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Immediate Replacement Complete Dentures: Pitfalls of Ignoring Traditional Teaching and Established Practice

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Abstract - *A thirty-year-old female had immediate replacement dentures made by a general practitioner and her teeth extracted and the dentures fitted under general anaesthetic by her local oral surgeon three months previously. Anterior and posterior teeth had been extracted and no attempt had been made to smooth or shape the ridges. Both dentures were constructed with gum fitted anterior teeth without labial flanges. This treatment differs from traditional immediate replacement complete denture teaching. Traditionally, when possible the posterior teeth would have been extracted first and then once there had been a period of healing the immediate replacement complete dentures would have been made replacing the remaining anterior teeth. A trans-septal alveolotomy would have been performed, which would reduce the labial undercut on the edentulous ridge so that the denture could have a labial flange which would enable a border seal to be established to enhance retention but would not displace the lip. Care would have been taken to ensure that the fit surface of the denture would reflect the change in ridge shape that would follow healing. The divergence of this treatment management from a traditional approach raises important questions. In the past oral surgeons were well versed in pre-prosthetic surgery. As demand for this type of treatment has declined, so has the opportunity for oral surgery trainees, who themselves may have limited experience in prosthetic dentistry, to learn the techniques involved. Teaching of this form of removable prosthetic dentistry has been reduced reflecting the reduced frequency of this presenting condition.*

KEY WORDS: Immediate Denture, alveolar re contour, education, pre-prosthetic surgery, treatment planning

INTRODUCTION

Improvements in dental care and dental public health measures have steadily reduced the number of people who become edentulous. The majority of those that become edentulous do so by loosing one or two teeth at a time rather than having multiple extractions and immediate dentures. As the treatment of edentulous patients has formed an increasingly small proportion of dentists' workload there has been a parallel reduction in complete denture teaching in many dental schools[1,2,3,4]. This report outlines a number of aspects of the established immediate denture technique that have been ignored and their impact.

Presentation

A thirty-year-old female was referred for new complete dentures. She reported that she had a clearance three months previously and immediate replacement complete dentures fitted. The teeth were extracted due to caries, the dentures were made by a general practitioner and the teeth extracted and the dentures fitted under general anaesthetic in her local oral surgery department.

On examination it appeared that both anterior and posterior teeth had been recently extracted. The edentulous alveolar ridges were healing but it was evident that when the teeth were extracted no attempt had been made to smooth or shape the ridges to improve their denture bearing capacity (Fig 1). Several uneven areas of bone were evident and there were large undercut areas in both the upper and lower labial sextants. As a result both dentures were made with "gum fitted" anterior teeth without labial flanges (Fig 2).

The fit surface of both dentures reflected the fact that the cast had not been smoothed prior the manufacture of the dentures, rather the casts had been scalloped so that the prosthetic teeth protruded into the opening of the sockets of the teeth with the result that the ridge would take up the irregular shape of the fitting surface of the dentures (Fig.3). Moreover, there appeared to have been no attempt to reduce these extensions during the healing period.

Future treatment

In the short term, the fitting surfaces of the dentures were smoothed and repeated changes of tissue conditioner allowed the dentures to be wearable. Once healing is complete and there has been some initial bone resorption a decision wlll be made regarding the need for further surgery to remove residual sharp pieces of bone prior to making new correctly extended dentures.

The traditional approach

The management of the case outlined above differs from traditional immediate replacement complete denture teach-

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ing in several ways. Traditionally, in a case like this, the posterior teeth would have been extracted first and then once there had been a period of healing the immediate replacement complete dentures would have been made replacing the remaining anterior teeth. This approach has the advantage that the complete denture that results is better supported on the posterior parts of the ridge, which have healed and is more comfortable for the patient[5]. However, in cases where it was necessary to extract all the remaining teeth at the same time, surgical preparation of the extraction site to produce an optimal ridge for denture support would ideally have been instituted. Similarly, when the anterior teeth were extracted the edentulous area would have been prepared for denture bearing. As a minimum, sharp pieces of bone should be removed or with a large undercut area a trans-septal alveolotomy, removing the interdental septa of bone and cracking the labial plate of bone back would have been performed[6]. The rudiments of the transeptal alveolotomy are illustrated in Fig.4[7]. This procedure had the advantage of not only reducing the size of the blood clot in the tooth sockets and shortening the time needed for healing, but also removing the labial undercut on the edentulous ridge so that the denture could have a labial flange which would enable a border seal to be established to enhance retention[8] and stability but would not displace the lip.

Figure 1. *The edentulous ridges three months after extraction of the teeth.The corrugated shape of the ridges and undercut area particularly at the canine areas were pronounced.*

Figure 2. *The scalloped nature of the fitting surface of the dentures following the shape of the ridges can be seen.The ridges when remodelling have no option but to conform to the shape of the dentures.*

The fitting surface of the dentures would be shaped so as to encourage the edentulous ridge to heal in a smooth even shape compatible with successful denture wearing. In order to achieve this, the cast on which the denture was to be processed would have been shaped to reflect the change in ridge shape that would follow extraction of the teeth and the trans-septal alveolotomy. The antero-posterior dimension of the sockets would be reduced by between a third and a half (Fig 5) and the residual ridge smoothed to the anticipated shape of the ridge following the trans-septal alveolotomy (Fig. 6).

