

## Scalp Needlestick Injury During Fine-Needle Aspiration Cytologic Evaluation Without Needle Manipulation: William Tell in the Laboratory, Not Quite

TO THE EDITOR—Galed-Placed et al.<sup>1</sup> suggest using a modified method of fine-needle aspiration cytologic evaluation (FNAC) that eliminates manipulation of the contaminated needle to reduce the risk of occupational infection in healthcare personnel while retaining diagnostic accuracy. The modified method of FNAC eliminates excess needle manipulation by aspirating 2 mL of air into the syringe so that, subsequent to the procedure, the residual air can be used to empty the material in the needle. We describe a case of scalp injury in a cytopathologist who used this modified method of FNAC.

The cytopathologist aspirated 2 mL of air into a syringe before connecting a 25-gauge needle and performing FNAC on a thyroid nodule. She then proceeded to extract the cytologic material for examination. When she depressed the plunger, the high level of pressure inside the syringe (probably caused by a colloidal clot that was clogged the needle) caused the needle to shoot out. The needle hit the table where the cytopathologist was working and bounced, lodging in the scalp on the top of her head. The cytopathologist was referred to the emergency department and then to the infectious diseases department. The thyroid specimen had been obtained from a patient with no known bloodborne infections. After the exposure, the cytopathologist was followed up for 6 months, and results of virological and biochemical analyses remained normal.

FNAC has been performed in our hospital since 1993. More than 32,000 procedures have been performed to date, with only 4 occupational exposures reported (0.01% of procedures).

Among healthcare workers, accidental needlestick injury is a major cause of occupational infection<sup>2</sup> and is the most common type of parenteral contact, accounting for approximately two thirds of occupational exposures.<sup>3</sup> More than 90% of needlestick injuries involve hands, but most anatomic sites have been affected.<sup>4</sup> However, a review of data from the Italian SIROH (Studio Italiano Rischio Occupazionale da HIV Group) database on occupational exposures revealed that the head was involved in 11 (0.03%) of 36,421 percutaneous injuries; 10 cases were due to nail scratches, and 1 case involved a dentist who hit his head on an instrument.<sup>3</sup>

Scalp injuries to fetuses during lidocaine injection associated with perineal infiltration for episiotomy have been reported,<sup>5</sup> but to our knowledge, no needlestick injuries on the scalp of a healthcare worker have been described. Although we realize that this type of injury is extremely rare, it is a

reminder that improbable injuries might lead to occupational infection in healthcare workers.

We agree that FNAC should be performed without manipulating the contaminated needle, but substantial attention must be given to other possible means of injury associated with use of this technique. In particular, during training, caution about careful application of pressure when expelling the tissue should be taught. In other words, to perform FNAC safely, you must use your head. The number of needlestick injuries can be reduced by use of improved technology, but at times we are “squeezing the balloon” and creating new, unrecognized risks even as we try to address old, recognized risks.

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## Compliance With Application Time for Surgical Hand Disinfection

TO THE EDITOR—A formulation for disinfecting hands before surgery that requires a short, 1.5-minute application time was recently approved for marketing, on the basis of a

TABLE. Definitions for Compliance Used in Hand Hygiene

Compliance variable	Definition	Comment
Proportion of performed procedures	Numerator: number of procedures performed; denominator: number of clinical situations in which a specific procedure should be performed.	This definition is often used for direct patient care on wards, for hand washing and/or hand disinfection. For hand disinfection before surgery, it is probably not suitable, because any compliance rate less than 100% is unlikely (and would have to be described as grossly negligent).
Proportion of correctly performed procedures	Numerator: number of procedures correctly performed; denominator: number of performed procedures.	This definition is used both in direct patient care on wards (for hand washing and/or hand disinfection) and for hand disinfection before surgery. Specific recommendations are usually provided for all types of hand-hygiene procedures and are based on scientific evidence of efficacy (eg, for hygienic-hand disinfection, keep hands wet with the disinfectant for 30 seconds).

comprehensive evaluation of its efficacy.<sup>1</sup> Several experts have raised concerns about this abbreviated procedure for hand hygiene before surgery. They argue that a shorter recommended application time may result in even shorter application times, given the busy environment of a modern hospital, leading to increased rates of surgical site infections. Such concerns are intuitively understood by most infection control professionals. However, several scientifically based arguments should be considered.

First, to our knowledge, no one has raised this concern for an application time of 3 or 5 minutes, despite the lack of evidence that an application time of 2 minutes (instead of 3 minutes) or 4 minutes (instead of 5 minutes) is as effective as the recommended application time. In fact, dozens of studies on compliance with and without instructions for use of hygienic hand rubs have been published, but few, if any, have evaluated these factors for surgical hand rubs.<sup>2</sup>

Second, many more studies have been performed to measure and improve compliance with hand hygiene protocols in the patient-care setting, compared with the surgical theater.<sup>3</sup> However, different definitions for compliance should be used in a valid scientific evaluation of surgical hand disinfection (Table). We define compliance with surgical hand hygiene as the proportion of procedures correctly performed. Only 2 published studies used this criterion. In the first study, scrubbing with antiseptic soaps based on povidone iodine or chlorhexidine gluconate was compared with rubbing with a propanol-based preparation.<sup>4</sup> Clear instructions were given to each group to apply their respective preparations for a total of 5 minutes. A total of 278 observations of the surgical hand antisepsis procedure were recorded. The mean duration of hand rubbing was 5.2 minutes; 44% of staff rubbed their hands for at least 5 minutes. The mean duration of hand scrubbing was 4.8 minutes; 28% of staff scrubbed their hands for at least 5 minutes. In the hand-rubbing group, the shortest observed application time was 1 minute, and the longest application time was 8.5 minutes. In the hand-scrubbing group, the shortest observed application time was 1.5 minutes, and

the longest application time was 8 minutes. Compliance was higher among operating room nurses, compared with physicians on the surgical staff.

In the second study, a preparation based on povidone iodine was used in the surgical theater.<sup>5</sup> The manufacturer recommends using the preparation for 2 minutes. One hundred staff members were observed during surgical hand antisepsis. The mean duration of hand scrubbing was 4.1 minutes among physicians on the surgical staff and 3.3 minutes among operating room nurses. The shortest observed application time was 1.5 minutes, and the longest observed time was 8 minutes.

Third, compliance with use of hygienic hand rub is clearly related to the time required to perform the procedure.<sup>6,7</sup> Similarly, a shorter application time for which the effectiveness is equivalent to longer application times may improve compliance with performance of surgical hand disinfection.<sup>8</sup>

Fourth, European Norm (EN) 12791 defines the efficacy criteria that must be satisfied before a hand-hygiene product can be sold in the European market.<sup>9</sup> Clearly, one cannot ask for a more stringent application process just because one product performs faster than others. In addition, there is no evidence that the efficacy criteria of the current EN are insufficient for preventing surgical site infection due to an insufficient reduction of the bacterial flora on surgeons' hands. Clearly, only a randomized, controlled clinical trial with sufficient power is needed to ultimately answer this important question. However, even a large trial failed to demonstrate differences in the rate of surgical site infections, despite the fact that the tested products differed considerably in their antimicrobial efficacy, according to criteria specified in EN 12791.<sup>4</sup>

A clinical study that investigates the efficacy of the propanol-based hand rub with the shorter application time is the ultimate way to confirm the results obtained from in vivo experiments. However, current evidence demonstrates that a shorter application time provides a similar level of antimicrobial efficacy and has the potential to improve compliance

by reducing the time for the surgical team to perform the hand-hygiene procedure.

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