

# Back- and Neck-Saving Strategies for Ophthalmologists



Simple adjustments in work practices and equipment can reduce spinal stress and strain.

BY MICHAEL E. SNYDER, MD

**B**ack and neck pain is a widespread occupational hazard among ophthalmologists. Chronic musculoskeletal pain can result from working in awkward positions, slouching at the slit lamp or surgical microscope, and performing repetitive tasks causing ongoing muscle tension. In severe cases, clinicians can lose function in their necks and hands, require surgery, or have permanent damage.

Fifty percent of ophthalmologists responding to a Canadian survey stated that they had musculoskeletal pain associated with the clinic during the previous year.<sup>1</sup> In the United Kingdom, more than half of ophthalmologists responding to a survey had back pain and nearly one-third had neck pain.<sup>2</sup> Thirty-four percent experienced pain while performing surgery, and 32% had pain when examining patients at the slit lamp.<sup>2</sup> In a study of eye care professionals versus family medicine physicians at the University of Iowa and Mayo Clinic, 46% of eye care providers had neck pain compared with 21% of family physicians, and 26% of eye care providers had lower back pain versus 9% of family physicians.<sup>3</sup>

Fortunately, we can adjust the way we work and ergonomically revamp our workstations to help prevent back and neck pain and help protect our careers for the long haul.

## PINPOINTING THE PROBLEM

One of the main reasons ophthalmologists experience pain is the way they sit. In the surgical suite, they may perch forward on the chair, far away from the chair back, so the spine is not supported.

Our hand and arm positioning also may increase our risk of pain and strain. The most sensitive point of a joint's function is in its mid-range of motion. When our forearms are parallel to the floor, we can flex our wrists about 90%, but our extension is limited. In contrast, if we change position so that our arms are more vertical to the floor, we have approximately 50% flexion and extension and are working in the midpoint of rotation. In addition, when we turn our hands inward or outward, we are in the midpoint where our hands are more upward and our elbows are closer to our sides. Better ergonomics also makes our surgical maneuvers more facile.

## MAXIMIZING COMFORT IN THE SURGICAL SUITE

Customizable equipment plays a major role in an ergonomically designed surgical workspace.

Our chairs should have adjustments for height and lumbar support. A new surgical chair, CO:RE Surgical Chair (Haag-Streit USA) provides lumbar support that adjusts horizontally and vertically (Figure 1). It helps the surgeon sit upright, and the backrest follows the natural spinal curvature. In addition, the backrest is narrow enough to permit a full range of elbow and shoulder girdle motion without contaminating the arms of our sterile surgical gowns. The waterfall edge on the front of the seat relieves pressure on the sciatic nerve.

Because the chair offers numerous graded adjustments, the surgical team can set each adjustment to a particular number for each surgeon and work setting. The backrest lumbar depth can be adjusted forward and



Figure 1. The CO:RE Surgical Chair (Haag-Streit USA) features an adjustable backrest depth and height and adjustable height range.

back to support the spine, accommodating where the surgeon prefers to sit on the seat. In addition, the backrest height can be raised or lowered to accommodate the surgeon's spinal curvature. It also provides a wide range of seat height adjustments for surgeons of various statures.

We also need to consider our patients' head tilt and the surgical microscope tilt, and we need to be mindful of keeping our spine straight during surgery. Many years ago, a colleague, Bruce Wallace, MD, advised me to tilt the surgical microscope to keep my spine straight and reduce strain. Using the old rigid-style microscope at that time,



Figure 2. The vertiscope of the Hi-R NEO 900 microscope (Haag-Streit Surgical) extends the binoculars to the surgeon, allowing better neck and back alignment.

we turned the patient's head approximately 30° off to the side and tilted the microscope toward us approximately 30°.

With the introduction of more adjustable surgical microscopes, the ergonomics are even better. Surgeons who sit at the head of the bed, such as retina surgeons, can use a surgical microscope that has an adequate amount of horizontal optical path, so they can sit upright with a straight spine, without leaning forward into the microscope.

