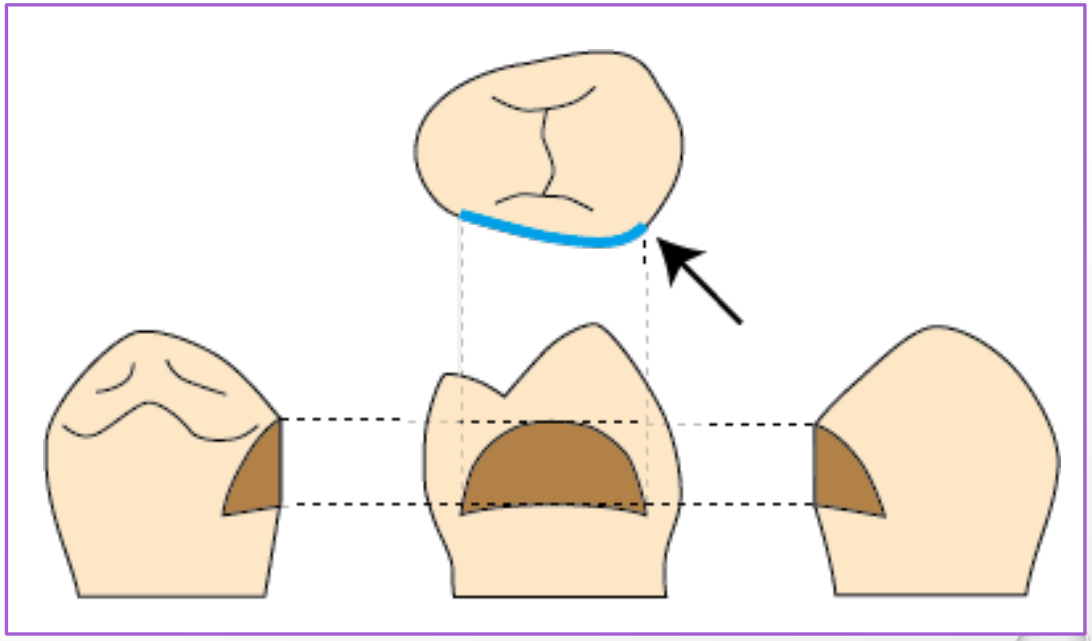
Topics of Denture



A. How to use the Perfect-STOX
B. Maxillary impression procedures
C. Mandibular impression procedures
D. Difficult case of complete denture
E. Placement of direct retainers and indirect retainer
F. Design of direct retainer
G. Design of indirect retainer
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Preparation of abutment teeth

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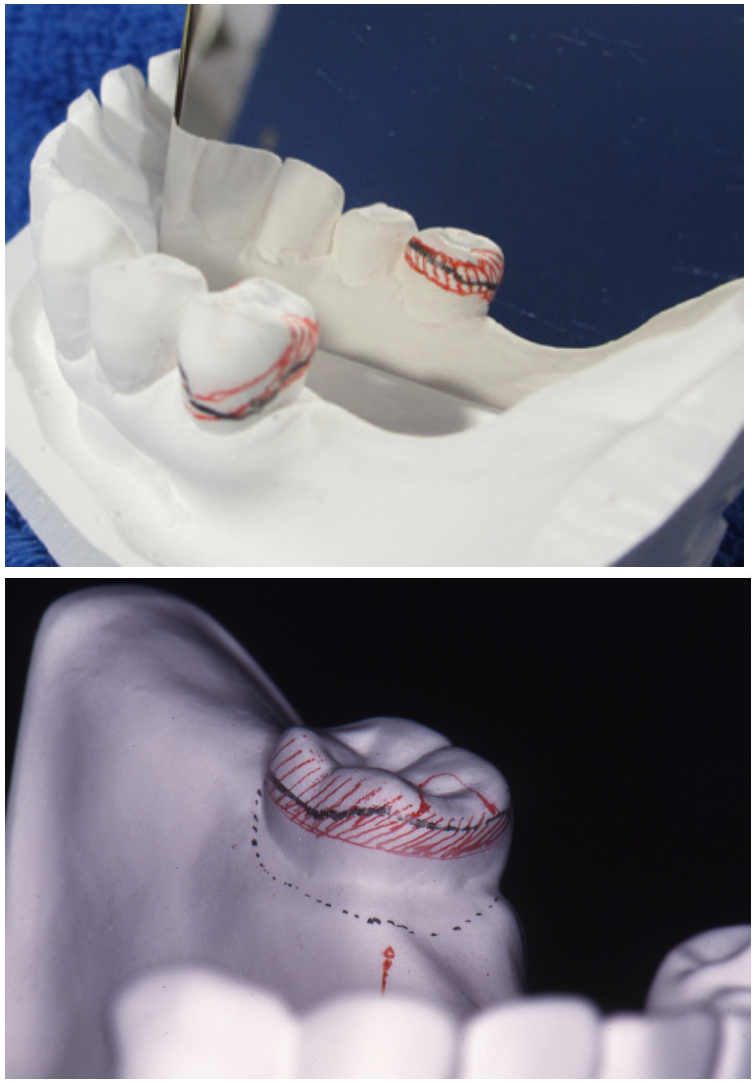
1. What is the preparation of an abutment teeth

