Prosthetic Dentistry for the 3rd year

PARTIAL DENTRUE: LEC. 18 CLINICAL PHASES AND LABORATORY STEPS.

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Clinical Phases of Removable Partial Denture Construction

1st Phase: Education of patient:

The process of informing a patient about a health matter to secure informed consent, patient cooperation, and a high level of patient compliance. The following should be present in mind:

1) The dentist and the patient share responsibility for the ultimate success of a removable partial denture.

2) Motivation and instruction to the patient for proper oral hygiene as a measure, the patient should understand that removable partial denture causes a periodontal problem, caries, and bad oral hygiene that is why partial denture is not supplied to a patient unless the oral hygiene is satisfactory.

3) Patient education should begin at the initial contact with the patient and continue throughout treatment. This educational procedure is especially important when the treatment plan and prognosis are discussed with the patient.

4) A patient will not usually retain all the information presented in the oral educational instructions for this reason; patients should be given written suggestions to reinforce the oral presentations.

2nd Phase: Diagnosis, Treatment Planning, Design, Treatment Sequencing, and Mouth Preparation:

Treatment planning and design begin with thorough medical and dental histories. The complete oral examination must include:

A. Clinical and radiographic interpretations of:-

1) Caries.

2) The condition of existing restorations.

3) Periodontal conditions.

4) Responses of teeth (especially abutment teeth) and residual ridges to previous stress.

5) The vitality of remaining teeth.

B. Evaluation of the occlusal plane.

C. Evaluation of arch form.

D. Evaluation of occlusal relations of the remaining teeth by clinical visual evaluation and diagnostic mounting of diagnostic casts.

After a complete diagnostic examination has been accomplished and removable partial denture has been selected as treatment of choice, a treatment plan is sequenced and a partial denture design is developed based on the support available. For distal extension situations in which no posterior abutments remain and in which extension bases must derive their principle support from the underlying residual ridge require an entirely different partial denture design than does one in which total abutment support is available.

Sufficient differences exist between the tooth-supported and the tooth and tissue-supported removable restorations to justify a distinction between them.

Principles of design and techniques employed in construction may be completely dissimilar. The points of difference are as follows:

1) The manner in which the prosthesis is supported.

2) Impression methods are required for each.

3) Types of direct retainer's best suited for each.

4) Denture base material best suited for each.

5) Need for indirect retention.

The dental cast surveyor is an absolute necessity in which patients are being treated with removable partial dentures. The surveyor is instrumental in diagnosing and guiding the appropriate tooth preparation and verifying that the mouth preparation has been performed correctly.

After treatment planning, a predetermined sequence of mouth preparations can be performed. Mouth preparations, in the appropriate sequence, should be oriented toward the goal of providing:

1) Adequate support, stability, and retention for a partial denture.

2) A harmonious occlusion for the partial denture.

Through the aid of diagnostic casts on which the tentative design of the partial denture has been outlined and the mouth preparations have been indicated in colored pencil, occlusal adjustments, abutment restorations, and abutment modifications can be

accomplished. Then the final form of the denture framework should be drawn accurately on the master cast after surveying so that the technician can clearly see and understand the exact design of the partial denture framework that is to be fabricated.

3 Phase: Support for Distal Extension Denture Bases:

It does not apply to tooth-supported removable partial dentures because support comes entirely from the abutment teeth through the use of rests.

For the distal extension partial denture (FEE), however, a base made to fit the anatomic ridge form does not provide adequate support under occlusal loading; therefore, a special impression technique is needed to satisfy the requirements for support of any distal extension partial denture base.

The certain soft tissue in the primary supporting area should be recorded or related under some loading so that the base may be made to fit the form of the ridge when under function. This provides support and ensures the maintenance of that support for the longest possible time. This requirement makes the distal extension partial denture unique in that the support from the tissue underlying the distal extension base must be made as equal to and compatible with the tooth support as possible.