DISCUSSION

The introduction of osseointegrated implants begs the question, could a case be made for trying to preserve the maximum size of the edentulous ridge? It could be argued that the ideal treatment for the case described above would be full arch fixed bridgework supported on osseointegrated implants. However, financial restrictions, both private and relating to the UK National Health Service ruled this out in this case. The likelihood of the patient having just two implants as recommended by the Montreal and York consensuses[9,10] seems equally remote, but even if such treatment were to become available to this patient in the future the likelihood is that there would be sufficient bone remaining to support the implants. Experience shows that young patients who loose teeth due to caries often maintain surprising levels of alveolar bone and do well with complete dentures. The critically important stage in such

Figure 3. *The fitting surface of the dentures shows the scalloped shape of the fit surface and the absence of anterior flanges.*

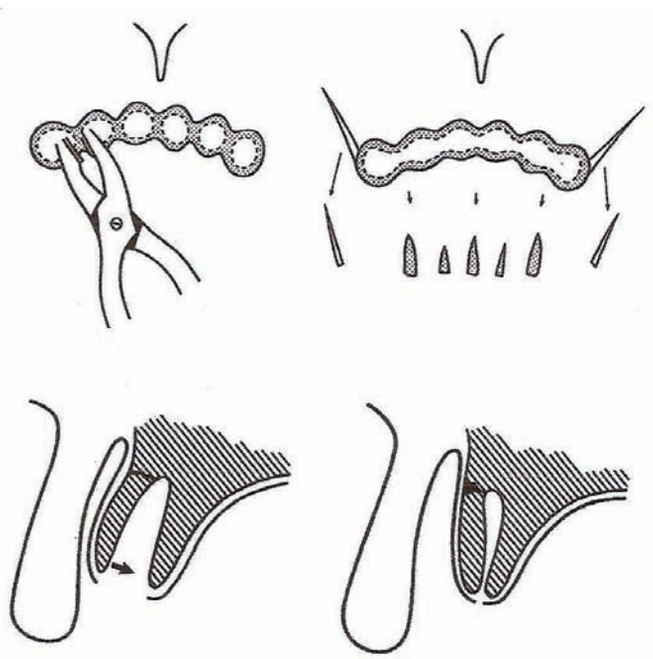

Figure 4. *The interdental septa are removed with rongeurs (top left) and the labial plate of bone is cut at the distal extremity of the extraction site (top right).The labial plate is fractured (lower left) and pressed palatally reducing the labial undercut area and reducing the blood clot in the tooth sockets (lower right).*

Figure 5. *The teeth have been removed from the cast and a pencil line has been placed between a third and halfway across the sockets indicating the amount that will be removed from the cast.The cast will then be smoothed over the tooth sockets.*

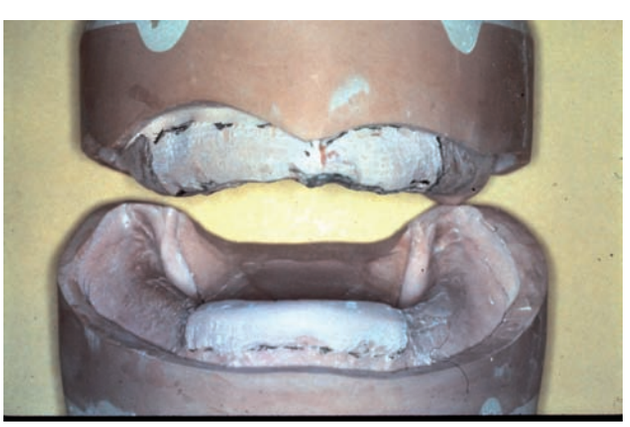

Figure 6. *The upper and lower casts which will be used to process the dentures have been trimmed and smoothed to reflect the shape of the ridge after the teeth have been extracted and the trans-septal alveolotomy performed providing a satisfactory shape for future denture use.*

a case is treatment planning, not just in the short term, but also for a lifetime of edentulousness.

No criticism of the practitioners involved in the treatment of this case is intended, rather it is used to illustrate the type of problem which may occur when well practiced techniques are ignored or perhaps not known by the practitioner. The divergence of the treatment plan in this case from a tradition approach, which had developed over many years experience raises important questions. Teaching of removable prosthodontics has been reduced in dental schools in UK reflecting the changes in dental demographics. In some schools it has been reduced to the point at which students have very little practical experience when they qualify and many do not make up this deficit in vocational training[3,11,12]. In one study[12] vocational trainers identified provision of immediate replacement dentures as a weakness in their trainees. Furthermore, in the past oral surgeons were well versed in pre-prosthetic surgery and the basic requirements for surgical outcome prior to denture construction. As demand for this type of treatment has declined, so has the opportunity for oral surgery trainees, who themselves may have had limited experience in prosthetic dentistry as undergraduates and subsequently as graduates, to learn the techniques involved.

There is no suggestion of negligence in this case. Rather, we would suggest that changes in the parttern of dental education may have resulted in the practitioners involved not knowing what could have been done. There may be fewer patients requiring complete dentures but dentists still need the knowledge to be able to treat them. The fact that there are fewer cases in the population at large does not mean competence can be achieved by practising on fewer cases as a student/trainee. If sufficient cases are not available during undergraduate training for students to become practically competent then it is important that

they are taught what could be done in a way that would allow them to make informed referrals when they go into practice. Not knowing what could be done should not be an excuse for not providing optimal easily achievable treatment.

The introduction of clinical dental technicians (CDT) into the dental team may add further complications in the treatment of immediate denture patients. As the CDT may make the dentures, a dentist will be required to extract the teeth and fit the dentures. Considerable cooperation, team working and shared knowledge will be required to prepare the cast on which the dentures are processed in a way which anticipates the shape of the edentulous ridge following extractions and surgery. Now that this aspect of prosthetic care has rarely seen by the dental undergraduate the question that arises is "Is it included in CDT training?". If not, then it is at risk of being lost to patients' disadvantage in much the same way as appears to have happened in the case reported above.

CONCLUSION

Changes in the pattern of dental disease and its management inevatably means that some well established practices may not be covered in depth in the dental curriculum. The consequences of changes such as these are illustrated by the presented case

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