

RESEARCH SUMMARY

Blood contamination of matrix bands after cleaning and sterilisation

A study of blood contamination of Siqveland matrix bands

A. H. Lowe, J. Bagg, F. J. T. Burke, D. MacKenzie and S. McHugh. *Br Dent J* 2001; 192: 43–45

Aims

To use a sensitive forensic test to measure blood contamination of used Siqveland matrix bands following routine cleaning and sterilisation procedures in general dental practice.

Materials and methods

Sixteen general dental practices in the West of Scotland participated. Details of instrument cleaning procedures were recorded for each practice. A total of 133 Siqveland matrix bands were recovered following cleaning and sterilisation and were examined for residual blood contamination by the Kastle-Meyer test, a well-recognised forensic technique.

Results

Ultrasonic baths were used for the cleaning of 62 (47%) bands and retainers and the remainder (53%) were hand scrubbed prior to autoclaving. Overall, 21% of the matrix bands and 19% of the retainers gave a positive Kastle-Meyer test, indicative of residual blood contamination, following cleaning and sterilisation. In relation to cleaning method, 34% of hand-scrubbed bands and 32% of hand-scrubbed retainers were positive for residual blood by the Kastle-Meyer test compared with 6% and 3% respectively of ultrasonically cleaned bands and retainers ($P < 0.001$).

Conclusions

If Siqveland matrix bands are re-processed in the assembled state, then adequate pre-sterilisation cleaning cannot be achieved reliably. Ultrasonic baths are significantly more effective than hand cleaning for these items of equipment.

IN BRIEF

- Of 133 decontaminated Siqveland matrices recovered from general dental practices, residual blood was detected on 21% of the matrix bands and 19% of the retainers.
- Ultrasonic baths were significantly more effective than hand scrubbing for removal of blood.
- Adequate pre-sterilisation cleaning cannot be achieved reliably, if Siqveland matrices are re-processed in the assembled state.

COMMENT

This paper is a follow up to an article by the same group entitled "*A survey of the use of matrix bands and their decontamination in general dental practice*" which also appears in this issue. That study sought to establish baseline information for the handling of contaminated matrix bands in general dental practices. This paper extends the work by determining whether the cleaning procedures used are effective at removing blood from the matrix bands.

Samples were obtained from 133 matrix bands that had been used in general practices in Scotland, then cleaned and sterilised by their normal procedure. Ultrasonic cleaning was used on 47% of samples and manual scrubbing and soaking but without ultrasonics on 53%. The method used to detect blood was one used in forensic science and employs a reagent (Kastle-Meyer) that changes colour on contact with haemoglobin. Although no attempt was made to quantify the amount of blood present in the sample, it is stated that the method will detect blood diluted at least 6400 fold and even at this dilution there would be the equivalent of one infective dose of Hepatitis B virus present in 0.06 – 0.006 ml of blood.

Following cleaning, 21% of matrix bands and 19% of retainers still had blood detectable. It is not known whether any viruses present on these matrix bands would still be viable after the sterilisation procedure but they could well be. Of particular note is the finding that 34% of bands and retainers that had only been handscrubbed still had blood on them, compared with 6% that had been ultrasonically cleaned. These findings may be an underestimate of the true situation, partly because the GDPs taking part were aware of what would be measured but also because the sampling appears to have used a dry filter paper which may not have picked up as much material as a moistened paper would have. The outcome from this work is the recommendation that matrix bands should be disposed of after each patient and that retainers should then be cleaned using a regime that includes ultrasonics and sterilised by autoclaving.

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