A machine learning algorithm was used to classify the two research groups and while experiencing no net blood loss as verified by blinded physician adjudication. The performance of the algorithm was measured by calculating sensitivity/specificity.

Results: The average age of research subjects was 34, 82% were male, initial SBP averaged 130 mmHg and HR 81 bpm. The analyzed PPG data demonstrated an overall accuracy of 82.9%, a sensitivity of 89.3% and a specificity of 78.2%.

Conclusion: The preliminary results from this ongoing study of a novel, wearable PPG device demonstrate high sensitivity and moderate specificity at categorizing blood loss. Increasing the number of subjects, both with and without blood loss, will allow for a more thorough evaluation of the device’s capabilities.

299 Withdrawn

300 Comparative Analysis of Five Methods of Emergency Zipper Release by Experienced Versus Novice Clinicians
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Study Objective: Penile zipper injury is usually caused by entrapment of penile tissue (foreskin, shaft, or glans) in the actuator or the teeth of the zipper. It is one of the most common genital injuries in prepubertal boys. The primary aim of this proposal was to compare five common techniques for releasing zipper-entrapped skin using an animal model.

Methods: This was a prospective, randomized trial using an animal model consisting of chicken skin firmly entrapped by a metal zipper on a pair of denim jeans. Volunteers consisted of emergency medicine physician faculty and medical students (novice clinicians). During the simulation lab, participants were taught the five common techniques for releasing zipper-entrapped skin: 1) cutting the median bar; 2) using a screwdriver to separate faceplates; 3) manipulation of the zipper using mineral oil; 4) lateral compression of the zip fastener using pliers; and 5) removing the teeth of zip mechanism using trauma scissors. Order of the techniques was chosen by a random number generator. Subjects were timed by evaluators using a digital stopwatch from the time they were told to start until successful release of the entrapped skin. Success was defined as release of the entrapped skin while minimizing trauma to the skin. Failure to successfully release the entrapped skin within 5 minutes or causing full thickness laceration to the skin was logged as failures. Comparisons were made between each technique and between training levels (ie, student versus faculty) for both success rate and time to successful release of entrapped skin utilizing Chi-Square, and 2-tailed unpaired t-tests.

Results: Volunteers consisted of 12 EM physician faculty and 18 medical students. Overall, procedure times were 16.2 sec faster for EM faculty compared to students (P<.05); however, success rates did not vary significantly. Gentle manipulation of the zipper using mineral oil lubricant was the quickest technique among novice or experienced clinicians (53.9 +/- 25.6 sec), followed by cutting the median bar (126.0 +/- 110 sec) and use of a screwdriver to widen the faceplates (131.6 +/- 90.5 sec). The procedure that was the least traumatic to skin involved cutting the closed teeth of the zipper using trauma scissors, permitting the unzipping of the zipper from the distal end.

Conclusions: This is the first randomized trial to compare the five methods for releasing zipper-entrapped skin. Based on our animal model the preferred technique is simply gentle manipulation of the zipper using mineral oil lubricant. If this is not immediately effective, clinicians may wish to try cutting the closed teeth of the zipper using trauma scissors, and unzipping the zipper from the distal end.