Although some surgeons tout the benefits of 3-D monitors, the current microscope stacks can still obstruct our view of the monitor during procedures. To see the screen, the surgeon needs to shift to the side, looking around the stack, which is not ergonomic. The Hi-R NEO 900 microscope (Haag-Streit Surgical) offers an ergonomic option for anterior and posterior segment surgeons, allowing better neck and back alignment with a long light path (Figure 2). The vertiscope extends the binoculars to the surgeon and the microscope's C. RED reflex technology provides a constant, stable red reflex as well as easier visualization of the anterior chamber.

We also need to look at our foot maneuvers. Most foot pedals are flat on the floor, which does not correspond to the mid-range of our ankle joint. By contrast, the pedals in our cars are ergonomically designed, so we can work our ankle in the best position of its range of motion.

To remedy this problem in the surgical suite, we have been using foot pedal elevators to tilt the pedals, which is much more comfortable, and the ankle joint is more sensitive as we actuate both microscope pedals and our phaco pedals.

When we combine the CO:RE Surgical Chair, surgical microscope with extended binoculars, and the pedal elevators, we have a very ergonomic workstation in the operating room. Our days are more comfortable, and we can perform better for our patients and potentially extend our surgical careers.

### FINE-TUNING THE EXAMINATION SETTING

A colleague asked me to observe his ergonomics as he examined patients. At the slit lamp, his back was far from the back of the chair, and the oculars were horizontal to the floor.

There are a number of ways to make the clinical workspace more comfortable. If we raise or lower the patient to meet our preferred height, we can sit straighter at the slit lamp, relieving strain by changing the curvature of our back and neck. Inclined eyepiece adaptors for slit lamps also help us sit straighter (Figure 3).



Figure 3. With the inclined eyepiece adaptor for the BQ 900 slit lamp (Haag-Streit Diagnostics), the view into a microscope is inclined at 20° to the horizontal. Consequently, the examiner is able to maintain his head in a fatigue-free position.

In addition, it helps if we sit closer to the patient, so we are not leaning forward. We can slide in closer by flipping up the footrest on the examination chair or raise the chair so we can slide under the footrest.

A new exam lane system, the XOMA Smart Lane (Haag-Streit Reliance), addresses these key features, providing better ergonomics for the doctor conducting an ophthalmic examination (Figure 4).

The new XOMA Smart Lane is the first ophthalmic chair where the patient's footrest lowers to floor level, providing closer access for the physician. This is also safer for less stable patients when sitting and standing up.



Figure 4. The XOMA Smart Lane (Haag-Streit Reliance) provides better ergonomics for the doctor conducting an ophthalmic examination.

The XOMA Smart Lane also features a contoured slit-lamp table that allows the doctor to sit closer to the slit lamp, providing a more ergonomic position for the doctor performing the slit-lamp examination.

### STRATEGIES FOR A HEALTHY FUTURE

To help prevent spine and other musculoskeletal disorders, pay attention to your posture and movements in the clinical and surgical settings. Rather than craning your neck and straining your spine, move the patient to your preferred height, tilt your microscope to a comfortable position, and consider inclined eyepiece adapters for slit lamps. Adjust your hand and foot positions, and consider foot pedal elevators to maximize joint sensitivity for microscope and phacoemulsification pedals. Using a better chair in the clinic and operating room provides improved support, allows freedom of motion, and maximizes joint sensitivity for greater comfort. ■

1. Diaconita V, Uhlman K, Mao A, et al. Survey of occupational musculoskeletal pain and injury in Canadian ophthalmology. *Can J Ophthalmol.* 2019;54(3):314-322.
2. Hyer JN, Lee RM, Chowdhury HR, et al. National survey of back and neck pain amongst consultant ophthalmologists in the United Kingdom. *Int Ophthalmol.* 2015;35(6):769-775.
3. Kitzmann AS, Fethke NB, Baratz KH, et al. A survey study of musculoskeletal disorders among eye care physicians compared with family medicine physicians. *Ophthalmology.* 2012;119(2):213-220.

#### MICHAEL E. SNYDER, MD

- Clinical Governance Board, Cincinnati Eye Institute, A CVP Physician's Practice, Cincinnati, Ohio
- Chair, Clinical Research Committee, Cincinnati Eye Institute, Cincinnati, Ohio
- Professor of Ophthalmology, University of Cincinnati, Cincinnati, Ohio
- MSnyder@CVPHealth.com
- Financial disclosure: Consultant (Haag-Streit USA)