

Musculo Skeletal Disorders in Dentistry

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ABSTRACT

In dental practice knowledge of patients and operator's position is important for the health and comfort of both patient and operator. The causes of musculoskeletal disorders in dentistry are multi factorial, ranging from non ergonomic loupes and improper selection of delivery systems, to generic exercise that worsens muscle imbalances. Therefore proper operator positioning techniques help in preventing the progression toward chronic pain or potential injury for the operator.

Keywords: *Operator posture and position, Musculoskeletal disorders, Neutral position.*

Dentistry is a very demanding profession, mentally and physically. Most dentists suffer from shoulder, back pain or musculoskeletal disorders as a consequence of poor working posture. Average 2 out of 3 dental professionals experience occupational pain. The causes of musculoskeletal disorders in dentistry are multi factorial, ranging from non ergonomic loupes and improper selection of delivery systems, to generic exercise that worsens muscle imbalances. However, proper operator positioning techniques can go a long way in preventing the progression toward chronic pain or potential injury for the operator. If operator maintains proper position and posture during treatment, the operator is less likely to get strain, fatigue, be more efficient and less chance of getting musculoskeletal disorders. Operator's posture and position is a very important aspect in the success of the dental treatment. The correct positioning helps the operator to have a good visibility and accessibility to the oral cavity.

CORRECT POSTURE FOR THE OPERATOR

The operator should sit as close as possible to the patient to avoid having to bend the back too much. Both feet should be

on the ground (**Fig. 1**). The upper border of the thighs should be slightly bent. The long axis of the torso should be vertical (i.e. the back should be straight!) (**Fig. 2**) Both shoulders should be horizontal (not raised). Both arms should be in light contact with the rib cage. (**Fig. 3**)

CORRECT POSTURE FOR THE ASSISTANT

The dental assistant should sit higher than the operator. Sit 'at an angle' to the patient.

Dental assistant should sit higher than the operator: (fig. 4)

This allows the dental assistant to gain good vision of the oral cavity by seeing over the operator's hands. In our experience many dental assistants sit at the same height as the operator. This can cause back strain, as in order to reach the patient's mouth the dental assistant has to lean across the patient's body and inevitably bend their back. By sitting higher up, the dental assistant has good vision of the patient's mouth without having to lean forward, allowing them to keep their back straight. As a general

rule, the dental assistant's eye level should be approximately 10 cm higher than the operator's.

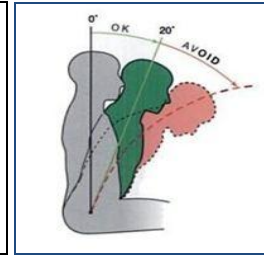
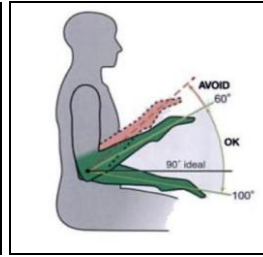
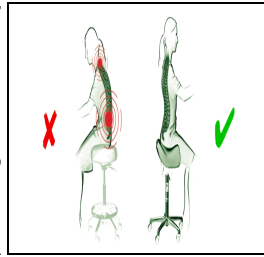
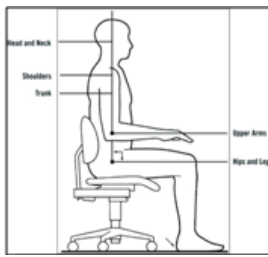


FIG. 1

FIG. 2

FIG. 3

FIG. 4

FIG. 5

COMMON PAIN SITES AND THEIR CAUSES

Site	Fault	Consequence	Solution
Back	Patient's chair too low		
Lower back	Dentist too far away from the patient's head	Over-flexion of thoracic and cervical spines and elimination of the concave lumbar curve	The dentist should move right up to contact the top of the patient's head
Neck	Patient's head too far down the headrest	Over-flexion of thoracic and cervical spines and elimination of the concave lumbar curve	Move the patient up the chair so that the top of the head is level with the top of the headrest
Back, neck, shoulder	Chairback tilted forward	Over-flexion of the back and neck particularly lumbar and thoracic spines	Lower chair back to truly horizontal
Neck	Headrest tilted too far forward	Over-flexion of the neck in order to maintain vertical eye line.	Tilt headrest further back to produce horizontal frontal plane in the patient
Neck, shoulder, upper arm	Excessive twisting of cervical and thoracic spines	Neck / shoulder / upper arm pain	Rotate patient's head and move dentist's location
Neck, shoulder, upper arm	Using direct vision to see upper teeth: Back rest not flat Head rest not flat	Neck / shoulder / upper arm pain	Lower backrest to horizontal and headrest tilted below horizontal Use mirror vision

WHAT ARE THE LONG-TERM CONSEQUENCES?

In the early stages there is pain in the muscles and ligaments. Working in a distorted posture also causes uneven pressures on inter vertebral discs and facet joints in the vertebrae. This may cause the disc to bulge and put pressure on the nerve root so producing referred pain. Because it is cumulative, permanent damage to the disc may result. This is not reversible and often leads to decreased work performance, limitation of movement, disability and, increasingly, the need to give up dentistry completely.

MANAGEMENT

1. Correct posture: Dentists should always remember that when adjusting the patient's height they themselves must be sitting in the correct seated posture and at the correct height.

2. Use of Magnifying loupes: These are optical systems worn by the operator which magnify the image of the patient's teeth. As well as the obvious benefits of improved vision of the oral cavity they can also help to promote good posture by being set up so that they only give a clear image when the operator has an upright posture.

3. Regular exercise: The benefits of regular exercise have been well documented for many years. As dentistry is a sedentary profession it is particularly important that dental professionals take regular exercise. Apart from the obvious health benefits, regular exercise helps to maintain mobility and flexibility of the joints of the body. Activities such as swimming and Pilates or yoga have been found to be particularly helpful as they can improve flexibility and strengthen back muscles.

4. Proper space management: One final important point which should be mentioned is that poorly designed clinical

space with inadequate chair space may hamper efforts to maintain good working posture.

CONCLUSION

It is essential that all members of the dental team are aware of the importance of taking steps to avoid musculoskeletal problems. With the average age of retirement continuing to rise, avoiding musculoskeletal problems in dentistry is likely to be more important than ever.

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