Hollmann R et al. (2004) Smoke in the operating theatre: an unregarded source of danger. Plast Reconstr Surg 114(2):458–463

LINK - https://www.ncbi.nlm.nih.gov/pubmed/15277814

Abstract

Monopolar electrocautery devices are being used in operating theaters worldwide and have become a "sine qua non" in modern surgery. Despite being widespread, the use of electrocautery is not harmless, because by burning the tissue with rather low temperatures as compared with usual combustion, toxic gases evolve and particles are dispersed and are inhaled by the staff in the operating theater. Samples of this smoke, which evolves particularly densely during reduction mammaplasty, were analyzed using a carbon dioxide laser photoacoustic spectrometer. Eleven gas components could be identified and quantified. In particular, the established concentration of 2-fur-ancarboxaldehyde (furfural) measured at 2 cm from the point of origin was outstandingly high, being 12 times higher than the occupational exposure limit. More than half of the identified gases do not even have any occupational exposure limit specifications. Because of the expected dilution at the height of the operating distance (the surgeon's nose), the present measured concentrations do not allow any conclusion on a direct health danger to the operating team. Because of laser spectroscopy, the present work reveals not only the involved gases but also their respective concentrations near the point of origin. These data are prerequisite for further studies, which are mandatory, verifying the effective concentrations of the inhaled gases