

Sterile or Nonsterile Gloves for Minor Skin Excisions?

Nonsterile gloves are just as effective as sterile gloves in preventing surgical site infection after minor skin surgeries.

Ashley Rietz, MD, Amir Barzin, DO, MS, Kohar Jones, MD, Anne Mounsey, MD

PRACTICE CHANGER

Consider using nonsterile gloves during minor skin excisions (even those requiring sutures), because the infection rate is not increased compared to using sterile gloves.¹

STRENGTH OF RECOMMENDATION

B: Based on a randomized controlled trial (RCT) conducted in a primary care practice.¹

ILLUSTRATIVE CASE

A 50-year-old man comes to your office to have a mole removed from his arm. You decide to excise the lesion in your office today. Do you need to use sterile gloves for this procedure, or can you use gloves from the clean nonsterile box in the exam room?

Nonsterile gloves are readily available during a typical office visit and cost up to a dollar less per pair than sterile gloves.¹⁻³ Studies conducted in settings other than primary care offices have shown that nonsterile gloves do not increase the risk for infection during several types of minor skin procedures.

A partially blinded RCT in an emergency department found no

significant difference in infection rates between the use of sterile (6.1%) and nonsterile (4.4%) gloves during laceration repairs.² Similarly, a small RCT in an outpatient dermatology clinic and a larger prospective trial by a Mohs dermatologist showed that infection rates were not increased after Mohs surgery using nonsterile (0.49%) versus sterile (0.50%) gloves.^{3,4}

Guidelines on the use of sterile versus nonsterile gloves for minor skin excisions in outpatient primary care are difficult to come by. Current guidelines from the CDC and other agencies regarding surgical site infections are broad and focus on the operating room environment.⁵⁻⁷

The American Academy of Dermatology is working on a guideline for treatment of nonmelanoma skin cancer, due out this winter, which may provide additional guidance.⁸ A 2003 review instructed primary care providers to use sterile gloves for excisional skin biopsies that require sutures.⁹

The 2015 study by Heal et al¹ appears to be the first RCT to address the question of sterile versus nonsterile glove use for minor skin excisions in a primary care outpatient practice.

STUDY SUMMARY

Nonsterile is not inferior

Heal et al¹ conducted a prospective, noninferiority RCT to com-

pare the incidence of infection after minor skin surgery performed by six physicians from a single general practice in Australia using sterile versus nonsterile clean gloves. They evaluated 576 consecutive patients who presented for skin excision between June 2012 and March 2013. Eighty-three patients were excluded because they had a latex allergy, were using oral antibiotics or immunosuppressive drugs, or required a skin flap procedure or excision of a sebaceous cyst. The physicians followed a standard process for performing the procedures and did not use topical antibiotics or antiseptic cleansing after the procedure.

The primary outcome was surgical site infection within 30 days of the excision, defined as purulent discharge; pain or tenderness; localized swelling, redness, or heat at the site; or a diagnosis of skin or soft-tissue infection by a general practitioner. The clinicians who assessed for infection were blinded to the patient's assignment to the sterile or nonsterile glove group, and a stitch abscess was not counted as an infection.

The patients' mean age was 65, and 59% were men. At baseline, there were no large differences between patients in the sterile and nonsterile glove groups in terms of smoking status, anti-

Ashley Rietz, Amir Barzin, and Anne Mounsey are in the Department of Family Medicine at the University of North Carolina. Kohar Jones is in the Department of Family Medicine at the University of Chicago.

coagulant or corticosteroid use, diabetes, excision site, size of excision, and median days until removal of sutures. The lesions were identified histologically as nevus or seborrheic keratosis; skin cancer and precursor; or other.

The incidence of infection in the nonsterile gloves group was 21/241 (8.7%) versus 22/237 in the control group (9.3%). The confidence interval (CI; 95%) for the difference in infection rate (−0.6%) was −4.0% to 2.9%—significantly below the predetermined noninferiority margin of 7%. In a sensitivity analysis of patients lost to follow-up (15 patients, 3%) that assumed all of these patients were without infection, or with infection, the CI was still below the noninferiority margin of 7%. The per-protocol analysis showed similar results.

