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An avoidable occupational hazard during mastoid surgery

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Abstract

Conjunctival innoculation is a previously unrecognized hazard for the otologist during mastoid surgery. This experiment assesses the spread of droplet contamination during temporal bone dissection. The results suggest that otologists and assistants should wear eye protection during exposure of the mastoid antrum by drilling.

Introduction

All otolaryngologists and health care workers are concerned about the risk of contracting human immunodeficiency virus (HIV) and subsequently the acquired immune deficiency syndrome (AIDS). Attention has rightly focused on transmission of the causative agent to recipients of human donor material. Fear of transmission of HIV has led to considerable re-evaluation of the role of homograft materials in middle ear surgery (Davis, 1988). It is recognized practice to perform the first steps of surgical approach to the mastoid antrum without the use of an operating microscope (Ransome, 1986). Surgeons who wear spectacles will have noted dried splash-marks on their lenses following mastoid surgery. If not for the spectacles then these droplets containing bone, blood and middle ear secretions could contaminate the conjunctivae of the surgeon, assistant, or scrub nurse. The aim of this experiment was to assess the approximate range of droplet spray during middle ear surgery.

Method

Standard temporal bone dissection was performed using a 6 mm. cutting burr with a Storz drill (Model No. 250400; 0-20, 000 RPM) and a Bien Air drill (Model No. MC40GTAV; high torque; 0-40, 000 RPM). A black irrigation fluid was used and the maximum radius of spray determined using adjustable white plastic sheeting. The maximum radius of spray for the lower energy Storz drill was 25.5 cm. and for the higher energy Bien Air drill 41 cm. Use of the operating microscope was noted to protect the eyes and move their position beyond the maximum radius of spray of both drills. In addition to droplet spray, a fine particulate cloud could be observed drifting across the light beam, despite continuous irrigation. Assessment of the spread and size of these 'dry' particles was beyond the scope of this experiment.

Discussion

In Great Britain, of 5,840,520 blood donors screened for HIV between October 1985 and December 1987, 92 were discovered to be seropositive. This represents 0.0016 per cent of the study population (Rawlinson, 1988). The major routes of transmission of HIV involve blood or semen (Friedland and Klein,1987). The virus has, however, recently been isolated from middle ear fluid (Sooy *et al.*, 1987). The 'reading distance' of the normal human eye is 23–30 cm (Trevor-Roper and Curran, 1984), well within the maximum radius of both drills used in this experiment. Mucous membrane contamination has been recognized as a mode of transmission of HIV (Sooy *et al.*, 1987). Although the risk is small otologists should consider using protective glasses; alternatively the operating microscope could be used during all drill work. Consideration should also be given to the protection of assistants.

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