
Rubber gloves redux

S. Robert Lathan, MD

In 2010, I wrote an article for the *Proceedings* entitled “Caroline Hampton Halsted: the first to use rubber gloves in the operating room.” Since then, some additional information has come to light.

When The Johns Hopkins Hospital opened in 1889, Caroline moved to Baltimore and was eventually appointed chief nurse of the operating room by Dr. William Halsted, soon to become the first surgeon in chief at Johns Hopkins. The specialty of operating room nursing emerged in 1889 at Hopkins, partly the result of an attempt to pacify two feuding nurses. Isabel Hampton (no relation to Caroline), a Canadian and graduate of Bellevue Hospital nursing school, came to Baltimore from Cook County Hospital and was selected over Caroline and two other candidates for the position of superintendent (or director) of hospital nursing; she was also charged with organizing a school of nursing. Caroline was appointed initially as head nurse of the surgical division.

There is some disagreement about what happened between them. One report stated that “an intense animosity existed because Caroline, a Southerner, disliked taking orders from Isabel, a Canadian.” Also, Caroline herself had hoped to get the job of nursing superintendent. But Halsted came to the rescue and appointed Caroline supervisor of the operating room to relieve some of the tension.

Caroline became Dr. Halsted’s scrub nurse but soon developed a severe contact dermatitis of her hands, which led to Halsted’s request of the Goodyear Rubber Company to make for her special rubber gloves, which were successful. Halsted and Caroline were quickly engaged and later married in 1890.

Halsted did *not* invent rubber gloves. Actually, 132 years previously in 1767, obstetric gloves made from sheep intestines were used for vaginal exams and deliveries by a German physician, J. J. Walbaum. Also, in the 1840s, gloves were used for postmortem exams, and Dr. William Welch at Hopkins may have used gloves for autopsies. In 1844, Charles Goodyear patented his discovery of “vulcanization” of rubber, allowing surgical gloves to become lighter but also stronger and more flexible.

At Johns Hopkins after 1890, Dr. Halsted didn’t start wearing gloves himself at first. They were used by nurses and assistants but rarely by the doctors (except for open bone and joint operations). Halsted’s paper, “The treatment of wounds,” was published in *Johns Hopkins Hospital Reports* in 1891 and mentioned, for the first time, the use of “thin rubber gloves by the assistant who passes the instruments.”

Dr. Joseph Bloodgood, Halsted’s protege who came to Hopkins in 1892, was later the director of surgical pathology and started using gloves himself during surgery in 1893. He said, “What’s sauce for the goose is sauce for the gander.” Bloodgood later published a report of over 450 hernia operations with

a near 100% drop in the infection rate by using gloves. Halsted was convinced and later asked, “Why was I so blind not to have perceived the necessity for wearing them all the time?”

Dr. Hunter Robb, a gynecologist at Johns Hopkins, was another Halsted associate who pioneered the use of rubber gloves and published a book, *Aseptic Surgical Technique*, in 1894. He married Isabel Hampton, the chief nurse who clashed with Caroline, and they moved to Western Reserve University.

By the turn of the century, there was a near-uniform adoption of rubber gloves as an operating room accessory. Since then, gloves have evolved and become more flexible and better fitting. In 2004, Barza from Tufts University School of Medicine described a new type of disposable glove that emits chlorine dioxide when exposed to light or moisture and kills potentially harmful microbes.

Glove use has skyrocketed. Some health care workers go through dozens of pairs in a single day. There are sterile and non-sterile gloves made of latex, vinyl, nitrile, and other synthetics. Gloves may be powdered or powder free. The advent of AIDS has revolutionized the way hospitals treat infection control. The last century has seen a 360-degree turn in the reason why gloves are used in the operating room:

1. Initially to protect staff from corrosive substances and from infections such as syphilis
2. Later to also protect patients from contamination by the staff, thus reducing operative and wound infections
3. Finally to also protect staff from bloodborne or needle-stick infections

In 2008, Johns Hopkins and other hospitals abandoned latex gloves because of possible allergic reactions. There is apparently a 10% incidence of latex allergy in the general population.

Lathan SR. Caroline Hampton Halsted: the first to use rubber gloves in the operating room. *Proc (Bayl Univ Med Cent)* 2010;23(4):389–392.

Johns E, Pfefferkorn B. *Johns Hopkins Hospital School of Nursing, 1889–1949*. Baltimore: Johns Hopkins University Press, 1954.

Bloodgood JC. Operations on 459 cases of hernia in The Johns Hopkins Hospital from June 1889 to January 1899. *Johns Hopkins Hosp Bull* 1899;7:223–563.

Halsted WH. The treatment of wounds. *Johns Hopkins Hosp Rep* 1891;2(5):255–313.

Geelhoed GW. ‘Hand in glove’: a centennial observation on the surgical use of rubber gloves. *South Med J* 1991;84(8):1012–1017.

Menting AM. Dressed not to kill. *Harvard Medicine* 2007(Winter). Available at <http://harvardmedicine.hms.harvard.edu/bulletin/winter2007/1.php>; retrieved July 14, 2011.

Barza M. Efficacy and tolerability of ClO₂-generating gloves. *Clin Infect Dis* 2004;38:857–863.

Corresponding author: S. Robert Lathan, MD, 122 Old Ivy Road, #17, Atlanta, Georgia 30342.