

## THE SHORTCOMING AND DEFICIENCY IN “ATTEMPTING PRIMARY CLOSURE FOR ALL OPEN FRACTURES: THE EFFECTIVENESS OF AN INSTITUTIONAL PROTOCOL”

Moola and colleagues<sup>1</sup> have done a lot of work on attempting primary closure for all open fractures, and they have found that primary closure for all open fractures is a safe and efficient practice. However, we have some concerns regarding the paper and wish to share them.

First, there was an obvious mistake in the design of the study. As we know, the timing of wound closure in the management of open fractures is very clear both in the orthopedic traumatology textbook and literature. The open fracture, from Gustilo type I to Gustilo type IIIa, should be treated with primary wound closure. Delayed wound closure is mainly performed in patients with Gustilo types IIIb and IIIc wounds, which always require second-look débridement to assess gross contamination. Such complicated open fractures no doubt have higher rates of infection and nonunion.<sup>2-5</sup> However, in this study the authors analyzed the following patients with open fractures: 152 type I (51.2%), 73 type II (24.6%), 46 type IIIa (15.5%), 13 type IIIb (4.4%) and 13 type IIIc (4.4%) injuries. Of these, types I, II and IIIa accounted for 91.3% of all open fractures. This means that most open fractures for the study should have been treated with primary wound closure. Therefore, the results comparing Gustilo type I, II and IIIa and Anderson type I and II, determining that they had the highest rates of definitive immediate closure, was meaningless, repetitive work. We suggest the authors analyze the attempting of primary closure for type IIIb and IIIc open fractures, which remains somewhat controversial in orthopedic traumatology.

Second, certain types of open fracture wound closure need to be

treated with delayed wound closure, which are not subject to Gustilo type restrictions (e.g., wounds with delayed presentation [ $> 12$  h] or high-risk of anaerobic contamination). Even in the study by DeLong and colleagues<sup>2</sup> there were still some Gustilo I and II wounds treated with delayed closure.

Third, the authors claimed that the only published prospective study evaluating wound closure protocol for open fractures is by Rajasekaran and colleagues.<sup>3</sup> However, we are aware of at least 2 published prospective articles in the literature.<sup>6,7</sup>

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### AUTHOR RESPONSE

We are happy to address your concerns with our paper.

You have the following 3 concerns:

1. You feel there is no timing debate.
2. Some wounds mandate delayed closure.
3. We did not quote the appropriate papers.

1. Timing is still controversial. We felt that there was enough evidence in the literature to start an institutional protocol. Reviewers still feel that we are too radical with our protocol. On average this is not a design flaw, but rather an attempt to answer a real question in North America: “Can you close open fractures?”. The inclusion of all grades is a review of a system protocol change, not a case-by-case dictation of whether to close or not. The paper is as much a review of a protocol implementation — whether it was successful and whether all surgeons followed — as it is a review of what happens with these patients.

2. Contaminated wounds and old wounds underwent the same protocol; excision of all contaminated areas converted the wound to a clean wound. The protocol did not forbid second looks, and patients were allowed to be taken back to the operating room for débridement. As long as the skin was closed initially, they fell in the primary closure group.

3. At the time of the initiation of the protocol, the quoted paper by Benson and colleagues<sup>1</sup> was the only prospective paper addressing this subject matter. This is the paper we quote in our design consideration.

Thank you so much for your letter; it is always great to have people read your work so keenly.

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