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HYGIENIC SAFETY OF A NEW HYDRODYNAMIC WOUND DEBRIDEMENT SYSTEM*

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Aim: Hygienic risk assessment by testing aerosol production of different hydrodynamic debridement systems* under real conditions.

Methods: Air sampling during debridement (t0, t10min, t15min, t30min, t45min, after debridement). Debridement was performed with 5 different modifications of a high pressure puls-ed hydrodynamic debridement system*. 6 surgical debridement interventions of highly contaminated chronic wounds from 6 patients were performed (1 conventional debridement served as control). Cultivated bacteria were counted and differentiated. Results were given as total bacterial counts and number of pathogenic bacteria (colony forming units, cfu / 1000L sampled air).

Results: Despite elaborated aerosol protection devices the systems allowed contaminations of up to 103 cfu /1000L air total as well as pathogenic bacteria during the intervention representing up to the 1000 fold contamination of a conventional debridement. Only one version of the system proved to be relatively safe exhibiting nearly the same contaminations as conventional debridement (max 344 cfu total bacteria, 0 pathogens compared to max 372 cfu total resp. 60 cfu S.aureus. S. aureus and P.aeruginosa were the prominent pathogens found in parallel in wounds and air.

Conclusions: Despite introduction of "preventive" measures hydrodynamic debridement can deliver high amounts of contaminated aerosols with classical wound pathogens, representing a nonacceptable hygienic infective and contamination risk.

Discussion: Optimized hydrodynamic debridement systems can provide contaminations comparable to conventional procedures, which nevertheless can lead to relatively low but risky contaminations (mainly β -hemolytic pyogenic streptococci and S. aureus). Therefore any debridement has to be flanked by conventional hygienic barrier precautions (hand disinfection, masks, gloves).

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