WHAT'S NEW

New evidence questions the need for sterile gloves for in-office excisions

Heal et al¹ demonstrated that in a primary care setting, nonsterile gloves are not inferior to sterile gloves for excisional procedures that require sutures. While standard practice has many family practice providers using sterile gloves for these procedures, this study promotes changing this behavior.

CAVEATS

High infection rate, other factors may limit generalizability

The overall rate of infection in this study (9%) was higher than that found in the studies from emer-

gency medicine and dermatology literature cited earlier.²⁻⁴ A similarly high infection rate has been found in other studies of minor surgery by Heal et al, including a 2006 study that showed a wound infection rate of 8.6%.¹⁰ The significance of the higher infection rate is unknown, but there is no clear reason why nonsterile gloves might be less effective in preventing infection in environments with lower infection rates.

This was not a double-blind study, and clinicians might change their behavior during a procedure depending on the type of gloves they are wearing. The sterile gloves used in this study contained powder, while the nonsterile gloves were powderless, but this variable is not known to affect infection rates. A study of Mohs surgery avoided this variable by only using powderless gloves; outcomes were similar in terms of the difference in infection rate between sterile and nonsterile gloves.⁴

CHALLENGES TO IMPLEMENTATION

Ingrained habits can be hard to change

Tradition and training die hard. While multiple studies in several settings have found nonsterile gloves to be noninferior to sterile gloves in preventing surgical site infection after minor skin surgeries, this single study in the primary care office setting may not be enough to sway clinicians from ingrained habits. **CR**

REFERENCES

1. Heal C, Sriharan S, Buttner PG, et al. Comparing non-sterile to sterile gloves for minor

surgery: a prospective randomized controlled non-inferiority trial. *Med J Aust.* 2015;202:27-31.

2. Perelman VS, Francis GJ, Rutledge T, et al. Sterile versus nonsterile gloves for repair of uncomplicated lacerations in the emergency department: a randomized controlled trial. *Ann Emerg Med.* 2004;43:362-370.
3. Mehta D, Chambers N, Adams B, et al. Comparison of the prevalence of surgical site infection with use of sterile versus nonsterile gloves for resection and reconstruction during Mohs surgery. *Dermatol Surg.* 2014;40:234-239.
4. Xia Y, Cho S, Greenway HT, et al. Infection rates of wound repairs during Mohs micrographic surgery using sterile versus nonsterile gloves: a prospective randomized pilot study. *Dermatol Surg.* 2011;37:651-656.
5. Mangram AJ, Horan TC, Pearson ML, et al. Guideline for prevention of surgical site infection, 1999. Centers for Disease Control and Prevention (CDC) Hospital Infection Control Practices Advisory Committee. *Am J Infect Control.* 1999;27:97-132.
6. National Institute for Health and Care Excellence. Surgical site infection: prevention and treatment of surgical site infection. www.nice.org.uk/guidance/cg74/chapter/1-recommendations. Accessed November 17, 2015.
7. National Health and Medical Research Council. Australian Guidelines for the Prevention and Control of Infection in Healthcare (2010). www.nhmrc.gov.au/book/html-australian-guideline-prevention-and-control-infection-healthcare-2010. Accessed November 17, 2015.
8. American Academy of Dermatology. Clinical guidelines. www.aad.org/education/clinical-guidelines. Accessed November 17, 2015.
9. Zuber TJ. Fusiform excision. *Am Fam Physician.* 2003;67:1539-1544.
10. Heal C, Buettner P, Browning S. Risk factors for wound infection after minor surgery in general practice. *Med J Aust.* 2006;18:255-258.

ACKNOWLEDGEMENT

The PURLs Surveillance System was supported in part by Grant Number UL1RR024999 from the National Center For Research Resources, a Clinical Translational Science Award to the University of Chicago. The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Center For Research Resources or the National Institutes of Health.

Copyright © 2015. The Family Physicians Inquiries Network. All rights reserved.

Reprinted with permission from the Family Physicians Inquiries Network and *The Journal of Family Practice.* 2015;64(11):723-724, 727.