

Dentist and personal trainer James Tang says prevention is better than cure when it comes to neck and back pain

# SIT UP AND

**A**N estimated 80 per cent of the population will experience back pain at some point in their lives and it is the largest single cause of disability in the UK, with lower back pain alone accounting for 11 per cent of total disability.

Figures from the Office for National Statistics suggest that almost 31 million days of work were lost in 2016 due to back, neck and muscle problems, costing the UK economy around £14bn a year.

Musculoskeletal pain is a significant occupational health hazard for dentists. A 2009 review of musculoskeletal disorders amongst dental professionals found that reported prevalence varied between 64 and 93 per cent, with the most commonly cited regions of pain being the back (36.3–60.1 per cent) and neck (19.8–85 per cent).

So chances are a fair number of dentists or other healthcare professionals reading this article will be suffering from back pain. But even if you are pain-free at the moment, prevention is always better than cure – and back pain is avoidable.

My interest in this subject began 15 years ago when I injured my back while lowering a piece of luggage. I am a practising dentist and was completely out of action for more than a week. Indeed, the pain was so severe that it took me more than 10 minutes to get out of bed the following morning. Thereafter, my back was so vulnerable that even minor tasks such as bending down to pick something up could trigger severe pain. It has never been bad enough for me to be off from work but can still restrict my movement and cause me discomfort as I sit and perform my job. It can be highly distracting and also affect my mood in dealing with patients.

## GOOD POSTURE

Musculoskeletal pain is most commonly caused by muscle imbalances (due to poor posture) and core dysfunction but without specific pathology (i.e. no herniation of discs or nerve compression). The majority of sufferers, like me, tend to have recurrent symptoms.

Muscles work in synchrony and rarely does a single muscle work without others contributing. In order to understand why prolonged static postures – such as sitting for long hours at a dental chair – can be detrimental, we need to understand that muscles adapt to the positions we put them in and can become adaptively shortened or lengthened. Although the body is efficient in coping with the stresses that we place upon it, these adaptations can lead to muscle imbalances, predisposing to back problems.

Good posture is key to the prevention of neck and back pain. The spine has four natural curves in the saggital plane (Fig. 1) – cervical lordosis, thoracic kyphosis, lumbar lordosis and sacral kyphosis – and these curves are essential for shock absorption.

In the neutral position, the spine is mainly supported by the bony structures of the vertebrae resting on top of one another. When these curves become either exaggerated or flattened, the spine increasingly depends on muscles, ligaments and soft tissues to maintain its erect position – causing tension in these structures – leading to lower back strain and trigger points.

## BAD HABITS

So what are the particular postural habits of dentists and associated mechanisms that can lead to back and neck pain? Below are some of the most common.

**Prolonged sitting.** This is obviously common for most dentists, and related postural problems involve a process known as reciprocal inhibition. This is when muscles on one side of a joint relax to allow contraction on the other side of that joint. In sitting all day your hip flexor is in a constantly contracted state, whilst the gluteus maximus (agonist) will be neurologically switched off through the process of reciprocal inhibition. Movement occurs through the coordinated contraction of a number of muscles around a joint and if the prime mover (glutes) does not contract properly, then the brain will

look for alternative solutions to create the same movement, resulting in other helper muscles or synergists taking over the role of the prime mover (i.e. synergistic dominance). But synergists are not designed to be agonists and are less efficient. Over time, this can lead to dysfunctional movement patterns which can lead to lower back pain. It is therefore advisable to alternate work positions between sitting, standing and different sides of the patient. Switching positions allows certain muscles to relax while shifting the stress onto other muscles.

**Lower cross syndrome.** This is common in those with abdominal obesity, thus shifting the centre of gravity forward, or dentists who sit with a hyper-extended lumbar posture. This postural deviation is characterised by specific patterns of muscle weakness and tightness that cross between the dorsal and ventral sides of the body. These imbalances result in an anterior tilt of the pelvis, increased flexion of the hips and a compensatory lumbar hyperlordosis. Again, maintaining good posture and alternating work positions are key in prevention. Corrective exercises involve the activation of the deep core abdominal muscles, alongside the glutes (such as performing the “glute bridge”). The tight hip flexors need to be stretched.

**Upper cross syndrome.** Dentists at work tend to bend forward, protracting their shoulders for prolonged periods leading to a hyperkyphosis (curvature of the thoracic spine) and a forward head posture. Holding the head and neck in an unbalanced forward position means the spine increasingly depends on soft tissues to maintain an upright position. For example, the upper trapezius and erector spinae muscles must contract constantly to support the weight of the head in the forward posture and this can lead to predictable referral pain patterns, including tension neck syndrome characterised by headaches and chronic neck pain. The pectorals muscles will also be tight. Dentists can stretch the pectorals and strengthen the upper back with one simple exercise that can be easily done regularly at work (e.g. between seeing patients). Simply clasp your hands behind your back, retract your shoulders and squeeze your scapulae – hold this position for a few seconds before releasing (<https://tinyurl.com/yab777lg>).

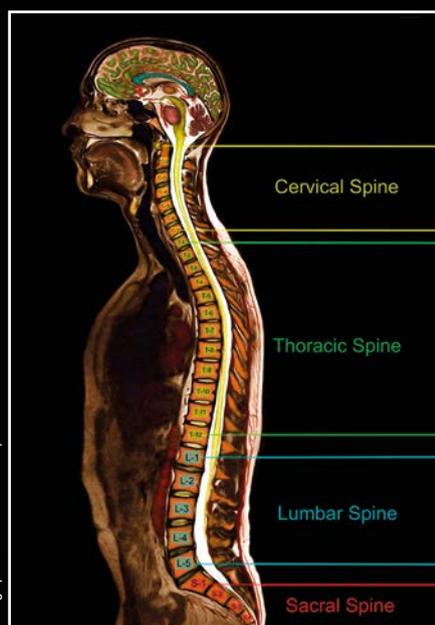


Fig. 1 Regions of the spine.

Photograph: Science Photo Library

# TAKE NOTICE

**Weakened deep neck flexors.** Dentists often suffer neck pain and this is commonly associated with weakness in deep neck flexors. There are exercises that can be used to strengthen these muscles including simple chin tucks. These can be done by moving the chin closer to your 'Adam's apple'. Stand against a wall so that when you retract your head, it just touches the wall. Hold this position while breathing normally for 10 seconds and repeat the process for 12-15 times. You can hold the position longer as you become stronger.

## CONCLUSION

This article obviously serves only as a primer to neck and back

pain and it must also be emphasised that corrective exercises alone are insufficient to deal with such problems. You must develop good postural habits by improving your general work ergonomics - and it is possible to train your body to recognise when you are adopting a poor posture. I would recommend all dentists to engage an appropriate professional to offer advice and guidance tailored to your particular work situation - and to seek medical attention for serious or prolonged back or neck pain.

James Tang is a general dental practitioner working in County Durham and also a personal trainer with a special interest in corrective exercise