



The pain of surgery: Pain experienced by surgeons while operating

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ABSTRACT

Introduction: The operating theatre can be a dreaded experience not only for the patient but also occasionally for the surgeon. We sought to investigate the prevalence of pain experienced by surgeons while operating.

Methods: One hundred and thirty anonymous questionnaires were sent to surgical consultants in the Britain.

Results: The response rate was 60% and 63 experienced pain while operating. The back and neck were the most common areas of pain (36 & 30 consultants respectively), followed by the hand (24 consultants). Nearly 80% described pains on a regular basis. Table height was the most common cause of pain (35%), followed by the use of microscopes (27%) and standing (22%). Nearly 43% of the consultants will take a break from surgery because of their symptoms, and 4 took sick leave in direct relation to pain experienced as a result of operating. However only 27% took measures to reduce their symptoms and 65% never sought any help or advice and only one consultant informed the occupational health department. **Conclusion:** Many surgeons will experience pain while operating due to positioning or the instruments they use, however there are no guidelines from occupational health departments or training courses to help minimise these symptoms.

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1. Introduction

Health care workers are subjected to many and varied occupational risks emotionally and physically. Occupational health is a well established discipline in many hospitals. Such departments have the responsibility of ensuring that the health care providers are safe at work and safe towards the patients. As well, risk management in health care is becoming increasing an influential department in modern health care management to minimise the risk of harm sustained within the organisations in which they manage. The surgeon's daily workload can exert a physical strain on his or her body from assisting in patient transfer tasks to the assumption of uncomfortable postures during lengthy operations. This can often go unreported or if reported is often not acted upon. As a result the operating theatre can pose potentially serious health hazard risks for surgeons. If undetected and/or not addressed at an early stage this may result in a reduction in the working life of the surgeon. For these reasons we sought to investigate the prevalence of pain experienced by surgeons while operating.

2. Methods

One hundred and thirty anonymous postal questionnaires were randomly sent to consultants in various subspecialties in surgery currently practicing in the United Kingdom. The surgeons surveyed were from five different specialities; general surgery, otorhinolaryngology, plastic surgery, orthopaedic and trauma surgery and neurosurgery. The data was collected and analysed after three months.

3. Results

The response rate was 60% (77 consultant surgeons). General surgeons had the greatest representation (23 surgeons), followed by plastic surgeons (16 surgeons), trauma and orthopaedic surgeons (15 surgeons), otorhinolaryngology surgeons (13) and neurosurgeons (10) (Fig. 1). Pain while operating was experienced by 63 surgeons who responded. The majority of the surgeons in each speciality group experienced pain while operating with plastic surgeons having the highest ratio of surgeons experiencing pain while operating (94 per cent), while trauma and orthopaedic surgeons having the lowest ratio (66 per cent) (Fig. 1).

The back and neck were the most common areas of pain (36 & 30 consultants respectively), followed by the hand (24 consultants) (Fig. 2).

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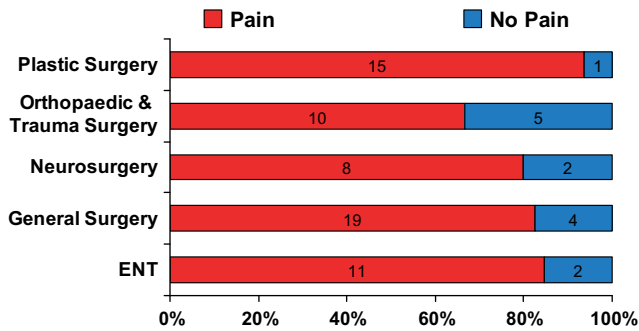


Fig. 1. Total number of respondents, with number of respondents per speciality that suffer from pain while operating.

Nearly eighty per cent described pains on a regular basis. Posture was the most common cause of pain (46 per cent), followed by the use of microscopes or surgical instruments (21 per cent each), then the use of surgical loupes or head-mounted lights (11 per cent). Instruments that were particularly mentioned included scissors, needle holders, forceps, endoscopes, retractors and micro-dredgers.

Nearly forty three per cent of the consultants reported that pain was severe enough to force them to take a break from operating to relieve their symptoms. Eleven surgeons reported that they take regular breaks and 16 only rarely take breaks. Sick leave in direct relation to pain experienced as a result of operating was taken by 4 surgeons.

Sixty five per cent of those that experienced pain never sought any help or advice. Of those that did, 12 sought the advice of another colleague, 5 surgeons self-medicated, 3 from their general practitioner, one from a physiotherapist and only one consultant informed the occupational health department.

