4th Grade Prosthodontics

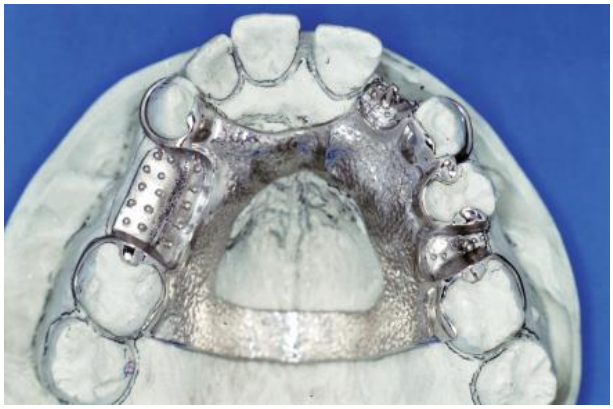
Fitting the removable partial denture framework

Why should a clinician be concerned with the fit of the framework? The rationale for having the clinician take responsibility for the fit of the framework is the same as the clinician taking responsibility for ensuring a single crown fits to the highest clinical standards suggested through the literature, so as to provide the patient with the highest quality of care over the long term.

Initial inspection

When the removable partial denture framework is returned from the dental laboratory:

1. Metal casting should be carefully inspected both off and on the master cast. Use of magnification such as dental loupes or a microscope is recommended.
2. The surface of the frame-work should be smooth and free from scratches and other defects.
3. Careful inspection should be made to ensure that the framework follows exactly the design submitted to the laboratory.
4. Ensure that all rest seats, indirect retainers, retention clasps, reciprocating clasps, major and minor connectors, and other components are present and well-constructed as requested on the design cast.
5. Metal framework components and connectors should be measured with calipers to ensure a minimum of 1.5 mm base metal alloy thickness for strength.



The intaglio surface of the framework should also be inspected using magnification.
Casting imperfections such as voids and nodules should be identified and removed or smoothed as indicated
There should be no voids or porosities present in high - stress areas such as where clasps and rest seats are connected to minor connectors. Internal and external finish lines should be sharp, well delineated, and less than 90 ° to provide adequate mechanical retention of the resin denture base to the metal framework.
When returned from the laboratory, all external metal components should be highly polished with the exception of the intaglio surface of the maxillary major connector, in an effort to provide close adaptation to the palatal tissue.
The internal components of the metal framework that contact tissue should have a smooth, matte - finished surface that maintains intimate soft - tissue contact.
The RPD framework should also be examined while seated on the master cast. Close scrutiny should be given to the adaptation of the major connector as well as the rest seats and clasps to the master cast. A metal frame that does not fit the master cast well will not likely fit the patient's mouth. If discrepancies are observed, the framework should be refined as needed. This step in evaluation of the framework is critical, comparable to when one inspects the accuracy of fit of a single - unit casting on a master die in fixed prosthodontics.

Methods and procedures for fitting the framework

A. Laboratory inspection

The initial fitting of the framework should first occur in the dental laboratory well before the patient arrives for the clinical appointment.
Initially, the internal surface of the Framework should be examined for obvious casting nodules, polishing paste, or other debris, which should subsequently be removed with a straight - shank round bur.
The metal framework should be inspected next while seating the framework on the master cast. If heavy rubbing against the cast or excessive seating pressure is required, the framework should be relieved to achieve smooth insertion onto the master cast. Close observation should be given to the full seating and adaptation of the major connector, clasps, rest seats, and indirect retainers.

The framework should sit passively on the master cast without wedging or impinging on the abutment teeth. If not fully seated, the internal surface of the framework should be painted with a disclosing medium such as chloroform and rouge paste, or disclosing wax

The framework should then be seated on the master cast using firm pressure. After removing the framework from the cast, it should be inspected under magnification for indication of internal high spots or frictional discrepancies as detailed by the disclosing medium. Adjustments are accomplished as needed until the metal casting is completely seated.

B. Clinical procedures

Once the framework is fitted to the master cast, the casting is ready for clinical try - in.

When the clinician receives the framework from the dental laboratory, this is an opportunity to inspect the fit to the master cast. Although requests to have the removable partial denture be fabricated to completion without an additional appointment to fit the framework may be common, each patient should receive consideration based on his or her diagnosis and intraoral assessment.

For instance, fabrication of a removable partial denture in a patient Kennedy Class I with an extensive number of missing posterior teeth associated with moderate to extensive residual ridge bone loss may indicate the necessity for a separate appointment to fit the framework and need for additional clinical procedures.

If the impression technique utilized is predictable and accurate, and the dental laboratory technician and the dental laboratory provide high - quality, well - made frameworks on a consistent basis, it is the judgment of the clinician whether or not to proceed to final fabrication of the completed removable partial denture.

If the RPD is completed without verifying the fit of the framework, the risk is the difficulty in discerning a fit problem if adjustments are required for both the acrylic resin portion on the intaglio surface and the framework.

The framework should be inspected using both visual and tactile sense during seating onto the abutment teeth. Direct seating pressure should be applied to the rest seats and major connector only, as pressure applied to tissue - borne denture base areas will cause the denture to pivot and rock.

Excessive force to seat the framework should not be required. The casting should go into place in a smooth manner without binding or catching the abutment teeth. Once seated, the framework should be inspected for complete

stability. The casting should fit passively without rocking or teetering. All major and minor connectors should be checked with magnification for close adaptation to the teeth and tissues.

In addition to the disclosing mediums previously mentioned, disclosing wax can be used to ensure there are no interferences causing binding or incomplete seating of the casting.



Common areas to inspect are along guide planes, under rest seats, in the shoulder areas of clasps, and on minor connectors.



Adjustment should continue to be made with high - speed diamond burs, carbide burs, or abrasive stones until the casting is fully seated. If the casting still will not go into place after several attempts at fitting the framework, a decision should be made to remake the framework.
A framework that fits the master cast but not the mouth indicates that the master cast is inaccurate and a new impression should be made to initiate the remake of the framework.

Occlusal evaluation

The framework should then be evaluated for clearance during patient articulation. Initially, remove the framework from the patient's mouth and ask him or her to occlude. Analyze the bite closely, and observe whether opposing cusps fit into wear facets or if opposing canines fully articulate together.

If open spaces are observed, the framework is elevated in occlusion and must be adjusted. When both maxillary and mandibular frameworks are being tried, they should be done individually before they are done together. Common areas of occlusal interferences are on rest seats, clasp shoulders, and minor connectors. Thin articulating marking paper, or disclosing wax can be used to discern high spots on the metal frame. Often it is difficult to mark and visualize highly polished areas, so a matte finish with micro - abrasion may be desired in these occluding areas. Disclosing wax can also be easily visualized when used to check occlusion





Metal calipers should be used routinely after adjustments to ensure at least 1.5 mm thickness of metal remains along rest seats, clasps, and minor connectors. Metal less than 1.5 mm in thickness will likely fracture or deform under function and necessitate remake.

The framework should be adjusted as needed until there is no contact of the metal against opposing teeth, prostheses, soft tissues, or metal frameworks. The adjusted areas should be repolished as needed. Following these adjustments, the patient should report occlusal stability and comfort. Further clinical procedures should be continued only after these criteria are strictly met.

Clinical procedures after fitting the framework

1. ***Corrected or altered cast***
This impression procedure is often required when the removable partial denture involves long - span distal extensions or long - span anterior edentulous areas



2. Maxillomandibular records
3. ***Facebow transfer***
4. ***Interocclusal records***
5. Wax try - in





