TECHNOLOGICAL STEPS IN CLASS II EDENTATION PROSTHETIC REHABILITATION-CASE REPORT

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TECHNOLOGICAL STEPS IN CLASS II EDENTATION PROSTHETIC REHABILITATION-CASE REPORT We presented a case of a Class II Kennedy edentation treated by a cast removable partial denture (RPD). Removable partial dentures with attachments present clear advantages to both patient and clinician. However, partial denture designs that try to improve morphological and functional benefits also should attempt to minimize the potential for harm. The practitioner should be aware of the principles of partial denture design that aim to maximize the functional stability of the denture and, at the same time, reduce the risk of partial dentures to cause long-term harm to the remaining teeth and supporting soft tissues. Keywords: CAST RPD, ATTACHMENTS, METAL CERAMIC BRIDGE.

This case presentation outlines the clinical and technological stages involved in realization of a cast removable partial dentures (RPD) that represents the likely treatment option for a class II Kennedy edentation. Patient’s complaints were related to poor appearance and loss of masticatory function. The clinical examination established the status of the remaining natural teeth, of the existing restorations, of the potential denture-bearing areas, and of the soft tissue. In addition to establishing the dental status of remaining teeth, the examination should include an assessment of occlusal relationships and the availability of space for the prosthesis. Additional investigations were required, including radiographs of all abutment teeth, being important to get as much information as possible to establish the treatment plan. The principal objectives when treating partially dentate patients are to preserve the remaining teeth in a stable and healthy environment, to prevent further pathological change and to restore function (1, 2, 3).

The preliminary casts were poured into preliminary impressions, with care taken not to omit detailed recordings of remaining teeth and potential denture-bearing area. The preliminary cast was surveyed to establish the design of the partial denture, essential step in getting a good clinical result. We decided the abutment teeth (1.6, 1.3, 2.3, 2.6, 2.8), the outline of the major connector (a palatal strap) and the saddle areas.

The fixed component of the partial denture was represented by three metallic crowns on 1.6, 2.6 and 2.8, and a metal-ceramic bridge with attachments on 1.3-2.3. The combined thickness of metal and
porcelain of the facial surface of a metal-ceramic crowns should be at least 1,4 mm to meet minimum strength and shade standards. A thickness of 0,4 mm of metal over the facial surface of the die is needed to prevent the alloy from flexing under stress. If the metal substructure flexes, applied porcelain will fracture. Bond strength between porcelain and metal is best when the metal surfaces are gently rounded. Corners or angles must be avoided on the porcelain-bearing surfaces. All junctions between porcelain and metal on the external surface of a restoration should be as close to a 90 angle as possible (4).

The wax patterns were made to a thickness of 0,4 mm in the areas that received porcelain. The wax was uniform and wrinkle-free to avoid holes. To control thickness with a little more precision we adapted a calibrated sheet wax over the die's surfaces. A cervical collar of 1 mm wide was carved into the oral half of the pattern. This collar helps ensure complete casting of the facial margin area and its bulk resists distortion when the porcelain cools from its firing temperature. In this stage, on the distal abutment teeth of the bridge the attachments were applied, in the denture’s path of insertion. The wax patterns were prepared for investment by spruing and the mold was obtained after burnout stage. The dental alloy Brealloy C+B 270 (Bredent, Germany) was melted and cast with an automatic casting machine (ORCACAST M). After divesting the crowns framework were finished and prepared for veneering.

To eliminate the possibility of an incorrect shade, the opaque porcelain was used as a foundation and built thick enough to blot out the metallic frame. The opaque porcelain was mixed with distilled water to a creamy consistency, applied with a sable brush and vibrated to expel water that may be trapped. When the desired thickness has been reached, the opaque was condensed and smoothed. The opaque layer needs to be 0,2 mm thick to perform its masking function.

The body porcelain should be 0,75 mm thick or thicker to reproduce the chosen shade. The porcelain powder was mixed with distilled water to a thick, creamy consistency. First the body mix was applied, starting from the labial surface and progressing around to the lingual surface. The porcelain elements were build larger one sixth than the finished elements so that to allow for shrinkage of the porcelain. After the body porcelain was correctly shaped, the incisal area was rehabilitated. The bridge was brushed to smooth and condense the porcelain. The incisal porcelain was added to the contacts' areas of the proximal sides to compensate for the shrinkage of porcelain when it is fired. After the bridge was fired and cooled, necessary adjustments were done to realize the appropriate shape (fig. 2). The final fire of the bridge obtains a glaze for a desirable glossy surface (5, 6).
The fixed appliances were checked on the cast and after into the oral cavity, surveying the cervical adaptation, the rehabilitation of the morphology, the esthetic parameters, the anterior guidance path and the relationship with the antagonists.

Into the dental laboratory a light curing custom impression tray was made over the fixed bridge, to obtain the final impression and further the master cast (fig.3).

The master cast was surveyed to determine the path of insertion, undercut areas and the design of the framework of the removable partial denture. Interferences can profoundly influence the choice of a suitable path of insertion and may prevent the use of a partial denture.

The preparation for duplication included the blocking out and relieving steps. On the duplicated cast, after the surveying, the wax up for the metallic frame was done from preformed wax profiles, sprued and invested. The dental alloy used for casting the framework was Brealloy F 400 (Bredent, Germany).

After divesting, finishing and polishing, the metallic framework fitting was checked on the master cast and into the oral cavity.

To obtain the acrylic component of the saddles, after the jaws relationship record, the master casts were mounted into an articulator, using baseplates and occlusion rims. It is the dentist's responsibility to get proper jaw relationship records and accurate measurements in the patient's mouth. The technician must be sure that the arrangement of the denture teeth harmonizes with the natural remaining teeth (7).

During the clinical try-in several aspects were checked: the dimension of vertical occlusion (DVO), the aspect and functionality of the artificial arches. There are at least three objectives in setting of the denture teeth. The first is to achieve maximum chewing function and stability, the second is to avoid interfering with the pa-
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...tient's speech, and the third is to restore natural appearances (8, 9).

The wax up of the acrylic saddles were transformed into the final components through the flasking, resin curing, deflasking, finishing and polishing stages (fig. 4).

CONCLUSIONS

It is necessary for both the dentist and the patient to be convinced that the replacement of missing teeth will produce significantly more benefit than harm.

For many patients with teeth missing in the anterior part of the mouth appearance is an overriding consideration. As with appearance, the patient’s concept of the problem is as important in deciding on a replacement as the problem itself.

In many cases tilting and over-eruption eventually lead to an instable occlusal relationship. If the missing teeth can be replaced before severe tooth movements occur, many TMJ disorders and malocclusions can be prevented.

REFERENCES