum is not prominent or when preparation might encroach upon the pulp, other means of securing a lingual rest seat must be considered (i.e. selection of a different tooth, use of a composite bonded rest seat, onlay, crown etc.)
2. The interocclusal relationship of a maxillary tooth with the incisal edge of the opposing mandibular tooth when the former will be prepared for a cingulum rest. When a deep vertical overlap exists, care must be taken to ensure that the mandibular tooth does not prematurely contact the area of the planned metal framework. Mounted diagnostic casts should be used to assess this relationship, by drawing a line on the lingual surface of the maxillary abutment, where the mandibular tooth touches when the models are in contact with each other. The cingulum rest seat preparation should be 1.5-2.0 mm below this line to allow for adequate framework strength.
Composite Buildups for Cingulum Rests:

When a cingulum is poorly developed, with insufficient bulk for preparation for a cingulum rest seat, a rest seat can be made using composite resin. Research has demonstrated that these "bonded rest seats" can provide acceptable strength and longevity. The cervical portion of the buildup should have a flat emergence profile (not overcontoured) with bulk increasing toward the incisal. Enamel should be pumiced, rinsed, etched, and bonded, in a relatively dry, isolated environment. Care must be taken to ensure the cervical composite is well adapted and that most of the form is finalized prior to curing. The bonded rest seat should be smooth and well polished, with no sharp line angles.
Composite Bonded Rest Seat Form

Correct

over-contoured

over-contoured and open margin
Round rest seats are occasionally prepared on the mesial of the canine teeth when the use of a typical cingulum rest is contraindicated (i.e. large restoration, lack of clearance with the opposing teeth, poorly developed cingulum). These rest seats are prepared spoon shaped, similar to an occlusal rest seat, with reduction of the mesial marginal ridge. However, preparation is more difficult due to the incline of the lingual surface of the canine and more tooth structure must often be removed.
Incisal rests are inferior to lingual rests both mechanically and esthetically.

Normally they should not be used unless it is impossible to place a lingual rest seat or a composite bonded rest seat.

a) An incisal rest seat is usually placed on the mesio- or disto-incisal angle of the incisor teeth with the deepest portion towards the centre of the tooth. It is predominantly used as an auxiliary rest or an indirect retainer.

b) It is usually used on the mandibular incisor where the lower lip can cover, as much as possible, the metal of the rest that shows at the incisal edge.
Mechanically, a lingual rest is preferable to an incisal rest, because the lingual rest is placed nearer to the center of rotation of the tooth and therefore, will have fewer tendencies to tip the tooth.