According to Miller's Removable Partial Prosthodontics, "Preparation of the abutment teeth involves shaping it for the placement of the clasp, based on the design of the partial denture."

There are two methods for modifying the crown form of an abutment teeth: "grinding the surface of the abutment teeth" and "reduction of teeth contours by restoration." If a natural teeth is to be used as an abutment, it should be kept within the enamel. If further ablation is necessary, the abutment should be modified by a restoration.

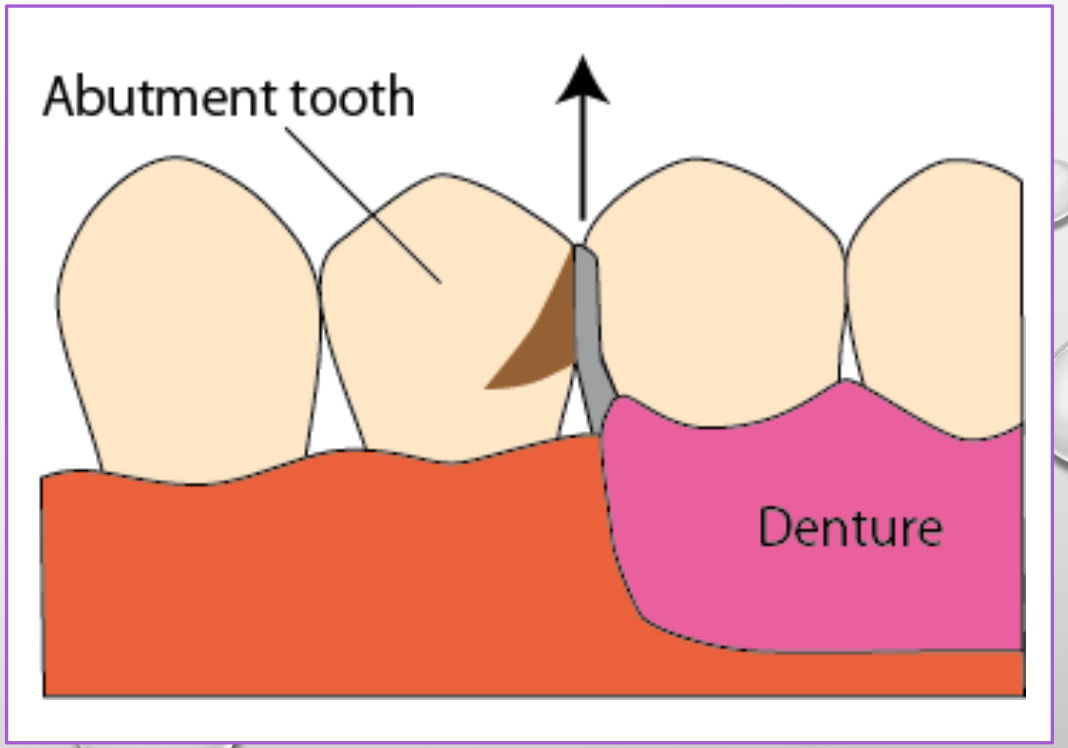
As shown in the photos on the right, the solid black line represents the survey line, and the red shaded area indicates the portion that needs to be removed to make the teeth suitable as an abutment. The preparation of the abutment teeth before taking the impression for the partial denture is done using this model as a reference.



Preparation of abutment teeth

2. What is a guiding plane

A guiding plane is the plane that matches the direction of the path of placement given to the abutment teeth. In the illustration on the right, it is represented by the brown part of the abutment teeth. A portion of the partial denture makes contact with the guiding plane, which controls the removal of the denture in one direction. The arrows indicate the direction of denture placement and removal.



