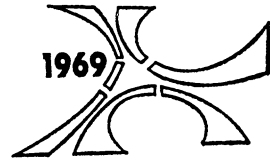


Problems of Retention in Abnormal Circumstances



BRIAN PENHALL, L.D.S., R.C.S.
London, England

By abnormal circumstances, I mean the conditions that we are often faced with when constructing an appliance for a patient with gross congenital malformation or with, say, a postsurgical condition. The lack of tissue, its form, or unfavorable quality, may tempt us to disregard the principles governing denture base construction. It must be borne in mind however that the tissues are usually the same as those in a normal mouth (there may be more or less of one particular type of tissue); it is the distribution of the tissues which may be quite different and it is important to note this distribution.

Many prosthodontists seem to believe that the construction of an appliance for an edentulous patient with these added difficulties is somehow different from that of a normal edentulous mouth. More often than not the difficulties associated with these cases are merely apparent, and can be satisfactorily overcome by applying conventional and fundamental principles to the construction of the denture base.

In Figure 1, the patient wore a full upper denture overlaying teeth 87/378. Only two of the three teeth on the left side could have been saved and used to support a new denture. It was decided to extract all the teeth and, although the edentulous condition (Figure 2) appears to present formidable problems, a retentive denture base was constructed.

It is generally assumed that partial dentures are more easily retained than full dentures. Because of this, teeth are regularly conserved in order to provide abutments for clasping or other retentive mechanisms. In many cases, the prognosis for such teeth has not been sufficiently considered and the treatment is inevitably unsatisfactory. It is unsatisfactory because if teeth with advanced periodontal or apical disease are kept for a long time, the loss of bone may produce an even more difficult situation. These teeth are often best removed and a full denture base constructed.

Figure 3 illustrates a case in which the two remaining teeth in the

Dr. Penhall is Lecturer in Restorative Dentistry, Royal Dental Hospital, London.
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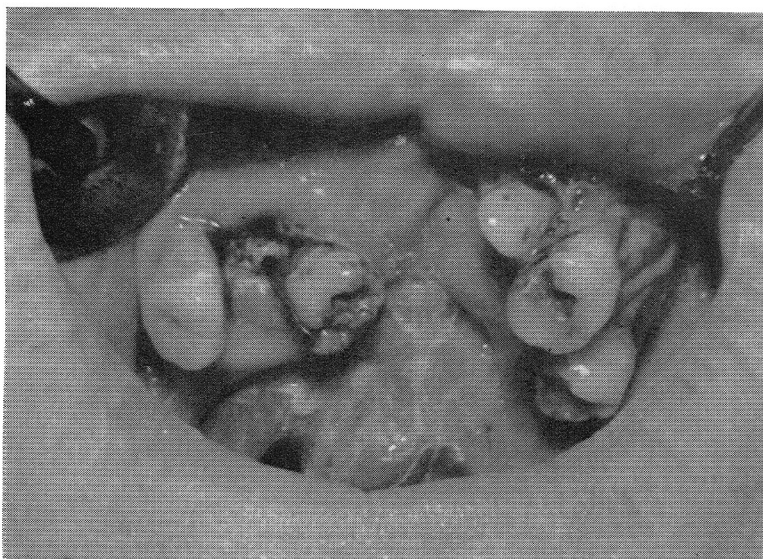


FIGURE 1. Example of full upper denture with overlay of several teeth.

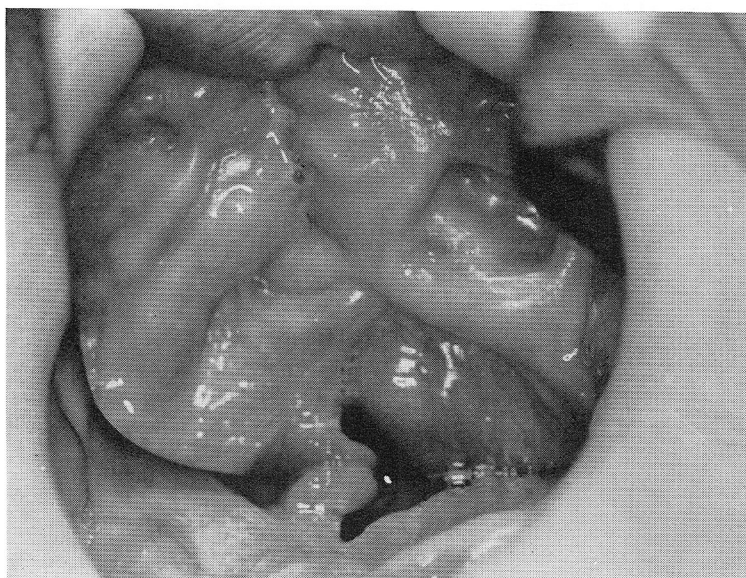


FIGURE 2. Same patient as in Figure 1; teeth extracted.

upper arch, a canine and a second premolar, were retained. These teeth were root-filled and finally restored with home-made "precision attachments" in the hope that this would help retain a partial denture.

