RESEARCH SUMMARY

Decontamination of dental burs

A comparison of decontamination methods used for dental burs

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Objectives
This study investigated the bacterial and fungal contamination of used dental burs. A novel assay system for comparison of efficacy of pre-sterilisation cleaning techniques for dental burs was used to evaluate manual scrubbing, enzymic agents and washer-disinfectors.

Methods
Thirty dental burs contaminated during cavity preparation were analysed for micro-biological total viable counts and species of bacteria and fungi present. To simulate clinically contaminated burs, a culture of *Streptococcus sanguis* NCTC 7863 was used to inoculate unused dental burs, alone and combined with blood, saliva or a mixture of blood and saliva. Contaminated burs were subjected to six pre-sterilisation cleaning techniques and the log reduction in contamination achieved by each method was assessed.

Results
The microbial count from used dental burs ranged from 0 to 6.92×10^4 CFU ml^{-1}. Many potentially pathogenic species were identified. The decontamination assay demonstrated that autoclaving alone was not sufficient to sterilise dental burs. Manual scrubbing in air was less efficacious than manual scrubbing under water ($p<0.001$). The most effective method of pre-sterilisation cleaning for dental burs was a washer-disinfector.

Conclusions
Enzymic agents are suitable for soaking contaminated dental burs immediately after use. Washer-disinfectors are recommended as the method of choice for pre-sterilisation cleaning of contaminated dental burs.

IN BRIEF

- Used dental burs may be contaminated with potentially pathogenic micro-organisms.
- Autoclaving alone fails to completely decontaminate burs.
- Manual cleaning is not as effective as other methods of pre-sterilisation cleaning.
- Enzymic agents may have a role in the decontamination process.
- Washer-disinfectors are the most effective method of pre-sterilisation cleaning for contaminated dental burs.

COMMENT

Instruments that have not been cleaned effectively cannot be sterilised. This is a fundamental maxim for sterilising instruments. More recently, the efficacy of cleaning has become more important following the emergence of vCJD in the UK and elsewhere in Europe. Recent assessments of the risk of transmission of vCJD via surgical instruments and dentistry have placed great emphasis on the efficacy of routine cleaning prior to sterilising of instruments to minimise the risks of transmission of infectious agents.[1] The work by Whitworth ***et al.*** has demonstrated the importance of cleaning dental burs as part of the reprocessing procedures if so recommended by the instrument manufacturers.

This paper also highlights the short comings of manually cleaning small intricate devices, ie manual cleaning is inefficient, laborious, time consuming (and therefore expensive) and places the user at-risk from sharps injuries and splatter with infectious material. Since manual cleaning is one of the more common methods employed in dental practice for reusable instruments – what are the practical implications of manual washing dental burs for dental practitioners (and dental hospitals)? The Medical Devices Directive is quite clear that manufacturers must provide the user with adequate instructions on reprocessing which raises interesting questions on the validity of some manufacturers instructions. I suspect that since it is difficult to reliably decontaminate these small intricate devices (ultrasonic cleaners were not used in this report) many manufacturers are opting for single use alternatives further raising the cost of dental treatment. Automated washer disinfectors may be the answer – however, these will come at a cost – all machines must comply with relevant technical guidelines (HTM/SHTM 2030), commissioned on installation, supplied with appropriate quality water, subject to daily, weekly, quarterly and annual testing. The whistle may be clean but at a cost.

Finally, it should be noted that the lead author is a general practitioner — many of the infection control issues facing the public today involve primary care and it is to be commended that practitioners are leading research into issues likely to have a huge impact on day to day dentistry. Hopefully this will serve as a rallying call for more practitioners to get involved in this type of research.

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1. www.doh.gov.uk/cjd/dentistryrisk/index.htm