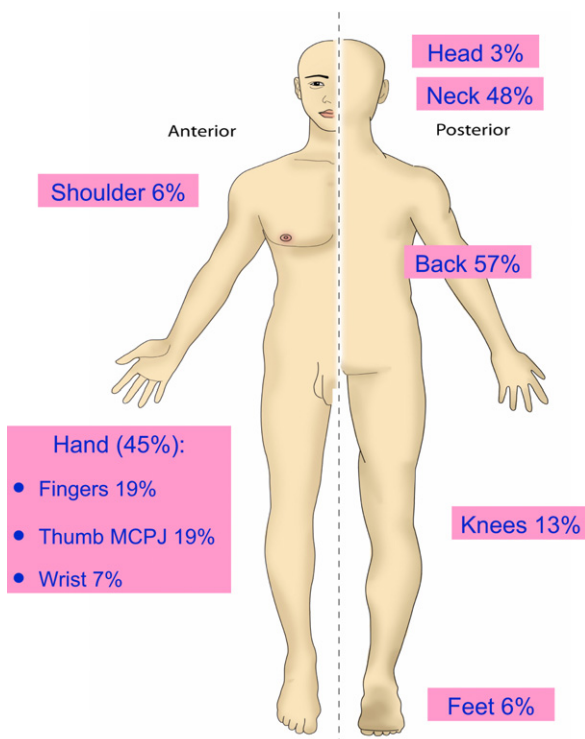


Fig. 2. A diagram showing the prevalence of pain in different anatomical locations.

Twenty seven per cent of the surgeons took measures to reduce their symptoms, the majority taking analgesics (15 surgeons), and one surgeon requiring injections to relieve the symptoms and one using physiotherapy.

4. Discussion

Surgery can often involve operating continuously for prolonged periods, frequently while standing, and operating on areas that are not easily accessible there requiring the surgeon to assume positions that may not be particularly comfortable. The operation may involve the use of tools that are physically demanding such as drills or mallets, or require delicate focused manipulation of the tools, for example in microsurgical procedures or the use of endoscopes in minimal access surgery.

Foot ache featured as one of the areas that surgeons suffered from during surgery, yet surgeons will struggle to find recommendations about appropriate footwear. Also many operating departments do not allow surgeons to wear footwear that they find comfortable or simply do not issue surgeons with any footwear at all.

Nearly fifty per cent of our surveyed surgeons blamed posture for some of their symptoms. Many surgeons find themselves having to operate at heights that can put strain on their elbows or backs, because of out dated operating tables or even badly designed ones. This is despite evidence in a recent study has shown that the ergonomically optimal operating surface height for a surgeon lies between a factor of 0.7–0.8 of the elbow height of the surgeon.¹ At this height the joint excursions stay in the neutral zone for more than ninety per cent of the operating time.

Around forty per cent of surgeons felt that the operating instruments caused some of their pain. Most of these instruments are however designed to deliver the specified function with little consideration of ergonomics and the ease of operator-handling of the tools. This usually means that the surgeon needs to adapt his operating style to the instrument rather than the instrument being adaptable to the surgeon. For example many scissors are designed with little ergonomic considerations on comfortable handling, as a result a few have a short arc range to minimise thumb movements. Laparoscopic surgery poses its own challenges to the surgeon. Even though instruments require little actual movements from the surgeon, this in itself can be problematic. The minimal movements of the neck and trunk in laparoscopic surgery will increase the risk of stiffness.^{2,3} These however can be tackled by education and re-design of instruments, for example placing the table at a lower level in laparoscopic surgery is found to be more comfortable than in open surgery.

A significant proportion of our surgeons suffered from pain as a direct result of their work and frequently had to take breaks or even take sick leave. One of the most unexpected of our results was the early age at which symptoms have developed. This is also shown in study done at the Mayo clinic on surgeons that found that 16 out of 17 surgeons experienced symptoms that worsened by performing surgery at an early age (mean age of 35 years), and the most common complaints were pain in the neck, shoulders, lower back and headaches.⁴ The study also revealed problems with operating room setup, poor positioning and awkward posture.

It is the duty of the occupational health departments to ensure that the employees have adequate training to perform their jobs safely. However, apart from manual handling training to prevent back injuries, which very few surgeons receive yet are expect to help in the transfer of patients in the operating theatres, these departments seem to lack in their guidance in the operating room. In one study, ninety seven per cent of surgeons felt that ergonomic improvements in the operating room are necessary.⁵ There is also

a need for surgical training bodies to take the issue of the ergonomics of the operating room more seriously. Hardly any of the taught surgical curriculums teach young surgeons about the ergonomics of surgery.

The results of this study may be skewed since it may have elicited a higher response rate from surgeons who are experiencing or who may have experienced problems as it may have had a greater appeal to surgeons in this group. As a result of this the true incidence of pain arising from work-related exposure amongst surgeons may be lower. Nevertheless, this study has been successful in highlighting that the problem does exist, as even if we assume that all the non-respondents had suffered no pain at all then still nearly half of the surgeons suffered occupational-related pain.

Based on this study, it is hoped that more attention would be placed on promoting better ergonomics in surgery by encouraging the industry to provide equipment that is more comfortable to handle. This study has also highlighted an area for occupational health care providers to be vigilant and proactive in order to nurture a more productive staff.

5. Conclusion

Many surgeons will continue to experience unnecessary pain while at work while operating due to bad posture or as a result of

the instruments they use unless they get the adequate training to improve their working practices and until the occupational health departments in their organisations start becoming more involved in the ergonomics of surgery.

Conflict of interest

None.

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Ethical approval

None required.

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