The knowledge that it is possible to treat efficiently an edentulous mouth of this kind makes it less likely that we will be tempted to

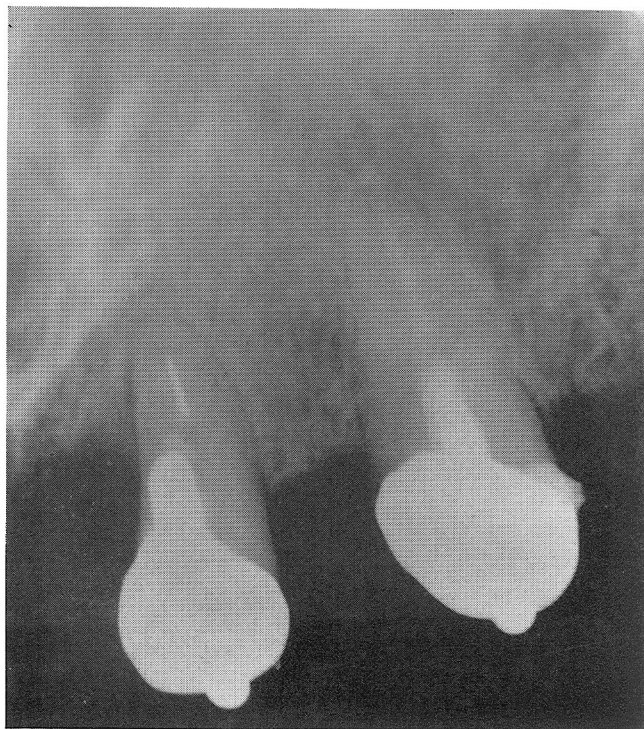


FIGURE 3. Root-filled teeth, with precision attachments for retention of partial denture.

retain unsuitable abutment teeth which, under more normal circumstances, we would probably condemn as being inadequate.

Figure 4 illustrates the condition of the upper jaw of a male patient, aged 52. Teeth 87543/4567 remained and had been extensively repaired over a number of years. The palatal mucosa was extremely thick and the deep pocketing was a combination of false pocketing superimposed on actual intra-bony pockets. It was decided to extract all the remaining teeth and reshape the hard palate by "filleting" out the thick fibrous tissue. A firmer foundation was thus provided for a full denture base. An immediate denture was inserted and it was unnecessary to rebase this until eight months postoperatively. Figure 5 shows the upper jaw eighteen days postoperative.

The principles governing the forces of retention are well known. They are a combination of the factors involved in adhesion and cohesion, surface tension, the viscosity of the saliva, and atmospheric pressure. The latter probably has its main effect at the moment that the denture base is displaced. Successful retention depends upon a favorable combination of these factors and will usually be achieved if we can maintain a peripheral seal and a thin fluid layer between the base and the tissues.

To develop the forces of retention, we displace border tissues a correct amount. The question is, what is a correct amount of displacement? It is sufficient to insure that the inherent elasticity of the tissues causes them to fall back on the periphery to form a seal; yet not enough to result in trauma to the tissues or to cause the tissues to exert a force sufficient to displace the base. It is important to realize that if we seek to utilize displacement of the border tissues in the cause of developing retention, we must extend the base so that it provides the largest area of support for

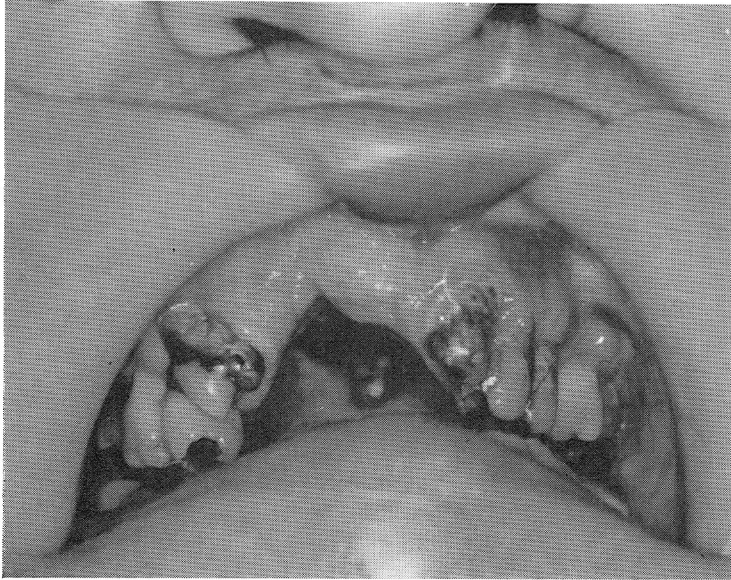


FIGURE 4. Male, age 52.



FIGURE 5. Patient in Figure 4, teeth extracted.

