Early or delayed stabilization in severely injured patients with spinal fractures? Current surgical objectivity according to the Trauma Registry of DGU: Treatment of spine injuries in polytrauma patients

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BACKGROUND: Because of a lack of evidence, the appropriate timing of surgical stabilization of thoracic and lumbar spine injuries in severely injured patients is still controversial. Data of a large international trauma register were analyzed to investigate the medical care situation of unstable spinal column fractures in patients with multiple injuries, so as to examine the outcome related to timing of surgical stabilization.

METHODS: Data sets of the Trauma Registry of German Trauma Society (Deutsche Gesellschaft für Unfallchirurgie [DGU]) (1993–2010) were analyzed. The Trauma Registry of DGU is a prospective, multicenter register that provides information on severely injured patients. All patients with an Injury Severity Score (ISS) of 16 or greater caused by blunt trauma, subsequent treatment of 7 days or more, 16 years or older, and thoracic or lumbar spine injuries (spine Abbreviated Injury Scale [AIS] score ≥ 2) were included in our analysis. Patients with relevant spine injuries classified as having a spine AIS score of 3 or greater were further analyzed in terms of whether they got early (<72 hours) or late (>72 hours) surgical treatment due to unstable spinal column fractures.

RESULTS: Of 24,974 patients, 8,994 (36.0%) had documented spinal injuries (spine AIS score ≥ 2). A total of 1,309 patients who sustained relevant thoracic spine injuries (spine AIS score ≥ 3) and 994 patients who experienced lumbar spine trauma and classified as having spine AIS score of 3 or greater were more precisely analyzed. Of these, 68.2% and 71.0%, respectively, received an early thoracic or lumbar spine fixation. With an increase in spinal injury severity, an increase in early stabilization in the thoracic and lumbar spine was seen. In the group of patients with early surgical stabilization, significantly shorter hospital stays, shorter intensive care unit stays, fewer days on mechanical ventilation, and lower rates of sepsis were seen. In the case that additional body regions were affected, for example, when patients were critically ill, a delayed spinal stabilization was more often performed.

CONCLUSION: A spinal stabilization at an early stage (<72 hours) is presumed to be beneficial. Although some patients may require delay due to necessary medical improvement, every reasonable effort should be made to treat patients with unstable spinal column fractures as soon as possible. If an early surgical treatment is feasible, severely injured patients may benefit from a shorter period of hospital treatment and a lower rate of complications. (J Trauma Acute Care Surg. 2014;76: 366–373. Copyright © 2014 by Lippincott Williams & Wilkins)

LEVEL OF EVIDENCE: Therapeutic study, level III.

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Spinal injuries are reported in up to 46% of patients experiencing major trauma.1-3 Therefore, spinal injuries are common in severely injured patients. Epidemiologic studies on traumatic spinal fractures show that spinal injuries occurring in this patient collective are located in the thoracic and lumbar spine in up to 80% of the cases.4 In this context, thoracic spine injuries are often associated with lung contusion (30–64%)5,6 and pleural effusion (39%)6 as well as other thoracic injuries such as rib fractures (30%)6 or pneumothorax (24–26%),5,6 which can impair respiratory function.5,7 In contrast, lumbar spine injuries were shown to be significantly associated with pelvic injuries8 and abdominal injuries,9 increasing the risk for major bleeding.10-12 Despite the previously mentioned high incidence of unstable spinal fractures in polytrauma patients, the optimal timing for surgical stabilization remains controversial.13,14 Advocates of delayed surgical treatment argue that, in the initial phase after trauma, patients with multiple injuries might be too sick to withstand the additional stress caused by a surgical intervention, which might increase the complication rate and therefore contribute to a poorer outcome.14-16 In