4th Phase: Establishment and Verification of Occlusal Relations and Tooth Arrangements:

Whether the partial denture is tooth-supported or has one or more distal extension bases, the recording and verification of occlusal relationships and tooth arrangement are important steps in the construction of a partial denture. For the tooth-supported partial denture, ridge form is of less significance than it is for the tooth- and tissue-supported prosthesis because the ridge is not called on to support the prosthesis. For the distal extension base, however, jaw relation records should be made only after obtaining the best possible support for the denture base. This necessitates the making of a base or bases that will provide the same support as the finished denture. Therefore, the final jaw relations should not be recorded until after the denture framework has been returned to the dentist, the fit of the framework to the abutment teeth and opposing occlusion has been verified and corrected, and a corrected impression has been made. Then either a new resin base or a corrected base must be used to record jaw relations.

5th Phase: Initial Placement Procedures:

This phase begins when the patient is given a removable partial denture. It seems that minute changes in the planned occlusal relationships occur during the processing of dentures. Not only must occlusal harmony be ensured before the patient is given the dentures, but also the processed bases must be reasonably perfected to fit the basal seats.

The patient must be understanding the suggestions and recommendation given by the dentist for the care of the dentures and oral structures and understands about expectations in the adjustment phases and use of the restorations.

6th phase: Periodic Recall:

Periodic reevaluation of the patient is critical for early recognition of changes in the oral structures to allow steps to be taken to maintain oral health. These examinations must monitor:

1) The condition of the oral tissue.

2) The response to the tooth restorations.

3) The prosthesis (removable partial denture).

4) The patient's acceptance.

5) The patient's commitment to maintaining oral hygiene.

Although a 6-month recall period is adequate for most patients, a more frequent evaluation may be required for some.

Laboratory procedures in RPD construction:

Block out and relief:

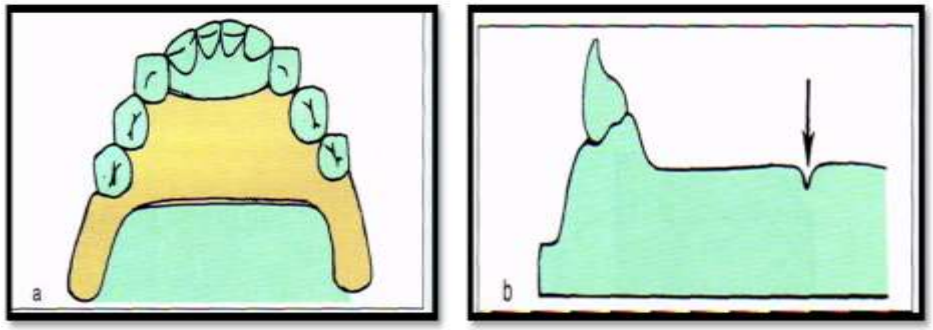
Blocking out is the act of placing wax and other materials into undesirable undercuts on the master cast. Since the framework is waxed and cast on a duplicate of the master cast, undercuts that would prohibit the framework from going into place must be eliminated.

Cast preparation:

Before the addition of the block out wax, a maxillary cast is beaded. Beading is the act of scraping the outline of the major connector into the master cast. The beading line is approximately 0.5 mm deep and becomes less distinct as it approaches the gingival margins.

The bead line produces a raised edge at the border of the major connector and ensures positive contact of the major connector with the palatal tissues. This feature reduces packing of food beneath the major connector.

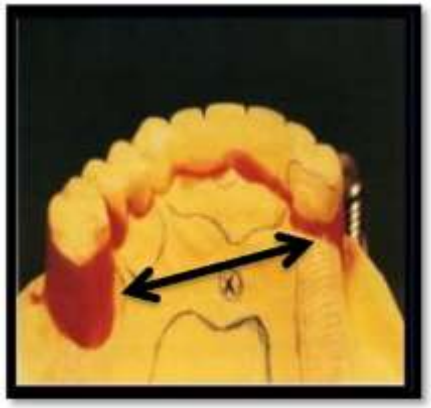
Bead lines are not used in conjunction with mandibular major connectors because these connectors rest on thin gingival tissues that cannot tolerate the associated pressures.