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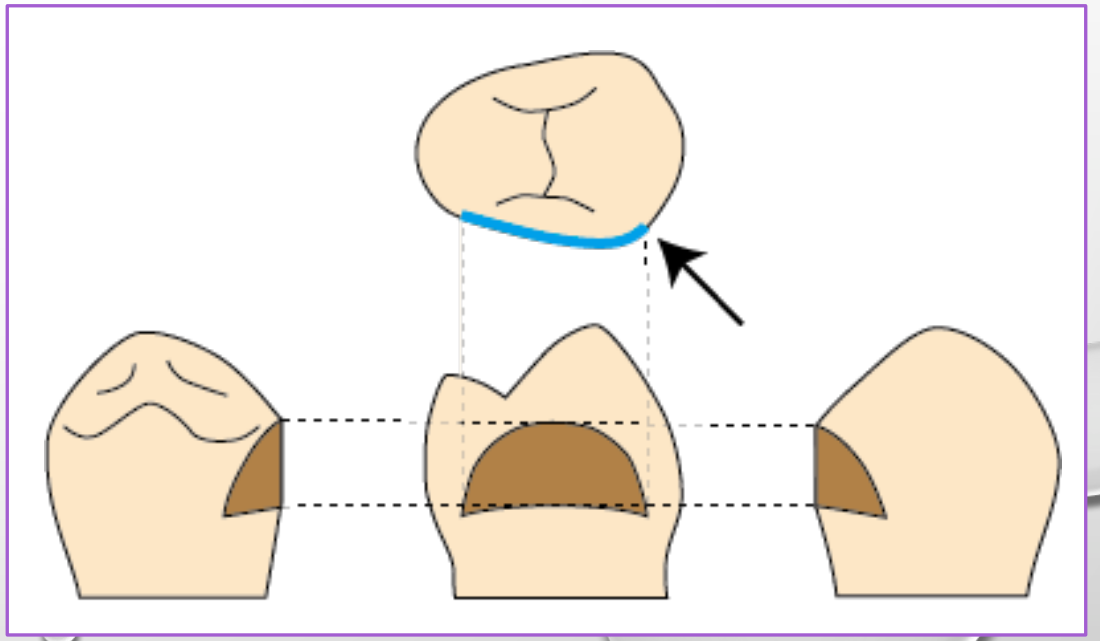
3. Shape of a guiding plane

The solid blue line in the right figure represents the guiding plane as viewed from occlusion. The width of the guiding plane slightly extends beyond the corner of the teeth, and the upper and lower widths are approximately 1/3 to 1/2 of the crown length diameter from the limb ridge. When viewed from the occlusal surface, the guiding plane appears curved. The gingival border of the guiding plane is distinct, while the other border areas form a transitional shape.

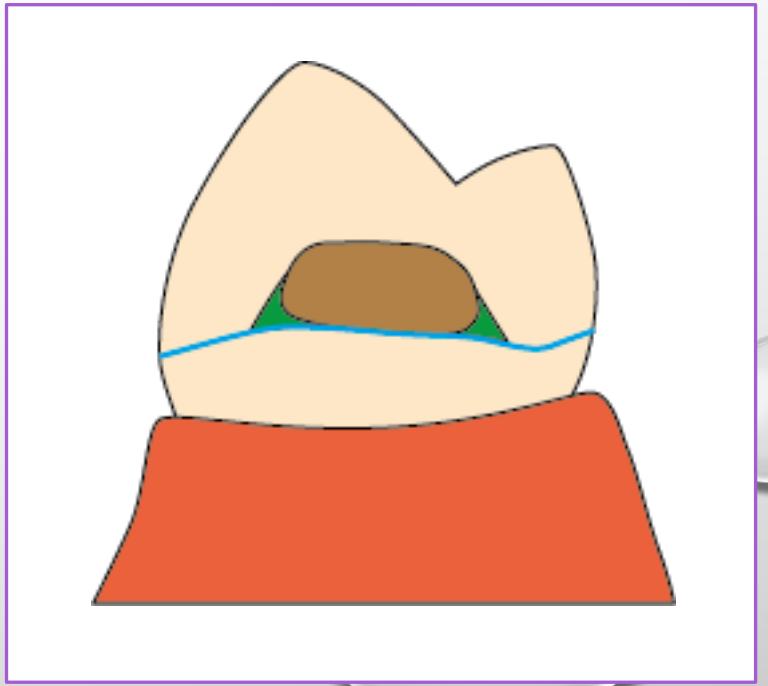


Preparation of abutment teeth

4. Preparation of a guiding plane

Guiding planes are formed using tapered turbine diamond bars, engine carborundum points, or turbine white stones. Ideally, the guiding planes should match the direction of the path of placement, but it is difficult to perfectly match the path of placement. Therefore, forming them with a slight taper will minimize mistakes.

