

Contamination of laryngoscope handles

A majority of reusable laryngoscope handles that were considered clean and ready for use were contaminated with bacteria.

It is possible that laryngoscope handles could act as potential vehicles for transmission of infection.

Objective

- To identify the extent and nature of contamination on the laryngoscope handles that were considered to be clean and ready for use in the anesthetic room within the operating room of the hospital

Methods

- This was a prospective study that involved the testing of rigid reusable laryngoscope handles in use within a single hospital
 - The handles were stored in the anesthetic rooms of 32 operating theatres that were in use at the time of the study
 - All handles were designated as clean and ready for use
- Samples were collected from three sites on each handle
 - The smooth metal surface at the side of the hook mount (tested for bacteria only)
 - The knurled metal surface on the upper third of the handle (tested for bacteria and occult blood)
 - The knurled metal surface on the lower third of the handle at the point where the laryngoscope blade would contact the handle when in the closed position (tested for bacteria and occult blood)
- Sample collection occurred over two consecutive days and took place in the middle of the operating day
 - Sterile templates were used to define a consistent area of 3.14 cm² from which samples were collected
- Any organisms that were isolated were identified using routine laboratory methods as well as mass spectrometry
- In order to prevent any changes in their routine practice, operating theater personnel were not made aware of the study

Results

- Overall, 192 specimens from 64 laryngoscope handles were assessed for bacterial contamination
- 99 positive cultures were identified, many of which were polymicrobial
- In total, 128 different organisms were isolated, comprising 35 different bacterial species
- 55 of 64 handles (86%) yielded one or more species of bacteria (Figure 1)
 - Potential pathogens included enterococci, methicillin-susceptible *Staphylococcus aureus* (MSSA), *Klebsiella* and *Acinetobacter*

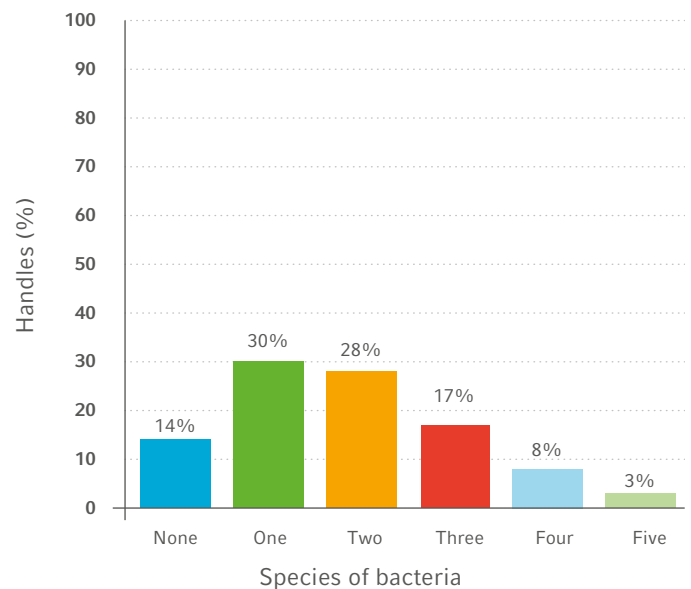


Figure 1. Extent of bacterial growth on reusable laryngoscope handles considered clean and ready for use

- Bacterial contamination most often occurred on the knurled metal surface on the lower third of the handle (Figure 2)
 - This was the only site to demonstrate 'heavy contamination' (i.e., >20 colonies of a given organism per plate) and the only site from which *Streptococcus viridans* was isolated

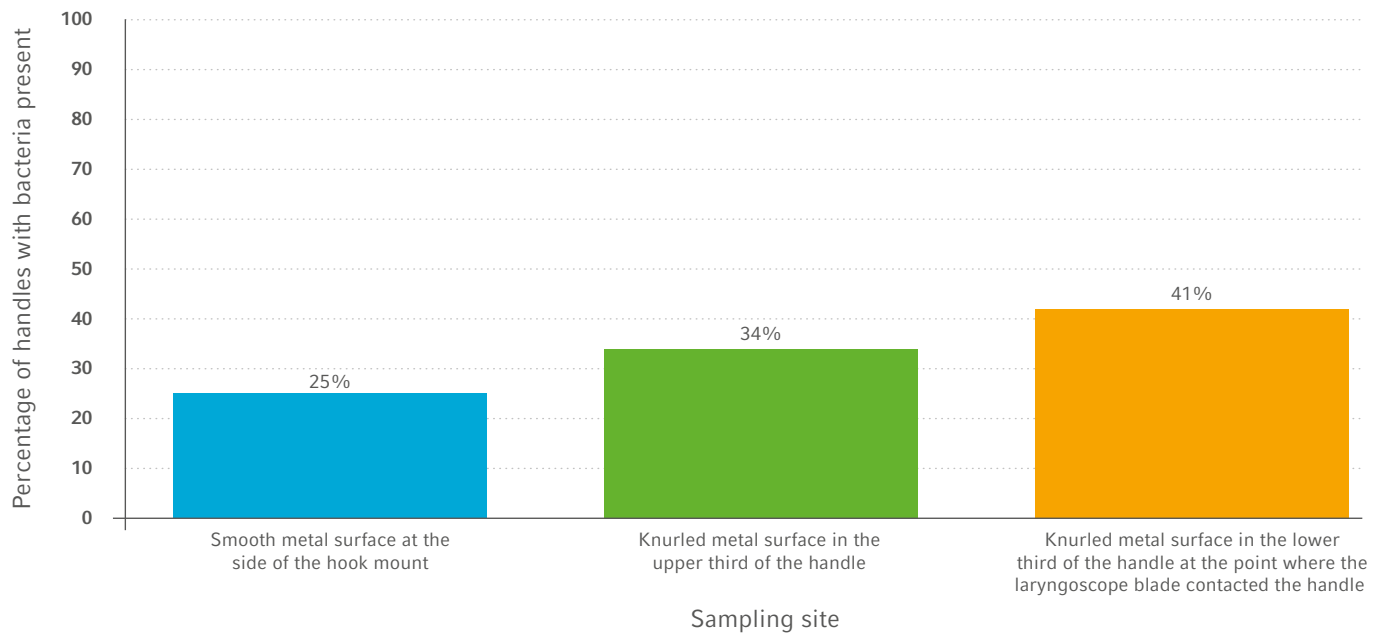


Figure 2. Bacterial contamination according to sampling site on reusable laryngoscope handles considered clean and ready for use

- Overall, 116 specimens from 58 laryngoscope handles were assessed for occult blood contamination
 - No occult blood contamination was demonstrated

Conclusions

- Bacterial contamination was demonstrated on 86% of reusable laryngoscope handles that were previously considered clean and ready for use
 - In this manner *"...it is possible for laryngoscope handles to function as a potential vehicle for transmission of infection"*
 - Isolates included MSSA and other organisms that have been implicated in nosocomial infections
- The authors noted that *"...strategies to prevent cross-infection [include] disposable 'single use' laryngoscope handles and laryngoscopes"*