Specifics of the blockout process are described in the following sections. Types of blockout of master cast

1- PARALLEL BLOCKOUT:

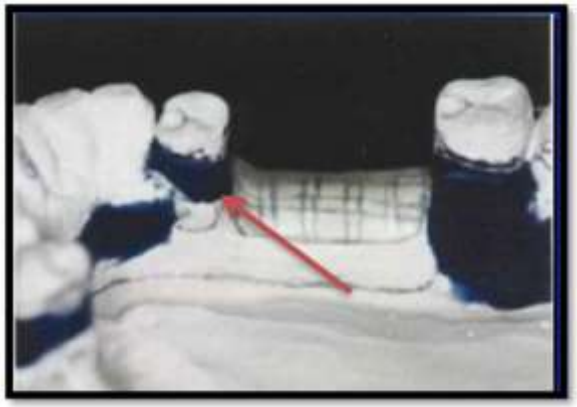
Parallel blockout is necessary for areas that will be used as guiding plane surfaces and over all undercut areas that will be crossed by major or minor connectors. Hard inlay wax may be used satisfactorily as a blockout material. It is easily applied and is easily trimmed with the surveyor blade.



Trimming is facilitated by slightly warming the surveyor blade with an alcohol torch:

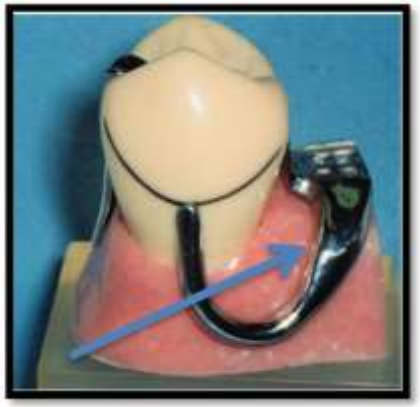
• Proximal tooth surfaces to be used as guiding planes.

• Beneath all minor connectors.

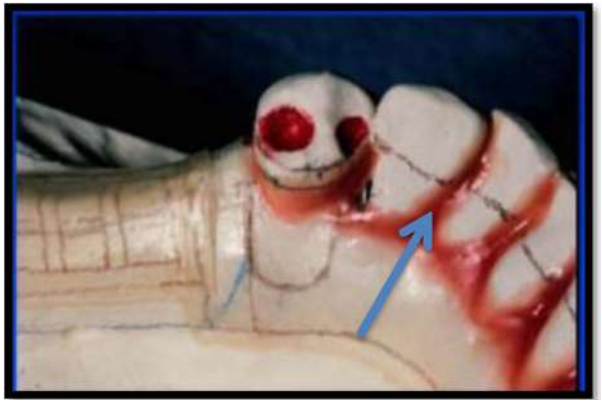


• Tissue undercuts to be crossed by rigid connectors.

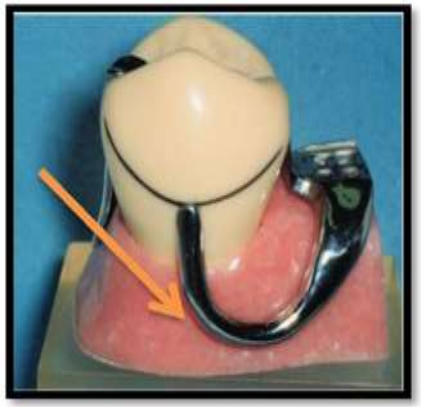
• Tissue undercuts to be crossed by origin of bar clasps.



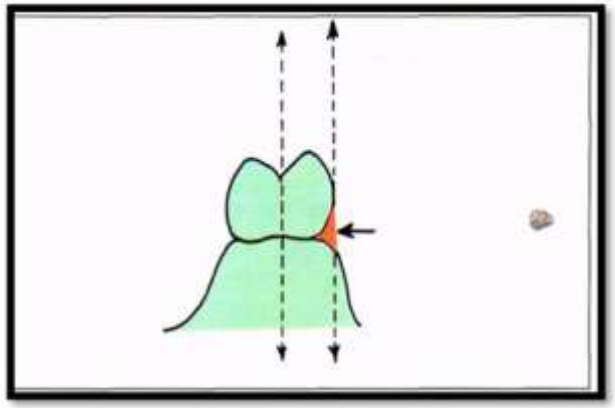
• Deep interproximal spaces to be covered by minor connectors or linguoplates.



