

FOCUS # 29

Iatrogenic Damages through Turbine-Treatments

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The informations about the acceleration of chronic illnesses in the Report of the World-Health-Authority are alarming! According to them, this type of illnesses has increased threefold during the last 2 years.

Environmental- and civilizational damages - such as stress, false nutrition, narcotics, alcohol, etc. - certainly contribute to the number which is quoted in the statistics. However, even though stress and pleasure-seeking have increased, yet this is no sufficient explanation for the immense rise in numbers of patients; especially because many people try - supported by Rainbow Press and serial publications - to maintain themselves in a fit condition with wholesome diet in moderate amounts and physical training. These efforts toward maintenance of health on the one hand and the increasing consumption of stimulants with increased stress on the other hand, should hold the balance, statistically considered. When, in spite of this fact, there is such a horrendous increase in chronic illnesses observable, we responsible doctors and dentists should check whether possibly our prescriptions and manipulations contribute to the increasing number of patients due to iatrogenic damages. The possibilities for supposing iatrogenic damages in the dental realm are so manifold that they can hardly be numbered.

Just think of the consequences to mis-articulations, omitted jaw-regulation - or wrongly executed; poorly fitting dentures, too

high fillings which cause early contacts, fillings without sub-fillings which cause a slow death for the pulp; voltage in the mouth due to diverse metals, and the extensive sphere of iatrogenic damages in dental surgery!

All these iatrogenic damages can lead to heavy afflictions for the general health condition of the patient. Here I want to point out damages which have not been sufficiently recognized till now, or else, having been known, they have been ignored.

I refer to the damages which arise due to turbine treatments. In my opinion - and meanwhile also the opinion of some Universities - one must see the turbine as a type of "time-bomb" which, however, is fully underestimated in its effects by most colleagues.

The industry advertises the ergonomic advantages of these high-^{torque}~~torque~~ drills and has developed faster and stronger implements, and the entire dentistry - including Universities - have taken over this develish tool without clinical and histologic-pathologic ^{Investigations}~~check-out~~ of its effects!

Wherein lies the damaging effect of turbines?

1. In the effect of abrasion on the enamel. The turbine does not grind, as the slower running machines do, but it smashes the enamel-prisms not only at the rim of cavities and preparations but far into the remaining enamel! The thereby created fissures not only allow passage for bacterial toxins but for bacteria themselves and macromolecules to enter the enamel and right into the dentin. Thus they promote tooth decay!
2. The main damage, however, happens in and on the dentin itself. Many colleagues feel the main damage in the treatment with turbines lies in the heat effect. There is something to be

done about that, namely good and abundant cooling.

But because of the high revolutions, there is a banked-up level on the one side and low pressure on the other side of the dentin, there develops a water-poor zone precisely on the drilling resp. grinding location.

In an edition of the ZWR, the Swiss Colleague Schoeler describes experiments with air- and water-cooled turbines, which culminated in the discovery that, in the grinding with turbines, a temperature rise in the pulp of 12° already causes irreversible damage in 60% of the pulp even after 5 to 20 seconds grinding time. These experiments confirm identical experiences by Henning and Przetak whose experimental results are included in the considerations of this article.

However, unmentioned in this article remain those damages which do not have a thermal cause but lead just as much to the demise of of pulp -namely, the low pressure damages.

Because of the high number of revolutions, there occur turbulences on the grinding-body, which lead to a very high low-pressure on the dentin-canalliculi. Moreover, through the turbulence there occur resonances, i.e. to self-vibration of the odontoblast-extensions, which form vacuoli in the tissue, which let the odontoblast-extensions tear up and, thus, lead to the demise of the vital tissue.

For your notation:

There are about 5 000 000 dentin-canalliculi per cm^2 near the crown pulpa. The number diminishes toward the root-tip, but is still 1,4 million near the cement border. O n e dentin-canalliculus has

a 1,3 to 4,5 μ diameter.

Prof. Ravnik/Ljubljana and Prof. Kellner/Wien have prepared cuts of teeth ground with such turbines and they verify that by the just described physical effect the odontoblast-extensions are torn off, yes, that even the odontoblast-cores are sucked into the dentin-canalliculi. The empty canalliculi may become occupied by bacteria and the de-natured albumen of the destroyed odontoblast-extensions leads to auto-aggressive processes in the pulpa.

Herewith is made clear that these odontoblast-damaged pulpa have NO CHANCE FOR SURVIVAL. They are the potential foci of tomorrow!

To those colleagues who insist that they grind only the enamel, I would like to say that they are not at all in the position to discriminate macroscopically (micro- ?Sh.) whether they are still in the enamel or a l r e a d y in the dentin during preparation!

But if the grinding-body touches the dentin on a single point, quite superficially, - the sucking-action into the dentin-canalliculi already happens and the pulp is irreversibly damaged! I have ~~had~~ examined, in my own practice, several hundred turbine-treated teeth, histologically - the effects are terrible!

The examination of the pulp by the usual test-methods before the extraction yielded merely reduced sensitivity values; the damages were exactly certified only by electroacupuncture measurings.

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If you now - knowing this - consider how carelessly our colleagues apply turbines daily on thousands of patients, then you will understand the concept "Time-bomb"!!!

With this implement we sin knowingly or unknowingly in unpardonable measure against the public health. The sequences are

at this time not yet possible to foretell.

Could there not be a connection between the turbine-era and the rise by leaps and bounds of the chronic illnesses? For over 10 years, 95% of all dental practices have been using turbines, at least for grinding. You know that chronic illnesses take time for developing. When one additionally considers that pulp^S die relatively slowly and that a second stress may not always be added to the patient, one should take a critical look on the possible connectedness.

According to my opinion, the high-rotating turbines, as they are used nowadays in most practices, should be f a s t withdrawn in order to avoid the described damages for the future.

The pulp^S and the entire odonton are living and essential constituents of the organism, the health of which has been entrusted to us dentists.

Through our carefulness, we should avoid everything that might lead to damaging the total organism.