Sterilization of the Operating Microscope

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With 3 Figures

Summary

Sterilization of the operating microscope and its equipment with formaldehyde (10 g for 10 hours) in a specially developed container provides sterility and ideal storage, and secures immediate availability in daily operating theatre practice.

Sterility of the operating microscope and additional parts of its equipment, including the cameras, simplifies its use, and shortens operation time. Between the years 1969 and 1972 we used gas sterilization with a mixture of 15% ethylene oxide and 85% carbon dioxide at a pressure of 5.5 atm and temperature of 55°C. The microscope was suspended in a special container, protected from external influences, and kept sterile.

We have abandoned gas sterilization after damage to the coating layer of the instrument and its optical system was noticed. This was probably due to the effects of occasional humidity.

Since 1973 we have used formaldehyde for sterilization of the microscope. Bacteriological tests were performed in cooperation with the Institute of Bacteriology, University of Giessen.

Identified bacterial strains of E. coli, B. pyocyaneum, Staphylococcus aureus, and Proteus vulgaris were used during testing. Areas the sizes of hands inside the airproof container, which measured 52 x by 58 by 42 cm, as well as parts of the microscope were infected with the above strains. Ten g of formaldehyde were placed in the container. Eleven tests were performed for each bacterial strain, and cultures were taken from the infected areas at different intervals during 11 hours. After two hours of exposure to formaldehyde no bacteria were found in previously infected areas. In one test a strain of staphylococcus was cultured six hours after infection with E. coli,
and this result has been interpreted as being due to secondary contamination. After the instruments had been exposed to formaldehyde for six hours, no bacteria were found, and the contents of container were sterile.

The operating microscope and the cameras are now routinely sterilized for 10 hours in a container with 10 g of formaldehyde.