

Dr Yogesh Neupane
Editorin Chief

LETS TALK: SURGEONS HEALTH & ERGONOMY

Surgeons are at high risk for various work-related musculoskeletal disorders that contribute to poor quality of life and decreased work productivity. Despite all the advances in medical technology, operating rooms are still not ergonomic and designed with surgeons' health in mind. Studies have shown that there is an 85% prevalence rate of work-related musculoskeletal complaints among ENT Surgeons worldwide. The most commonly reported problem sites among ENT Surgeon are neck followed by back and shoulder, leading to chronic discomfort over time. Factors that are unfavourable to surgeons include limited mobility of operating tables, hard flooring, incorrectly placed monitors, length of surgeries and working for hours in awkward positions. Other risk factors include the case volume, a mismatch between hand size and instrument, and remaining in a static position for extended periods of time. In a study by Davis et al, it was reported that more than 40% of surgeons suffer one or more on-the-job injuries that can impair the surgeon's ability to function, resulting in decreased job satisfaction.

Unfortunately, surgeons, knowing all of these facts, do not receive formal training in preventing these workplace injuries during their medical education.

Ergonomics is concerned with the interaction between humans and machines and the effects that machines have on humans. The principles of ergonomics use anatomy, physiology, psychology, and engineering to create a favourable environment that mitigates musculoskeletal complaints and optimises performance and efficiency.

Among the various types of procedures performed in otolaryngology, microscopic ear procedures and endoscopic rhinological procedures are associated with relatively better cervical and thoracic spine posture than open head and neck procedures. However, when the persistent static posture, eyestrain, and awkward upper extremity handling are considered, endoscopic and microsurgical procedures also contribute to poor ergonomics and potential risk of musculoskeletal injury.

The surgeon's posture, the way the surgical field is visualised, and the way surgical instruments are handled are the most important factors contributing to the operating room environment. The most common errors in ergonomic posture are head posture that is too far forward, persistent uncomfortable hyperextension, and asymmetric weight bearing. Kant et al. found that surgeons and operating room nurses experience significant musculoskeletal strain due to their frequent and prolonged static posture with a bent head and curved back.

Good posture includes maintaining the natural curvature of the spine: an inward curve in the lower back and neck and an outward curve in the thoracic spine. The table should be high enough so that the top of the patient is at the level of the surgical team's waist. When using video monitors, the eyes should be in line with the top of the monitor. Weight should be evenly distributed on both legs. Prolonged shifting of weight to one leg will result in an asymmetrical posture and increase stress on

the pelvis and lumbar spine. Foot pedals should be placed near the feet and oriented in the same direction as the instruments. Foot pedals with integrated foot rests are more ergonomic because the foot is not moved back and forth as frequently or actively held above the pedal when not in use.

Shifting to a seated position and adjusting the height of the table will also reduce fatigue from standing. When seated, hips and knees should each be bent to 90 degrees. Feet should be on the floor or a platform to prevent legs from dangling freely. The use of articulating arm supports reduces neck and shoulder strain during surgery.

Proper positioning of the microscope is necessary to maintain ergonomics of the cervical spine. Prolonged excessive downward flexion of the neck with the arms extended forward results in weakening of stabilising muscles in the cervical spine and scapula region.

Surgeons are no less prone to physical and mental fatigue, especially over the course of a long productive career. Surgeons should be aware of their own ergonomics to reduce time spent in poor posture during surgery in the operating room. Further efforts need to be made to create a more surgeon-friendly environment in the operating room.

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