

Occlusal Considerations

In the second of his articles on aesthetic dentistry, Geoffrey M Knight, a general dental practitioner from Melbourne, Australia, looks at the difficulties that can arise from occlusal disharmony and introduces the principles of Thegosis.'

There are few dentists who have not been frustrated by fractures that continue to occur to some anterior composite restorations or veneers, despite numerous attempts at adjusting the restoration to accommodate the occlusion.

In the early nineteen sixties a New Zealand dentist from Christchurch published a theory of occlusion he called Thegosis. Dr Ron Every has since developed his ideas to the extent that application of his work enables the identification and resolution of many of the frustrating occlusally induced fractures that occur in dentistry.

Dr Every determined that many patients have clenching habits that are carried out at the physiological limits of mandibular movement. These habits are usually initiated during sleep when patients are often unaware of the activity.

Restorations may fracture due to a random event such as biting on an unusually hard object, however, the majority of such fractures are due to occlusal interferences, often at the physiological limits. Patients will frequently volunteer that they awoke with a piece of tooth in their mouth or else that they were only eating something soft and sticky at breakfast time when the fracture occurred.

The following case illustrates this phenomenon.

Figure 1 shows a fractured restoration on the distal aspect of an upper right central incisor. The tooth had been unsuccessfully restored a num-

ber of times.

Normal protrusive and lateral movements, *Figure 2*, showed no evidence of occlusal interferences.

When the mandible was positioned, with difficulty and complaints from the patient, so that the upper and lower incisal wear facets lined up, the occlusion was in a cross bite position near the limits of mandibular movement. It was immediately evident, *Figure 3*, that the lower right canine had been responsible for fracturing the distal margin of the upper right central incisor.

An evaluation of an anterior occlusion using these principles will solve many incisor fracture problems and should be carried out routinely prior to any significant dental intervention.

The improved strength and inherent fracture resistance of modern porcelain veneers may precipitate periodontal, endodontic or joint problems if occlusal interferences remain after their placement. Direct bonded veneers do not pose such problems, only frustration, as they will inevitably fracture if placed in traumatic occlusion.

Restoration of the anterior dentition for patients who present with evidence of bruxing or clenching presents a clinical challenge.

Diagnosis of such individuals should include the following investigations and enquiries;

- Severe and unusual wear patterns evident on incisor teeth.
- Notification by a sleeping partner

of nocturnal bruxing.

- An awareness of clenching or bruxing whilst driving a car or other potentially stressful activities.
- A history of waking with pain at the back of the neck.
- An enlarged Masseter muscle
- A tense or nervous disposition.

An acrylic splint worn at night and during periods of stress will help protect restorations for such patients but unless it is worn continuously problems will eventually develop. An alternative approach is to build up anterior and lateral guidance planes on the canines with composite resin.

Figure 4 shows a patient who was concerned about the excessive wear of his upper right central and lateral incisors.

To simply restore these teeth without addressing the occlusion would rapidly lead to problems as is evident when the mandible is in right lateral occlusion Figure 5.

Small amounts of composite resin placed on the lingual aspect of the lower right canine and on the apex of the cusp of the upper right canine do not interfere with the occlusion in centric but cause a noticeable disclusion on right lateral movements, Figure 6.

Direct composite restorations were placed on the right central and lateral incisors that were comfortable in centric, Figure 7, and protected in lateral occlusion by the build-ups on the canines.

Rapid wear of the composite protecting the occlusion on the canines does not occur as patients seem to subconsciously identify such interferences and learn to avoid them, even during nocturnal bruxing and clenching.

Figure 8 shows the patient six months later in lateral excursion. Whilst there is evidence of a slight wear facet at the incisal edge of the

Figure 1
A fractured, frequently replaced restoration on tooth 11



Figure 2
The same mouth in lateral excursion showing no apparent occlusal interferences



Figure 3
Matching of occlusal wear facets on the incisor teeth revealed an obvious occlusal interference, tooth 43 is the culprit in fracturing tooth 11



Figure 4
The mouth of a patient unhappy about the excessive wear on his upper incisors

lateral incisor it can be anticipated that these restorations will serve the patient for a number of years, without having resorted to tooth preparation and leaving the maximum number of future treatment possibilities available.

The placement of anterior restorations or veneers in areas of heavy occlusal loading is an exciting and challenging field of dentistry. Insufficient occlusal considerations may lead to fracture or more serious problems with the TMJ and pulpal or periodontal breakdown of teeth restored in such circumstances.



The principles of Thegosis enables the identification and resolution of many of the frustrating occlusally induced fractures that occur in dentistry.

Figure 7
The completed case showing greatly improved aesthetics

Figure 8
The same case six months later, in lateral excursion, with a continued absence of occlusal disharmony and excellent aesthetics maintained