Letter to the Editor

The Emergency Department Application of a Windlass to a Bedsheet Pelvic Circumferential Compression Device

Dear Editor,

A recently published article in your journal emphasized the importance of pelvic ring stabilization in the management of an open-book fracture.¹ It has been emphasized that, because of the significant morbidity and mortality associated with this type of trauma, the early application of a pelvic circumferential compression device (PCC) can achieve fracture stabilization and reduce hemodynamic deterioration.^{2,3} The conclusion by Durão, et al. was that a modest maneuver with equipment such as a bedsheet can be effective in fracture stabilization.¹

If one considers the bedsheet as the “strap” of a hemorrhage-control tourniquet, then it must also be hypothesized that the introduction of a large windlass, seen with commercial

tourniquets, would improve improvised PCC efficacy. One study involving a simulated extremity hemorrhage revealed that the introduction of a windlass to a circumferential strap significantly stopped “bleeding” compared to a strap alone and the use of this adjunct has received acceptance in wilderness and military medical practice under specific circumstances.⁴ An earlier retrospective study questioned the efficacy of an external pelvic compression device in terms of the amount of blood transfusions and mortality.⁵ However, given the study’s acknowledged limitations, researchers must consider developing a prospective study to evaluate the efficacy of a PCC + windlass in terms of the amount of blood transfusions and mortality.

Meanwhile, in our medical simulation of a pelvic open-book fracture, we have begun using an improvised bedsheet pelvic binder and incorporating an I.V. pole as a windlass (see attached photograph) with emphasis on accurate placement at the level of the greater trochanters. With our simulation, a bedsheet is slid under the “victim” at the level of the greater trochanters. After maximum traction of the bedsheet is achieved, an IV pole is

Fig. 1. A bedsheet is applied at the level of the greater trochanters and secured in place (Improvised PCC). Should the patient’s condition warrant further pelvic compression, a “windlass” in the form of an IV pole can be tied into the PCC and torqued to further reduce the open-book pelvic fracture.

incorporated into the square knot to secure the sheet. The IV pole is then torqued to the maximum number of turns and secured in place with straps or another bedsheet. Binding knees and ankles coupled with a post-reduction pelvic x-ray will avoid over-pressurization.

Currently, we are planning a study to evaluate its efficacy, but your readers might consider the PCC-Windlass when an improvised PCC is not having the anticipated effect on a critical patient. This might be the case in at least two specific situations: 1) The habitus of the patient (e.g. a morbidly obese patient) and 2) The physical strength of the caregivers (pre-hospital and emergency department). To avoid “windlass” injuries to both staff and patient, in-service drills should be mandated (Fig. 1).

Thank you for taking the time to consider this letter for publication in the Journal Of Clinical Orthopaedics and Trauma.

Conflict of Interest

None.

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