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INTRODUCTION

Following cleaning, reusable surgical instruments (RSI) are frequently touched during functionality testing and packaging. Standards detailing the frequency of hand washing or the use of gloves in this area are lacking. We, therefore, aimed to determine the effect of packing instruments with either gloved or ungloved hands on instrument soiling.

METHODS

Following manual and automated cleaning, Halsted-mosquito forceps were assessed for adenosine triphosphate (ATP), protein and microbial contamination after being packed using gloved or washed but ungloved hands, using an ATP surface swab test, bicinchoninic acid (BCA) assay, and standard culture plate/broth, respectively. The effect of time since handwashing on instrument soiling was assessed by packing instruments one, two or four hours after washing hands.

RESULTS

Packing instruments with hands that had been unwashed for two hours or four hours resulted in a significant increase in contaminating ATP when compared to all other treatment groups ($P < 0.05$) (Fig 1). There was a significant correlation between the time since washing the hands and the amount of ATP ($R = 0.93$; $P \leq 0.001$) and the resulting microbial load ($R = 0.83$; $P \leq 0.001$) contaminating the forceps, where the longer the time the hands remained unwashed the higher the contamination. Significantly more contaminating protein was found on forceps handled with ungloved hands that had not been washed for two or four hours ($P < 0.001$) (Fig 2).

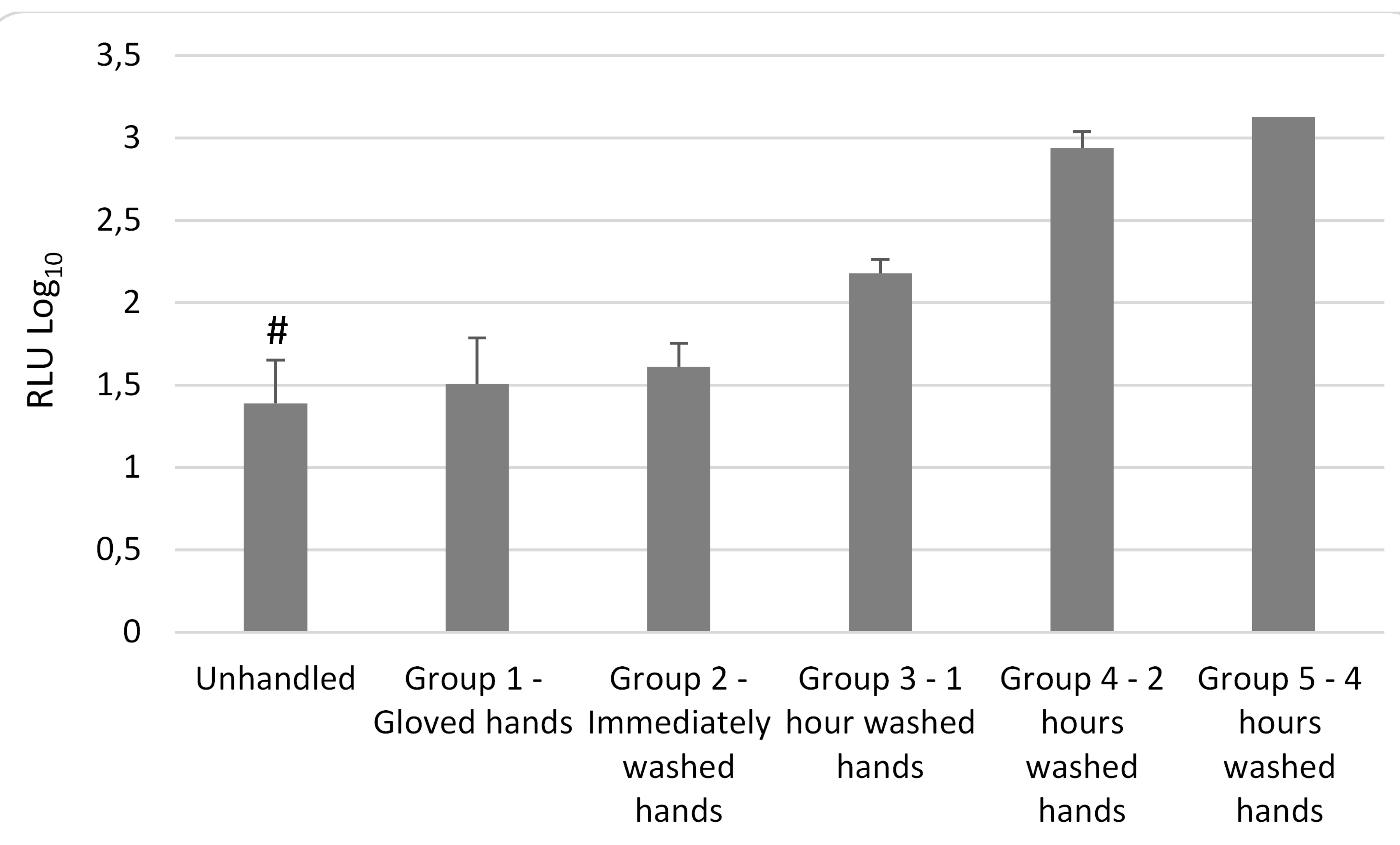


Fig 1. Amount of ATP on Halsted-mosquito forceps after various treatments for packing: gloved hands, ungloved and washed hands (time 0, after 1 hour, after 2 hours, and after 4 hours). #Different from all groups; Group 1 and 2 - Statistically different of Groups 3, 4 and 5, Group 3 is also significantly different from Groups 4 and 5.