The area around the corner of the guiding plane (green area in the illustration) is where undercuts are most likely to remain. This undercut area is an obstacle to proper clasp design, so the teeth surface should be ground to avoid leaving undercuts.



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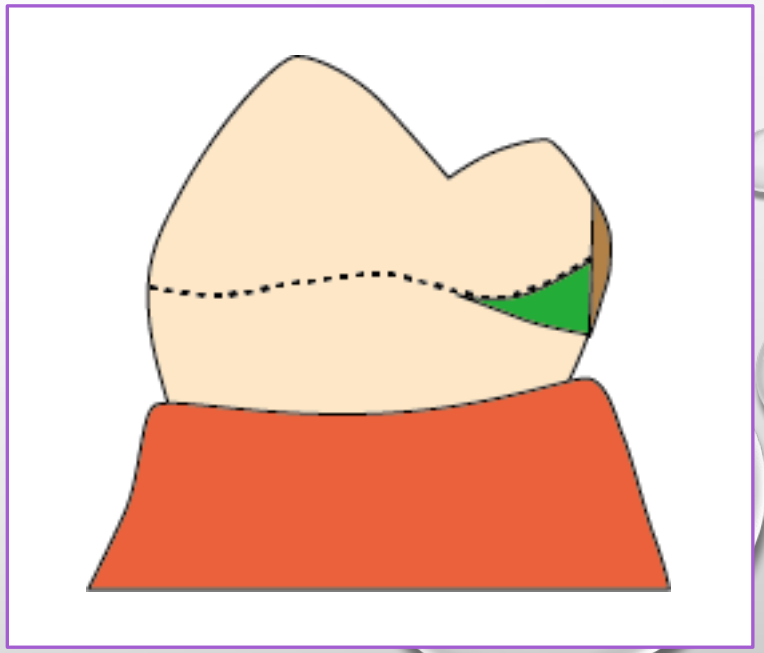
5. Preparation of survey line modification

Usually, the lingual crown morphology of natural teeth does not allow for proper arm design because the survey line is too high. In this case, the survey line can be corrected by shaving the upper lingual side of the abutment teeth (brown area) as shown in the figure. As a result, undercuts are often left near the corner of the abutment surface (green area in the figure), so the teeth surface must be carefully abraded.