Beneath bar clasp arms to gingival crevice.

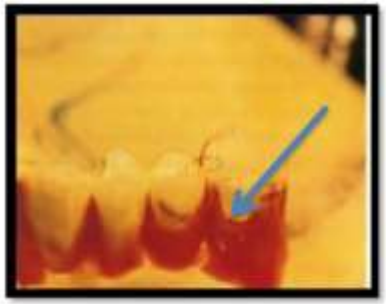


All guiding plane areas must be parallel to path of placement, and all other areas that will be contacted by rigid parts of denture framework must be made free of undercut by parallel blockout.



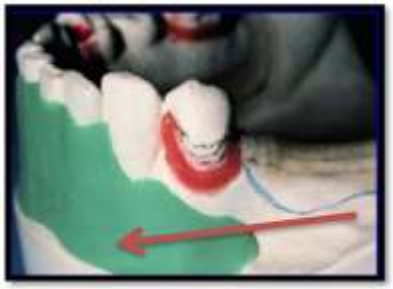
2- SHAPED BLOCKOUT.

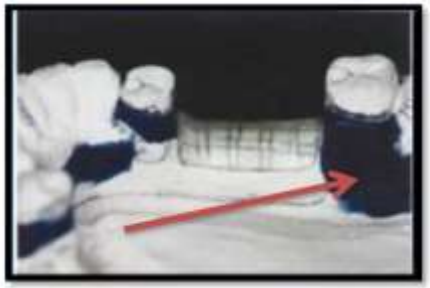
Wax ledge for reciprocal clasp arm as cervical as possible also ledge for location of retentive clasp arm, ledge is applied below the survey line around the abutment teeth. Situated on buccal and lingual surfaces, to locate the wax patterns for clasp arms.



3- ARBITRARY BLOCKOUT:

Such areas are the labial surfaces and labial undercuts not involved in the denture design and the sublingual and distolingual areas beyond the limits of the denture design. These are blocked out arbitrarily with hard baseplate wax, but because they have no relation to the path of placement, they do not require the use of the surveyor.





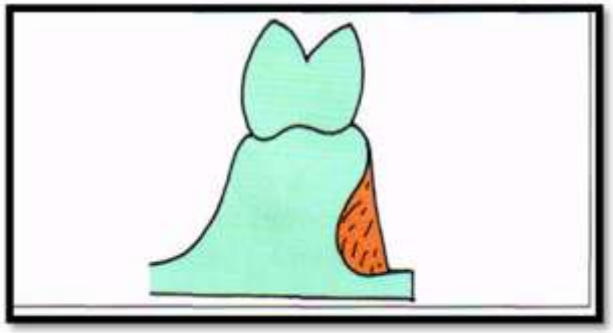
Arbitrary block out is done to:

- Facilitate the removal of the cast from the impression during duplication.

Prevent distortion of duplicating mold when the master cast is removed arbitrary block out.

- All gingival crevices.
- Gross tissue undercuts situated below areas involved in design of denture framework.
- Tissue undercuts distal to cast framework.

Labial and buccal tooth and tissue undercuts not involved in denture design.

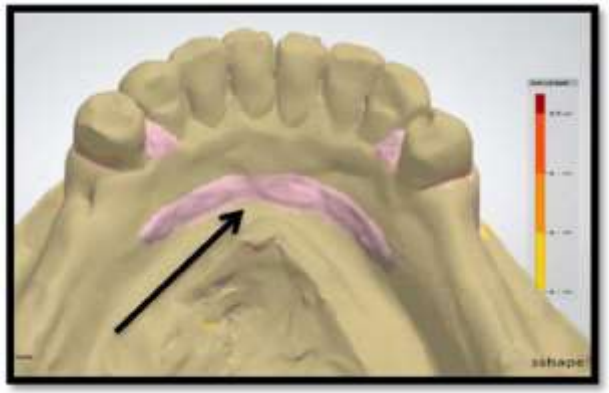


RELIEVING THE MASTER CAST:

