

Nonlatex Surgical Gloves (10/04)

Korniewicz DM, Garzon L, Seltzer J, Feinleib M. Failure rates in nonlatex surgical gloves. *Am J Infect Control* 2004;32:268–273.

The purpose of this study was to compare the frequency of glove defects for nonlatex surgical gloves while surgeons performed routine surgery and to evaluate surgeons' satisfaction with nonlatex sterile gloves. Two brands of latex gloves and six brands of nonlatex gloves were tested. Gloves were collected at the end of each surgical procedure and tested for visual defects and barrier integrity using an automated calibrated water test machine consistent with the U.S. Food and Drug Administration's recommended standards. A total of 6,386 gloves used by 101 surgeons and 164 residents representing 15 surgical services were included in the analysis. Higher after-use defect rates occurred in nonlatex surgical gloves than in latex gloves. Higher times of use were related to higher defect rates for some surgical specialties, and both surgeons and residents were less satisfied with nonlatex surgical gloves. **Intact latex and nonlatex surgical gloves provide adequate barrier protection. Nonlatex surgical gloves have higher failure rates and lower user satisfaction than latex gloves do. Both nonlatex and latex gloves should be changed after 2 to 3 hours of use because the barrier of either type of glove becomes compromised with extended use.**



DIS Comment: Latex has been the traditional material of choice for surgical gloves, protecting both health-care personnel (HCP) and patients from the transmission of bloodborne infections. However, increased use of latex gloves has been accompanied by more reports of allergic reactions to natural-rubber latex between HCP and patients. This was the first clinical trial to test the barrier integrity of nonlatex sterile surgical gloves after use in the operating room. In addition to testing latex gloves, the study also included nitrile and neoprene gloves. Gloves used during oral and dental surgeries were included in this study.

Limited studies of the penetrability of different glove materials under conditions of use have been conducted in the dental environment. Consistent with observations in clinical medicine, leakage rates vary by glove material (e.g., latex, vinyl, and nitrile), duration of use, and type of procedure performed¹⁻⁶, as well as by manufacturer.⁷⁻⁹ The current study supports these findings. The frequency of perforations in surgeon's gloves used during outpatient oral surgical procedures has been previously reported to range from 6% to 16%.¹⁰⁻¹³ Studies have demonstrated that HCP and dental health-care personnel are frequently unaware of minute tears in gloves that occur during use.^{3,5,6,14} These studies determined that gloves developed defects in 30 minutes–3 hours, depending on type of glove and procedure, however investigators did not determine an optimal time for changing gloves during procedures.

In the present study, the overall surgical glove defect rates were 5.6% for latex and 7.5% for nonlatex. Of the nonlatex gloves used, the surgeons preferred the neoprene to the nitrile material. Problems reported when using nitrile gloves included: inflexibility of glove material, hand fatigue, excessive sweating, and inappropriate fit (too tight or too large even with appropriate sizing). The authors concluded that oral, plastic, dental, and cardiac surgeries represented high-risk specialties and therefore had an increased risk of exposure to bloodborne pathogens. The authors also recommend that practicing surgeons may need to change gloves within 2 to 3 hours so as not to exceed defect rates of 5%.

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