Abstract: Work-Related Musculoskeletal Disorders Among Plastic Surgeons: A Systematic Review

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paralleled national trends ($R=-0.85$); smoking rates in PS patients were significantly lower for all years studied ($p<0.01$). After PSM, GS smokers continued to be more comorbid than respective nonsmokers, with greater incidences of diabetes, hypertension, dyspnea, and prior cardiac surgery ($p<0.01$); PS smokers were not significantly different than respective nonsmokers. Smokers had increased rates of superficial surgical site infections (SSI) ($p<0.01$), PE ($p<0.01$), and MI ($p<0.02$) for GS, but not for PS cohort. Both PS and GS smokers had increased dehiscence ($p<0.01$), deep SSI (PS: $p=0.01$, GS: $p<0.01$), and reoperation ($p<0.01$). Patients with $\geq 11$ pack-years experienced significant increases in deep SSI (PS: $p=0.02$, GS: $p=0.02$) and reoperation (PS: $p=0.05$, GS: $p<0.01$). In GS smokers, $\geq 21$ pack-years was associated with increased sepsis ($p<0.01$), MI ($p=0.04$) and organ/space SSI ($p<0.01$), and $\geq 31$ pack-years was associated with increased dehiscence ($p<0.01$). PS cohorts had increased rates of wound complications for both smokers and nonsmokers when compared to GS cohorts.

**CONCLUSION:** This is the first propensity-matched, large-scale database analysis isolating smoking as a risk factor for postoperative complications in PS and GS procedures. The contrast in smoking rates between GS and PS patients highlights the differences in patient selection for urgent versus elective procedures. Both PS and GS smokers had increased dehiscence ($p<0.01$), deep SSI (PS: $p=0.01$, GS: $p<0.01$), and reoperation ($p<0.01$). Patients with $\geq 11$ pack-years experienced significant increases in deep SSI (PS: $p=0.02$, GS: $p=0.02$) and reoperation (PS: $p=0.05$, GS: $p<0.01$). In GS smokers, $\geq 21$ pack-years was associated with increased sepsis ($p<0.01$), MI ($p=0.04$) and organ/space SSI ($p<0.01$), and $\geq 31$ pack-years was associated with increased dehiscence ($p<0.01$). PS cohorts had increased rates of wound complications for both smokers and nonsmokers when compared to GS cohorts.

**REFERENCE CITATIONS:**


**Work-Related Musculoskeletal Disorders Among Plastic Surgeons: A Systematic Review**

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**INTRODUCTION:** Work-related musculoskeletal disorders (WMSDs) are a group of disabling yet preventable disorders united by well-defined ergonomic risk factors. Plastic surgeons bear many of these risk factors. To date, no review has been conducted on the growing body of literature describing various WMSDs, ergonomic hazards, and potential interventions relevant to plastic surgeons. This systematic review aimed to (1) define the scope of coverage of this important issue in the peer-reviewed literature; (2) critically assess the evidence; and (3) provide recommendations for future directions.

**METHODS:** We conducted a literature search of Medline, Embase, Web of Science, and PubMed from the inception of each database until 2016. All articles reporting on WMSDs or ergonomics among plastic surgeons were reviewed, summarized, and assessed for trends.

**RESULTS:** The search returned 180 unique papers. Sixteen articles met our inclusion criteria including 5 editorials, 4 cross-sectional studies and case reports/series, 1 review, and 6 intervention articles. Four papers presented evidence on disease burden. The most commonly described WMSD was cervical spine disease, for which 1 study reported a prevalence of 24.7% (prevalence in the general population: 0.1–0.4%); 3 studies reported 64 cases resulting in surgical intervention, decreased productivity, or involuntary early retirement; and 8 studies described interventions, most of which were aimed at redesigning the operating microscope.

**CONCLUSION:** The plastic surgeon’s plight with cervical spine disease has long been substantiated by anecdotal evidence and sparse data with little context. This review found some evidence of plastic surgeons’ vulnerability to a WMSD at times severe enough to end careers. However, all studies in this review represented low levels of evidence. Further investigation is needed to clearly define this important problem in plastic surgery.
Specifically, future directions should include more methodologically rigorous epidemiologic studies evaluating disease burden.

**Targeted Stretching and Strength Trainingt to Improve Postural Ergonomics and Surgical Endurance in the Operating Room**

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**SUMMARY:** Plastic surgeons report amongst the highest prevalence of chronic musculoskeletal pain and fatigue in surgeons, which impacts daily life and career longevity.1 Hospital acquired occupational injuries are common, leading to some of the highest economic burdens in the industry. Poor postural awareness and ergonomic set up in the operating room represent the underlying culprit in the majority of situations.2 While a wealth of research documents the physical detriments, there remains a paucity of literature representing solutions to this problem.3-5 In this paper, we review anatomy, surgical equipment, and postural pitfalls in the operating room that lead to neck, back and shoulder pain. This paper provides an individualized template for home strengthening and conditioning exercises to target problematic muscle groups. The goal is to improve postural awareness, core strength, and surgical stamina. Self-motivated and prophylactic conditioning is a must for maintaining physical wellbeing in a surgical field which stresses mental and physical toughness. Future focus should be aimed at implementing dedicated ergonomic education and physical wellness programs early in surgical resident training.

**Reference Citations:**