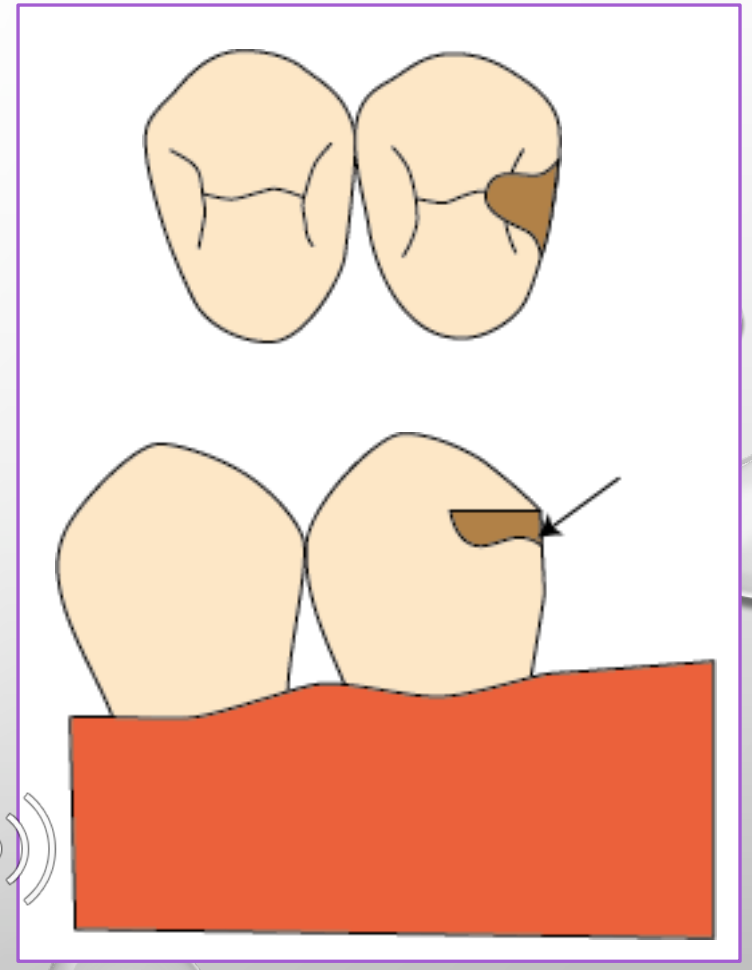


Preparation of abutment teeth

6. Preparation of a rest seat

The rest seat (brown area in the figure) should be convex in shape with a smooth curve that protrudes towards the center of the occlusal surface when viewed from the occlusal aspect. The width of the rest seat should be half the distance between the buccolingual cusps of the bicuspids and slightly less than this ratio for the molars. The position of the rest seat should align with the center of the missing alveolar crest.

The transition to the adjacent surface should be outwardly opening. The base of the rest seat should be deeper towards the center of the occlusal surface when viewed buccally, and the transition to the adjacent surface should also be outwardly open.

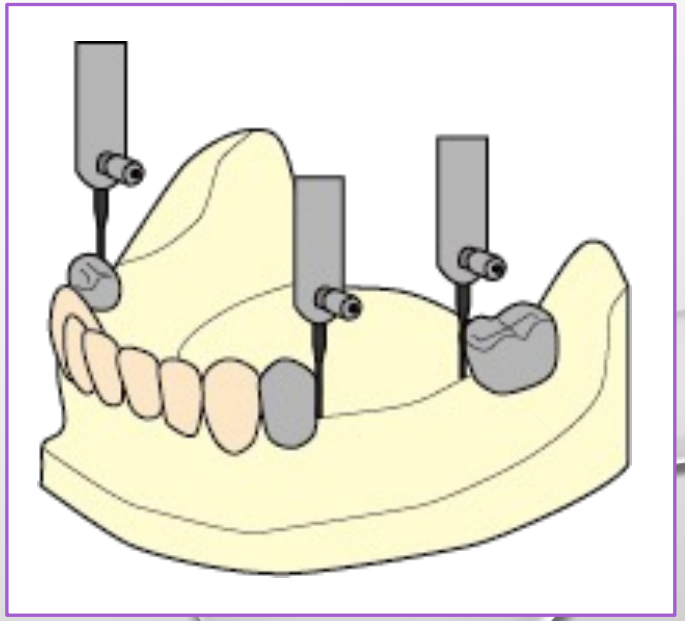


Preparation of abutment teeth

7. Reduction of teeth contours by restoration

Sometimes, the abutment teeth are used for crown prosthesis. In this case, abutment teeth can be properly shaped by waxing up the crown prostheses using a surveyor.

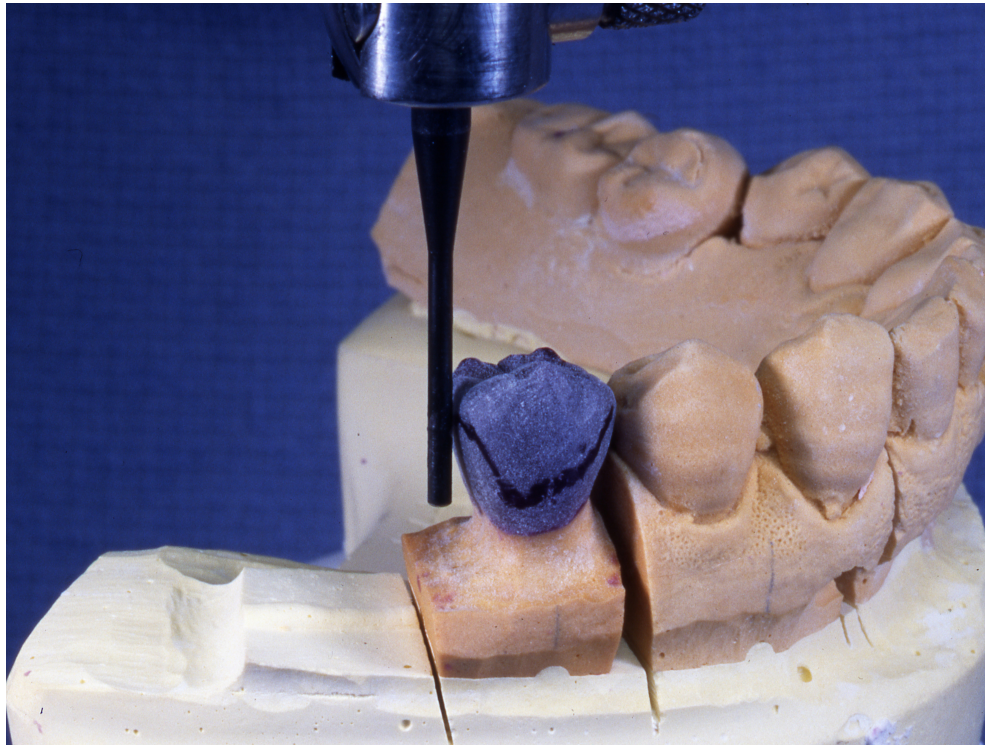
As shown in the figure on the right, if there are multiple abutment teeth to which crown prosthetics are to be placed, impressions are taken of them simultaneously. As a result, the crown prostheses of the abutment teeth can be aligned in the same direction on the surveyor. This allows for better control of the partial denture in the appropriate path of placement.