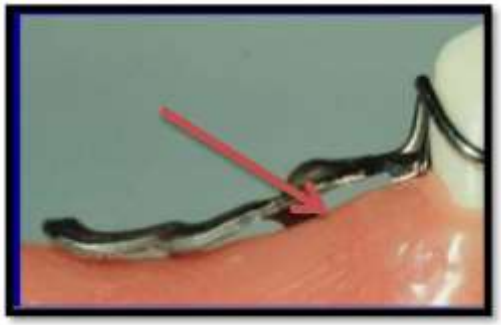
Relief is the procedure of placing wax in certain areas on the master cast before duplication, to create a raised area on the refractory cast.

Purpose of relief:

o To prevent tissue impingement resulting from rotation of the denture framework.



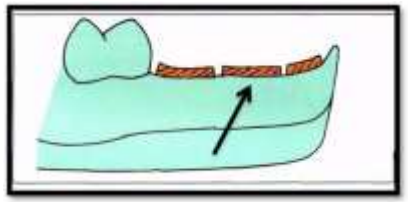
To create space for the acrylic resin (beneath the retentive ladder).

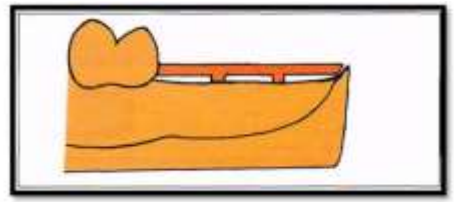


Sites:

o Areas in which major connectors will contact thin tissue, such as hard areas so frequently found on lingual or mandibular ridges and elevated palatal raphes and tori.

o Beneath the ladder minor connectors for attachment of resin bases.





Mandibular major connectors often warrant relief between the rigid metal surfaces and the underlying soft tissues.

Relief prevents the margins of the major connector from lacerating the sensitive lingual mucosa as a result of this movement.

The slope of the anterior ridge also influences the amount of relief needed. If the soft tissues are vertical, or nearly so, only minimal relief is required. Tissues that slope toward the tongue require the greatest amount of relief because any movement of the connector will bring it into contact with the adjacent soft tissues. If the anterior ridge is undercut, sufficient space may be created when the technician blocks out the undercut area.

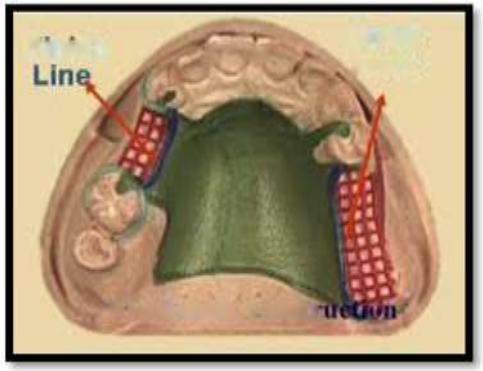
Tissue Stops:

o Tissue stops are represented as (2 mm x 2 mm) square cut in the relief wax over the ridge in distal extension areas.

Tissue stops are integral parts of minor connectors designed for retention of acrylic resin bases. They

provide stability to the framework during the stages of transfer and processing. They are particularly useful in preventing distortion of the framework during acrylic resin processing procedures, by holding the retention area of the framework (retentive ladder) away from the tissue while packing force is being applied.

Another integral part of the minor connector designed to retain the acrylic resin denture base is similar to a tissue stop but serves a different purpose. Spacer, one margin of the relief wax forms the internal finish line of the framework. o It is essential that this finish line be sharply defined. A properly formed internal finish line permits formation of a butt joint between the framework and the acrylic resin denture base.



This allows a smooth transition from metal to resin and minimizes the likelihood of trauma to the adjacent soft tissues. As a rule, the finish line should be placed 1.5 mm from the neighboring abutment or abutments. o This distance ensures that the porous resin will not contact the marginal gingivae; it is a continuation of the minor connector contacting the guiding plane.