

OCCLUSAL TRAUMA

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(Read before the Joint Meeting of the Missouri, Oklahoma and Kansas State Dental Societies, Kansas City, Missouri, April 10-15, 1922)

OF ALL diseases with which mankind is afflicted the most prevalent are those of the teeth and gums. Pathological conditions have always, to some extent, been present in the mouth, but while many other diseases have been diminished in frequency, mouth conditions seem to be growing worse, as evidenced by reports of the examination of school children all over the country.

The general subject of occlusion, and especially that part which relates to occlusal trauma is, in my opinion, one of the most important and interesting subjects confronting the dental profession today. When we stop to realize that the health, comfort, and retention of the dental organs may depend largely upon this important factor, we will serve our patients better.

I am not going into detail pertaining to the anatomical and pathological changes which may take place as the result of occlusal trauma, other than to say that it is a condition of abnormal stress brought on by an unnatural relationship of opposing teeth. In general, any condition contributing to the loss of normal function and changed relation of the teeth will result in occlusal trauma.

The positive force applied in occluding the teeth in the normal act of swallowing is an important factor that must be considered, as any deviation or change from the normal condition of stress of the teeth will be accentuated on account of

this force and the frequency with which it occurs.

The principal methods used in the determination of occlusal trauma are tests for mobility, use of radiography, and the mounting of casts of the teeth upon an articulator, such as the Monson instrument.

Some manifestations of occlusal trauma are tenderness of the teeth to percussion, tipping and elongation of teeth, faulty restorations, variation from the normal in the gingival tissues, and changes as shown by radiograms. When a tooth is tender to percussion, the natural inference is that the tenderness is caused by occlusal trauma unless the pulp is involved. When a tooth is tipped, force is not exerted in a line with the long axis of the tooth and occlusal trauma results. If a tooth is elongated on account of the absence of an occluding tooth, or where there is a faulty restoration or a malocclusion, occlusal trauma may result because the normal line of force of the occluding teeth has been changed. The deviation of the inclined planes of opposing teeth from their normal relationship either by tipping, elongation, or any abnormal stress, results in a loss of the natural pink color of the gingival tissue, and a condition of stasis ensues which, if not corrected, results in the breaking down of the surrounding tissues. In the use of the radiogram, one may find as a result of occlusal trauma, a picture of a

rarefied area of the bone at the apex of a tooth, as well as a thickening of the periodontal membrane.

It has been stated that improper restorations are a frequent cause of occlusal trauma. This statement may be elaborated as follows:

1. Golds of great hardness are being used in restorations, such as abutments for bridges and in restoring the whole occlusal surfaces of badly broken down teeth. If, in making these restorations, the cusps are left too high or the planes placed in such a manner that the stress is diverted from its normal line of force, the tooth or teeth so restored are placed in a condition of constant occlusal shock. The hard golds do not flow under stress and wear down as was the case when softer golds were used.

2. The occlusal surfaces are too often improperly carved as to correct tooth form. The usual mistake is to leave the marginal ridges too high and without proper spillways as nature makes them to sluice away easily the masticated food. Also, they are often carved in such a manner that the points of the buccal and lingual cusps are directly over the buccal and lingual walls. In nature these walls slope toward each other to so great an extent that the distance from the points of the buccal cusps to the points of the lingual cusps is only one-half the width of the tooth at the widest part buccolingually. This puts twice as much stress on the tooth as it was meant to carry.

3. Contact points are placed improperly as to position and also sometimes made so full that the tooth is tipped somewhat mesially or distally, as the case may be, so that the planes are in abnormal relationship.

4. In setting bridges or inlays, considerable force is often used to get them into place. The teeth are intruded to a degree into their respective sockets and when a patient is asked to close, since the teeth are so intruded they do not feel that the restoration strikes unduly. After

a period of rest, the teeth come back to their original normal position, and then certain portions of the restoration strikes too much with consequent trauma, particularly in swallowing. The plea is here made to have every patient, for whom a restoration is placed, return as a matter of routine on the day after such placing for examination with the disclosing paste and reduction of high points, if any exist. It is also a good plan to have the patient return at stated intervals to check up the restorations, both from a clinical and a radiographic standpoint.

5. Full mouth impressions should be taken in all cases of bridge-work, since the tactile sense of the cusps of the teeth is a real guide to occlusion. If we take impressions of one side only we have no idea as to how that patient really bites with a consequent great possibility of improper carving and resultant improper stress.

In the treatment of these conditions, I have found it an excellent plan to take an impression of the teeth and with the use of a mouth lamp with mirror attached, look for surface wear caused by excessive friction of one tooth upon another. This leaves a highly polished area which can be easily distinguished when the rays of light are projected from the right angle. By marking the findings on the cast a very simple and accurate record is obtained, which will be a guide in making corrections.

The teeth are suspended in fibrous tissues, allowing a certain amount of elasticity when stress is applied, therefore, in the use of carbon paper the loose teeth are depressed in their sockets and the markings show more distinctly on the teeth that are more firm. In addition there is usually shown a greater number of markings than you wish, on account of the force required to make an imprint from the paper.

I find the use of a disclosing paste is more accurate as it requires only the slightest contact of the teeth to make a

definite marking. This paste is made of lamp black incorporated with perfumed vaseline and was suggested to me by Dr. Frederick A. Brickner. Before using the paste, the tooth to be ground, as well as the opposing tooth, is thoroughly tried. With a small camel's hair brush the paste is applied on the occlusal surface of the opposing tooth, and then the patient is instructed to close ever so slightly, after which the occlusion is corrected with a carborundum stone. One should be careful to make corrections so that the occlusal stress will be as near as possible in line with the long axis of the tooth. Any great deviation from the normal relationship of the opposing teeth may result in the stimulation of the osteoclasts and be followed by disastrous results.

Sometimes after correcting the occlusion better results are obtained with the posterior teeth by use of a splint, but with the anterior teeth I do not advocate its use on account of the thinness of the surrounding bone with a consequent lack of circulation and chance for recovery.

If the teeth on which a splint is to be used are loose and sore, an occlusal rest in a form of a cap can be utilized to relieve the stress and allow the teeth to assume a more normal socket relationship. The cap is made of No. 30 gauge nickel silver bent in a form of a staple and fitted so as to slip over the crown of an adjacent firm tooth. It may be reinforced by a little solder on the occlusal surface.

The cap is usually put on the tooth in the morning and worn all day. Of course, the patient will not be able to take any solid food during this time. After

the cap has been removed the splint is inserted and worn until the loose tooth or teeth have become firmer. The splint, which is cast out of hard gold, is removable so can be taken off by the patient and cleaned. Both the splint and the cap are of simple construction and easily applied.

In addition to the correction of occlusal trauma, it is, of course, necessary to remove all source of irritation in the mouth. The patient is instructed in the use of the toothbrush so that the gums and mucosa will receive proper stimulation. After all, the greatest responsibility in the care of the mouth must of necessity rest with the patient.

I do not want to leave the impression with you that I think occlusal trauma is the only cause of pyorrhea, but in my practice I have found it a most important one. No doubt diet and elimination are also important factors; but it has been my observation that there is a local, exciting cause, which must be removed. I will go further and say providing a man were blessed with a perfect body, lived a normal life, with no excesses either as to work or play, ate a balanced diet, had perfect elimination, and took reasonable care of his teeth, he might not develop any pathological conditions in his mouth. However, we must meet conditions as we find them today. From the patient's viewpoint, I should say that he is more interested in results rather than the way they are obtained. From the dentist's standpoint, quoting the Rotary Club's slogan, I should say: "He profits most who serves best."