Preparation of abutment teeth

8. Drawing of a survey line in wax pattern

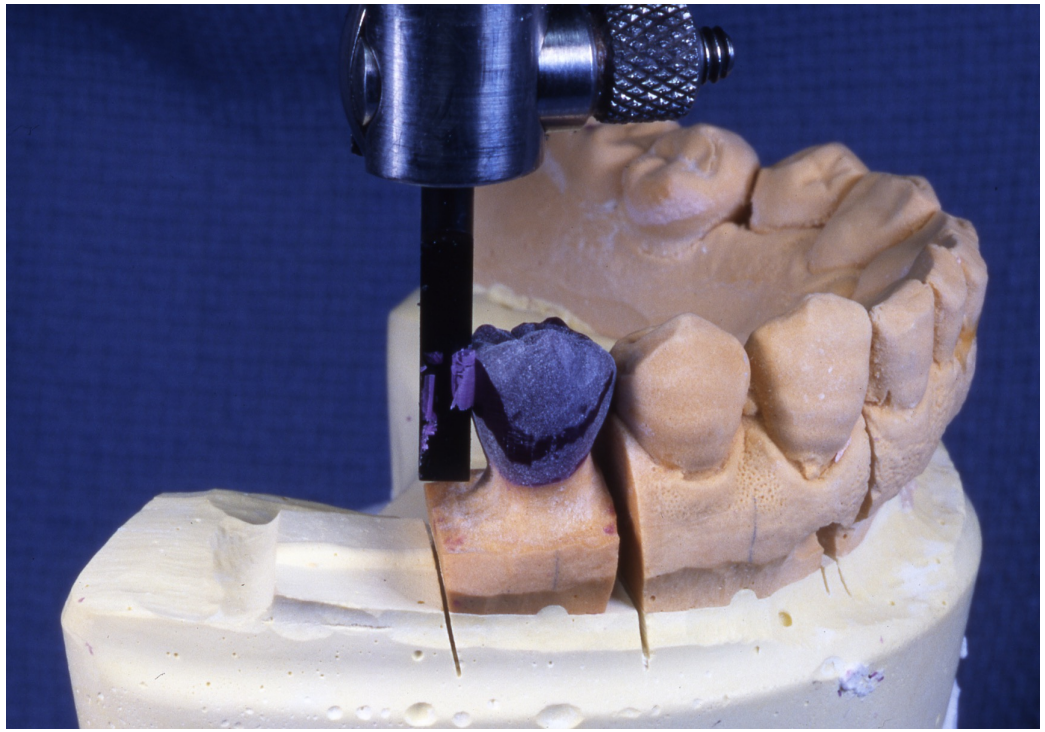
After completing the wax-up of all cast crowns, as usual, apply Siccarol (baby powder) to the surface of the wax pattern with a small brush. Attach a measuring rod to the surveyor and trace it over the surface of the wax pattern to draw a survey line. Correct the wax pattern until the proper survey lines are drawn.



Preparation of abutment teeth

9. Reduction of a guiding plane of wax pattern

A wax-forming spatula can be attached to the surveyor to create a guiding plane.



