Ophthalmology Ergonomics: Optimizing Positioning

Leica Microsystems integrates ergonomic concepts into microscope design, from the reach and overhead clearance of the stand to the widest range of binoculars and adapters of any surgical microscope company. These enhancements provide custom solutions to meet the unique physical requirements of surgeons.

The Problem

Too often, a surgical microscope is thought of as a shared tool, and as such it is not optimized to a surgeon’s unique physique. While each surgery mandates its own set of physician requirements, the microscope should be customized to the unique physique and needs of the ophthalmologist. In recent literature, Toffola et al. report that most surgeons complain of muscular and joint pain after an average of 4.3 hours of surgical activity. However, very few surgeons are aware of ergonomic guidelines and even fewer apply them to everyday practice.

In the operating suite, ophthalmologists who specialize in anterior procedures such as cataract spend several hours sitting in “non-neutral” positions, performing series of repetitive tasks. The need for intense visual focus through the microscope on the patient results in minimal attention placed on the physical needs of the surgeon.

Greater than 50% of ophthalmologists complain of muscle tension after a day of microscopic surgery, with the majority of complaints focused on the head, neck, back, and upper extremities. Damage may begin early in a physician’s career and poor posture becomes habit over time. Musculoskeletal disorders developed from repeated stress can contribute to inflammation, long-term pain, difficulty with concentration, fatigue, compromised patient care, and disability.

The Solution

Some positions can be corrected with simple adjustments.

Make sure your binocular is right for your physique. One size fits all does not work for many surgeons. Selecting a binocular which fits your physique is essential.

Check your sitting position: If you are sitting with your head forward in relation to the microscope and the patient, your forward head position can affect cervical alignment, causing

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stress in the back and neck, as well as upper extremity pain. Spending a few moments establishing a neutral, comfortable position prior to beginning a procedure is paramount. This includes relaxed shoulders and elbows and a straight back. Select a seat that can be adjusted easily. Take short breaks, even a few seconds, to check your body position, stretching and adjustments, with subsequent improved performance.5

Ultimately, including a focus on your personal ergonomics and position improvements can improve your personal wellbeing and longevity and optimize patient care.

Here are a few basic principles that can be followed to increase your comfort and facilitate improved ergonomics during surgeries.

1. **Optimize the microscope to you.** Too often, surgeons accommodate themselves to fit the surgical microscope. Select the binocular and stand that is right for you. Leica Microsystems has the most configuration of binoculars to customize your fit. If you operate with an assistant, or if multiple surgeons will share a microscope, then each participant should tailor the microscope adjustments to their needs.

2. **Find your most comfortable working position** by defining your “free space” zone. How do you position your hands? Where and how do you sit or stand? How straight is your back? How tense are your shoulders and elbows? Your posture is a critical factor in muscle tension. Find a comfortable working position that minimizes leaning forward at an awkward angle. Then, re-adjust the microscope to best fit you.

3. **Choose the best optics for fatigue-free viewing.** Leica Microsystems’ APO OptiChrome™ multifocal lens and world-class optics provide smoother lighting, better depth of focus, and high-resolution color correction. Premium optics can prevent fatigue and headaches that result from prolonged microscope use.

4. **Create visibility for entire OR team.** Leica Microsystems offers the largest integrated HD monitor with the longest and most flexible monitor arm. Combined with top-of-the-line HD camera and recording, this system allows the entire OR team to easily see the procedure. Leica’s video solutions will ensure that the entire OR team is comfortable and informed throughout the procedure.

**Our commitment to ergonomic design extends to all facets of surgical microscopes:**

- Binoculars

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Living up to Life

- Ergonomic Stands
- Ceiling mounts
- The finest optics
- Easy to move stands for fine adjustments