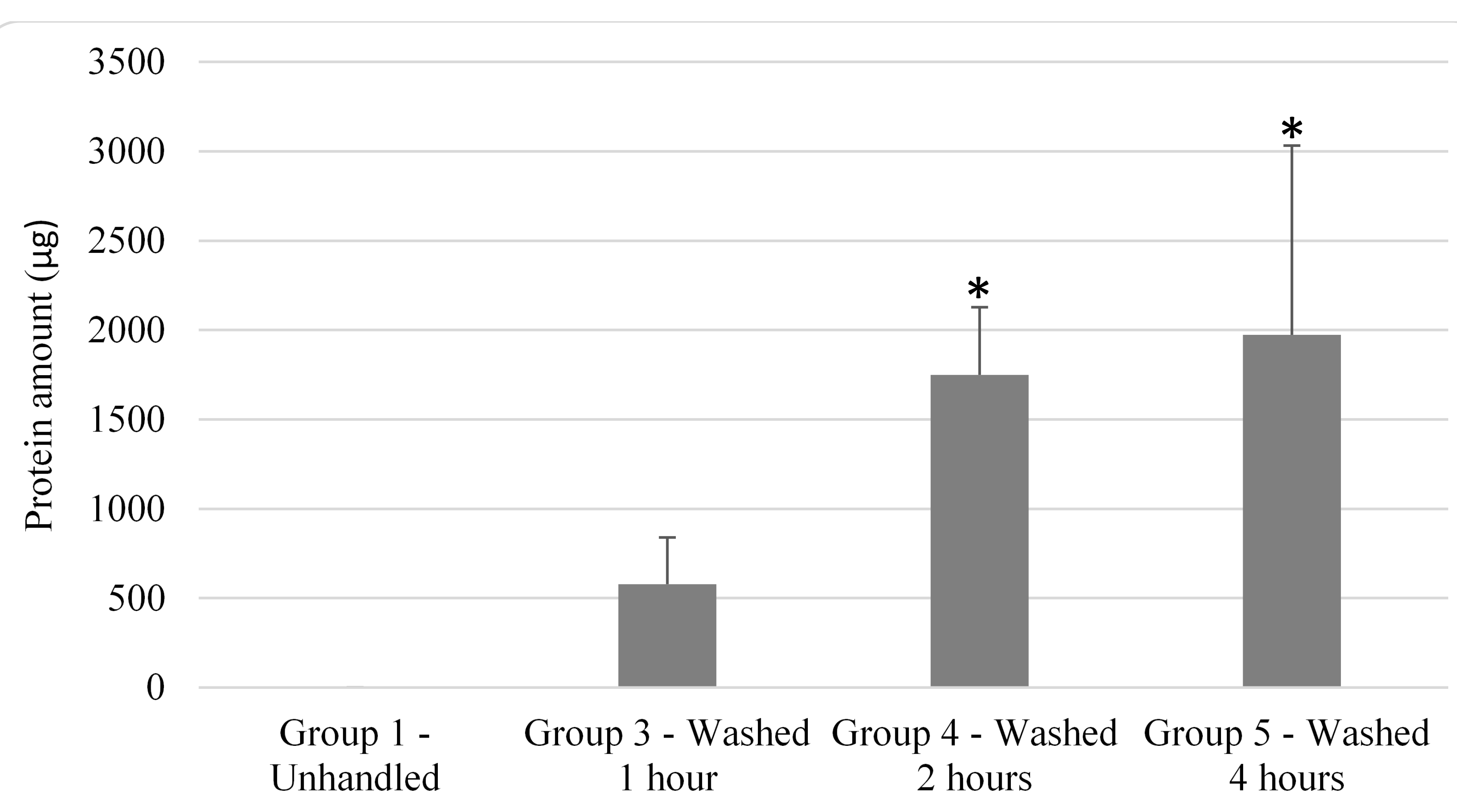


Fig 2. The amount of protein (µg) contaminating Halsted-mosquito forceps pre-packing (unhandled) and following packing with ungloved hands washed 1 hour, 2 hours, and 4 hours previously. *Significantly different from Group 1 unhandled ($P < 0.001$).

CONCLUSION

Critical RSI inspection, assembling, lubricating and packing should be performed using either gloved or recently washed hands.