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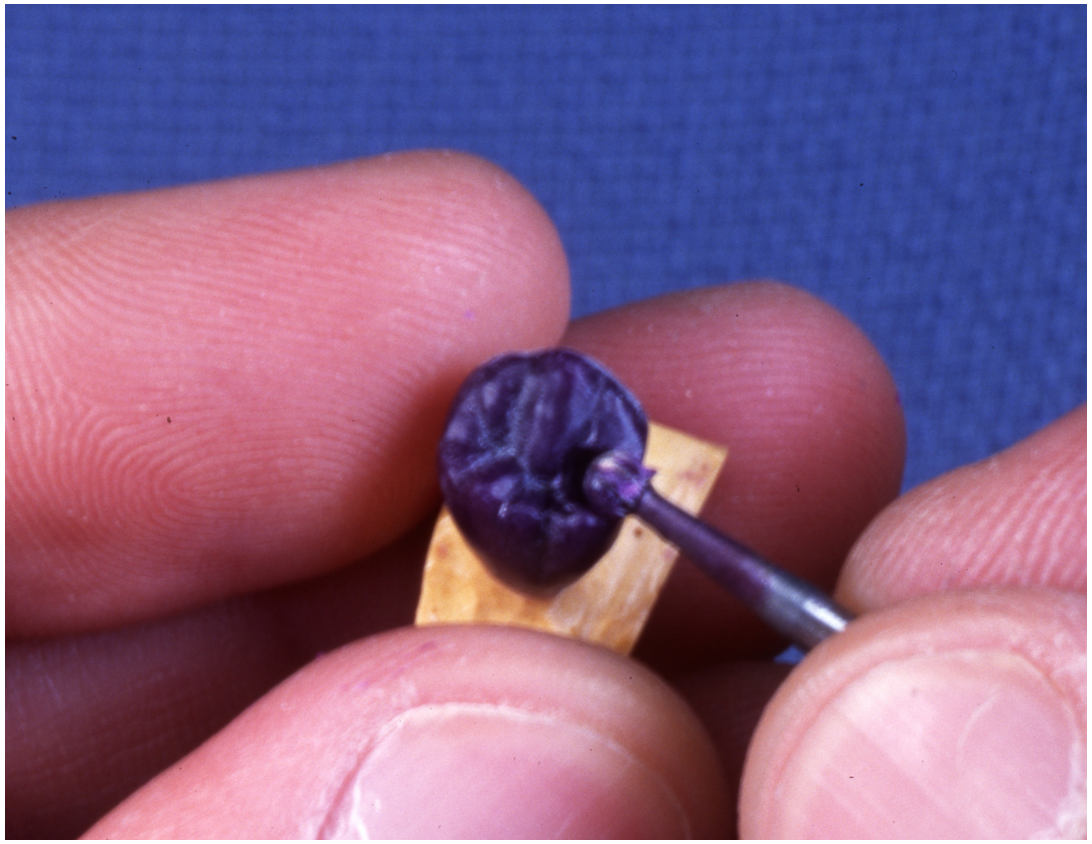
10. Reduction of a rest seat with wax pattern

The rest seat can be formed by applying a lightly warmed round bar to the marginal ridges of the wax pattern while rotating it in reverse.



Preparation of abutment teeth

11. What is a ledge

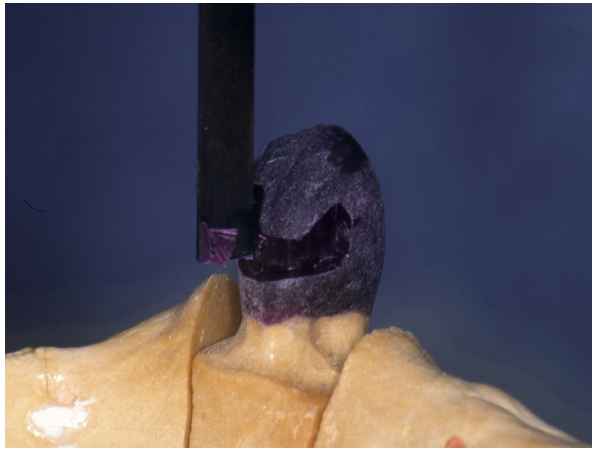
As shown in the upper right photo, the ledge is in the same condition as a natural teeth when a partial denture is fitted, so there is less discomfort caused by the tongue. Because of its superior ability to control the direction of attachment and removal, ledges can be expected to provide sufficient maintenance function without the need for an arm on the labial side. As a result, it is possible to design partial dentures with excellent aesthetics.

