

How to take the pain out of doing dentistry

By Kurt Klemm
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Stop the pain! I guess we would all appreciate that at various times in our lives. Although I've known a few football players who thrived on pain, most of us tend to avoid it. Sometimes pain may seem inevitable. In a few situations this is the case, but for the most part we tolerate pain because we just haven't found an adequate solution to the problem.

As a physical therapist certified in spine care, most of my workday is spent dealing with back and neck pain. Pain relief is obviously the primary goal for my patients. Depending on their dysfunction, a few may continue to have some degree of ongoing pain, but most will achieve their goal of being pain-free. It's a matter of applying the correct solution to the problem with each patient to maximize the results in each situation.

Dentistry is no different. Dental practitioners have the unenviable task of maintaining relatively fixed postures for extended periods of time. While theirs is not heavy work, the sustained nature of the work leads to some inevitable muscular results. These results usually lead to pain and often chronic muscle dysfunction. Holding a position, even if it's "good posture," requires muscle effort¹. When any muscle stays contracted, even partially, for a prolonged period, the end result will be pain.

When a muscle contracts, the muscle gets tight resulting in an increase in the pressure inside the muscle². This increased pressure compresses the vessels running through the muscle resulting in a decrease in blood/fluid flow in that tissue. The tissue itself now has less oxygen and nutrients available, waste products of metabolism build up and our body tells us (pain) to change position. For example, if we were to raise our arm overhead (eg. to change a light bulb) for an extended period we would feel discomfort in our shoulder muscles. After lowering our arm, we would feel relief- the result of increased blood flow as the muscle tissue relaxes.

In the case of the dentist/hygienist/assistant that option is not frequently or readily available. The desired patient treatment position in dentistry is to naturally lean toward your work, a movement not unusual during many tasks. This incline puts the practitioner in the position of constant muscle contraction in back musculature to sustain the position. While not heavy work, the unrelenting nature of the muscle contraction results in decreased blood flow and eventually pain. If this muscle pain and ischemia occurs on a regular basis a pain-spasm cycle can begin. In this case, the pain stimulus triggers muscle activity that further decreases blood flow. Now we have a situation where pain causes a muscle reaction that causes more pain, which causes more reaction, more pain. Once in this pain-spasm cycle, appropriate hands-on

therapy may be required to break the cycle. When the cycle is broken, the goal then is to not start is again.

So what's the solution in dentistry? The ideal solution would be to avoid the muscular overuse situation all together. Changing from a static muscle contraction situation (muscle holding) to one of dynamic muscle activity (movement) would allow increased blood flow. The actual amount of positive effect would depend on the degree of initial irritation/ischemia in the tissue and the effectiveness of the dynamic movement in actually increasing blood flow in the desired tissue. Some authors have suggested regular rest breaks for this ef-

fect³; others have reported that short breaks throughout the day have not decreased the prevalence of symptoms. Up to this point, modifications of work practices have not substantially decreased the prevalence of symptoms either. Maybe the modifications made in dentistry to date have had limited success as they are attempting to address the problem indirectly.

As a spine therapist, part of my job with any patient is to modify their workplace as needed to maximize the results of therapy I also look at their work environment to determine if modifications will allow them to return to work while minimizing the

possibility of recurrence. In dentistry, this would necessitate the elimination of the constant muscle contraction while they maintain their work position. To achieve this, one option would be to change their work position. Moving the practitioner to a fully upright position has shown some decrease in muscle activity, but takes them away from their desired position of maximum direct vision of their worksite. A different option would be to decrease the prolonged muscle activity while allowing them to remain in their desired treatment position. Frontal support in an inclined position accomplishes this.

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When reclining in a chair, the chair back supports us and allows us to sustain a position for extended periods (sometimes too long, but, hey, that's what remote controls are for!). In the same way, giving the practitioner support on the front of the body relieves virtually all back muscle effort allowing normal blood flow.

It's no different that reclining in your favorite chair, only with the backrest removed. In that position your abdominal muscles would fatigue and you would be unable to maintain the position. If you needed/wanted to sustain that position, posterior support (the chair back) would allow you to achieve that without effort. Most of us appreciate that fact as we relax in our favorite chair. This same concept applies to sustaining a forward incline position. As our abdominal muscles fatigue in an unsupported reclined (backward) position, so our back muscles will fatigue in an unsupported incline (forward) position. If unsupported, the incline position requires constant muscle activity to maintain, resulting in ischemia, muscle pain, and dysfunction. Just as the backrest of a chair provides support and allows abdominal muscle rest in a reclined position, so an anterior support will allow back muscle rest in an inclined position. The dental work position can actually become a rest position for the muscle that previously had been overworked through constant activity.

This frontal support is accomplished with the Anteriores, a device developed to attach to the most stable platform in the operator, the patient chair. The Anteriores is fully and easily adjustable in all planes to allow virtually infinite positioning. The practitioner is supported in their preferred treatment position, eliminating the ischemia and discomfort frequently experienced in the dental arena.

Sometimes the solution is right in front of us. Bio-mechanically in the case of dentistry, that may be where the solution is found. Stop the pain? It can be done, with the right solution. **DT**

About the author

Kurt Klemm is an orthopedic physical therapist with 24 years of experience. He is the co-owner of three physical therapy clinics in northern Wisconsin and specializes in spine care. He is certified by the McKenzie Institute in mechanical diagnosis and therapy of the spine.

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