



Letter to the Editor

Letter to the Editor: Do Longer Surgical Procedures Result in Greater Contamination of Surgeons' Hands?

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To the Editor

We read the study by Hosseini and colleagues [2] with great interest. We have a few comments and questions we would like to share with the authors of the study.

First, in noting that a surgeon's hands could be a source of surgical site infection, the authors reported the findings of a study by Mermel and colleagues [4], in which two cases of *Pseudomonas aeruginosa* surgical-

site infections were caused by colonization of a cardiac surgeon's onychomycotic nail. However, we believe that the findings by Mermel and colleagues should not be referenced in this research since a surgeon with a skin condition on the tested hand met one of the exclusion criteria in the study by Hosseini and colleagues.

Second, we do not think the correlation between the duration of an operation and hand recolonization can be obtained without setting a control group. The authors mentioned that the porous nature of natural rubber latex gloves can allow uptake of aqueous fluids into the latex membrane, causing glove failure [2, 3]. Now that the bacteria can penetrate out of the glove, can the bacteria penetrate into the internal environment of the glove as well? Would the colonization originate from the external environment instead of the surgeons' hands inside the gloves? To eliminate the bias, a control group should consist of surgeons

wearing gloves as they would during a regular surgical procedure.

Finally, the investigators did not mention hand sizes nor the amount of hair on the surgeons' hands. Generally speaking, the amount of bacteria is greater for a larger hand since it has a larger surface area. Likewise, hairy skin is more favorable for the growth of bacteria [1]. Bias may exist if there is wide variation among surgeons' hands. In terms of physical characteristics, based on our common sense, white surgeons generally have larger body sizes and are more hairy than Asian surgeons. This is also true in terms of hand size. Based on this, could the study conclusions be applied to surgeons from other countries and areas regardless of race and sex? Would hand contamination be less likely if the surgeons have smaller and less hairy hands?

(RE: Hosseini P, Mundis GM Jr, Eastlack R, Nourian A, Pawelek J, Nguyen S, Akbarnia BA. Do Longer Surgical Procedures Result in Greater Contamination of Surgeons' Hands? *Clin Orthop Relat Res.* 2016;474:1707–1713).

The authors certify that they, or any member of their immediate families, have no funding or commercial associations (eg, consultancies, stock ownership, equity interest, patent/licensing arrangements, etc) that might pose a conflict of interest in connection with the submitted article. All ICMJE Conflict of Interest Forms for authors and *Clinical Orthopaedics and Related Research*® editors and board members are on file with the publication and can be viewed on request.

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References

1. Cundell AM. Microbial ecology of the human skin. [Published online ahead of print May 31, 2016]. *Microb Ecol*. DOI: [10.1007/s00248-016-0789-6](https://doi.org/10.1007/s00248-016-0789-6).
2. Hosseini P, Mundis GM Jr, Eastlack R, Nourian A, Pawelek J, Nguyen

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- S, Akbarnia BA. Do Longer Surgical Procedures Result in Greater Contamination of Surgeons' Hands? *Clin Orthop Relat Res*, 2016. DOI: [10.1007/s11999-016-4832-1](https://doi.org/10.1007/s11999-016-4832-1).
3. Korniewicz DM, Laughon BE, Cyr WH, Lytle CD, Larson E. Leakage of virus through used vinyl and latex examination gloves. *J Clin Microbiol*. 1990;28:787–788.
4. Mermel LA, McKay M, Dempsey J, Parenteau S. Pseudomonas surgical-site infections linked to a healthcare worker with onychomycosis. *Infect Control Hosp Epidemiol*. 2003;24:749–752.