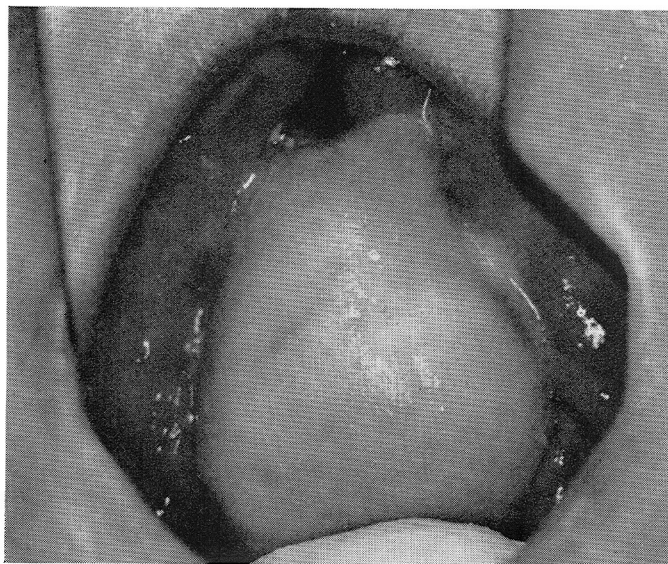


FIGURE 6. Mirror image of edentulous upper jaw, 32-year-old female.

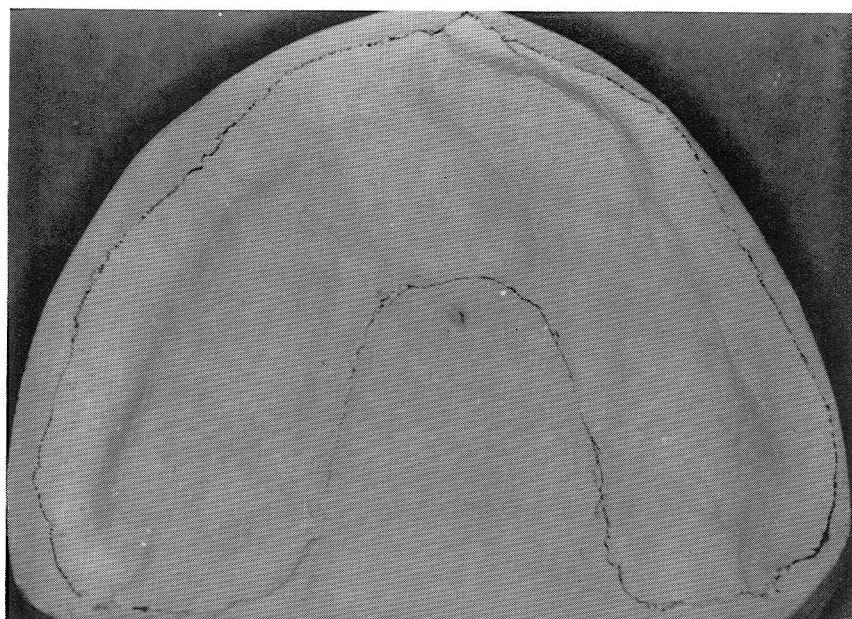


FIGURE 7. A retentive denture base for patient in Figure 6.

the denture, that is, we incidentally provide the maximum potential of stability and the optimum load distribution.

Figure 6 is the mirror-image of the edentulous upper jaw of a female, age 32 years. She had a severe Vcaux Type III cleft and partial

closure of the hard and soft palates had been achieved with a pedicle graft. Despite the residual oronasal fistula, a retentive denture base was constructed; its outline is illustrated in Figure 7.

Now, it is true that some of these patients do manage with very unretentive appliances. They do this by unconsciously making use of their tongue and cheeks to stabilize the dentures. However, I cannot see that we should call upon our patients to cope with such a situation if it can be avoided. Muscular forces are an important factor for successful stability but they should be allowed to develop slowly so that as retention is lost, muscular forces compensate for its loss.

I therefore believe that if we apply these principles of retention to the bases of dentures for people with cleft or surgically mutilated palates, it is nearly always possible to achieve adequate retention without dependence on mechanical aid or the maintenance of a few diseased teeth.

The above discussion only scratches the surface of the problems involved in the development of retention. For example, a repaired soft palate presents more particular problems: for instance, the tissues may be displaceable but are often extremely mobile as well during function. Nothing has been said of retention in relation to free-end saddles, but again that would involve a discussion on partial denture design which is not the subject of this article. Nevertheless, we should attempt to achieve the same aim: the development of retention.

Having stressed retention is not to say that this is the end of the matter. The construction of any appliance, whether it be full or partial, obturator or not, depends for its success upon a sequence of events, the success of each one dependent upon the success of the one before. For example, centric occlusion must be built to coincide with centric jaw relationship; an acceptable position must be found for the teeth, which complements the support of the lips and cheeks, deglutition, mastication and speech. All these things are equally important and inter-dependent. But the knowledge that retention in most circumstances can be achieved, and the acceptance that the development of retention is the fundamental step to make to initiate this interrelated and interdependent sequence, must lead us away from the inherent temptation of the prosthodontist to rely upon mechanical juggling.

Summary

Examples of patients with unusual problems of denture retention are presented and methods of handling such difficulties are discussed.

reprints: *Dr. Brian Penhall*
School of Dental Surgery
Leicester Square
London, W. C. 2, England