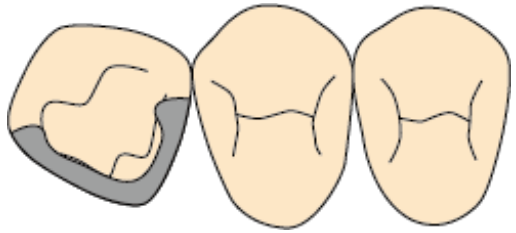
The disadvantage of the ledges is that they cannot be placed on natural teeth due to the large amount of removal of the grafted teeth. Even when placed on an unbranched teeth, special consideration must be given to the formation of the abutment teeth, as it requires a larger than usual space between the abutment teeth and the contra-aligned teeth.

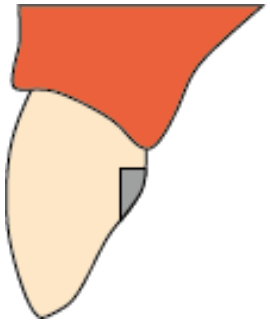
Preparation of abutment teeth

12. Reduction of ledges

Ledges can be formed by attaching a wax-forming spatula to the holder and using a surveyor, as shown in the upper right figure. The ledge forms a groove across the entire tongue side, as shown in the bottom right figure. The walls of the ledge should be formed so that they are aligned with the direction of attachment, and the bottom should be perpendicular to the walls.







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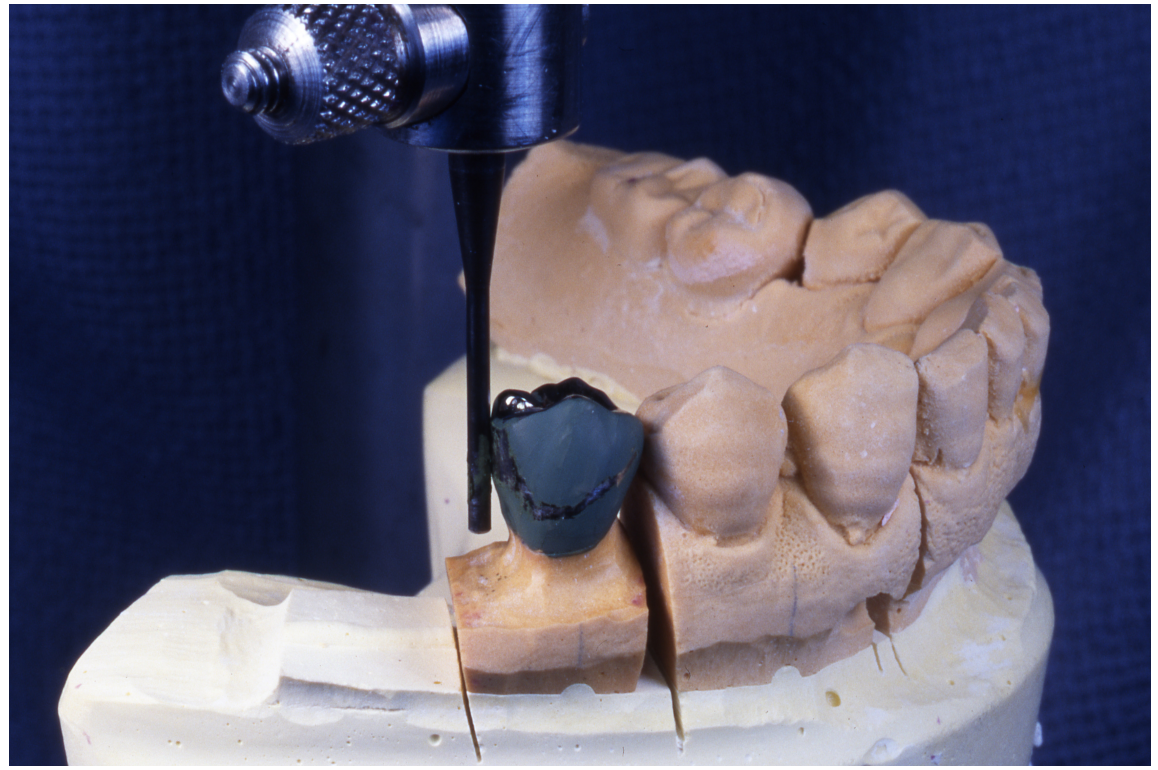
13. Final adjustment of restoration

For cast crown prosthetics, baby powder can be applied to the surface of the crown to mark a survey line on the measuring rod. This allows the crown prosthesis to be adjusted on the model until the appropriate survey lines are aligned with the designed clasp.



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If you have any questions or doubts, please leave them in the public comment section below.

The next topic will be the ninth, " Design of major connector ".