Title: Low Velocity Gunshot Wounds Result in Significant Contamination Regardless of Ballistic Characteristics

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Introduction: Controversy exists among the orthopedic community regarding the treatment extremity trauma following gunshot injuries. No consistent treatment algorithm for treatment of low energy gunshot wound trauma. The purpose of this study was to critically examine the wound contamination following low velocity gunshot wound based upon bullet caliber and clothing fiber type found within the bullet cavity and the injury track.

Methods: We created simulated gunshot wounds using ballistic gelatin as human tissue. We fired 4 types of handguns from a ten-foot distance into the gel. In order to simulate the real world conditions we applied various clothing materials (denim, cotton, polyester and wool) circumferentially around the tissue agar in a loose manner. A total of 32 specimens were examined. Each caliber handgun was fired a minimum of 5 times into a gel. We used a standardized classification scheme for each wound.

Results: Regardless of bullet caliber there was gross contamination of the entire bullet track in 100% of specimens in all scenarios and for all fiber types. We also found that the full metal jacket bullet casing did not alter the degree of contamination. Furthermore, as would be expected, the degree of contamination appeared to increase as the size of the bullet increased.

Conclusions: Low velocity gunshot wounds result in significant contamination regardless of bullet caliber and jacket type. Based upon our results further investigation of low velocity gunshot wound tracks is warranted. Further clinical investigation should focus on the degree to which debridement should be taken.

References:

