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Editorial

Severe pelvic trauma: A complex and challenging situation

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In the current issue of the *Journal*, The French Society of Emergency Medicine and the French Society of Anaesthesia and Intensive Care Medicine published guidelines for the early management (first 24 h) of patients with pelvic injury [1]. A consensus committee composed by experts in the field has done an extensive work, finally allowing proposing 22 recommendations for the pre-hospital and hospital management of patients presenting severe pelvic injury. These guidelines are complementary to the recently up-dated European guidelines for major bleeding after trauma [2], but with a specific focus on the complexity of pelvic trauma care. From prehospital settings to specialised trauma centres, trauma patients with severe pelvic injury are probably the most challenging ones. Haemorrhagic shock and associated injuries are the leading causes for death after severe pelvic trauma [3]. Trauma network organisation and trauma guidelines are key-points to improve trauma care and decrease mortality rate, especially preventable death related to haemorrhage [4,5].

One of the main challenges during pelvic trauma management is the early detection of pelvic bleeding. Linking the bleeding to a retroperitoneal injury accessible for haemostatic procedure, without neglecting other sources of haemorrhage should be a priority in the early post-traumatic hours. A correct and complete diagnosis of traumatic injuries must be done, and haemostasis should be performed as early as possible. Pre-planned algorithms may be very helpful in such complex situations to help clinicians for rapid decision-making under strong time-pressure. A decision-making algorithm is proposed in the Fig. 1.

In the prehospital setting, clinical signs of pelvic injury, as pelvic pain, are sometimes lacking due to altered consciousness. One of the first strong recommendations proposed by the expert's committee is to consider all trauma patients with shock or coma to have pelvic trauma and therefore to apply pelvic contention with pelvic binders, as soon as possible. Another important point is the initial orientation of patients presenting severe pelvic trauma. The present guidelines recommend to initially admit

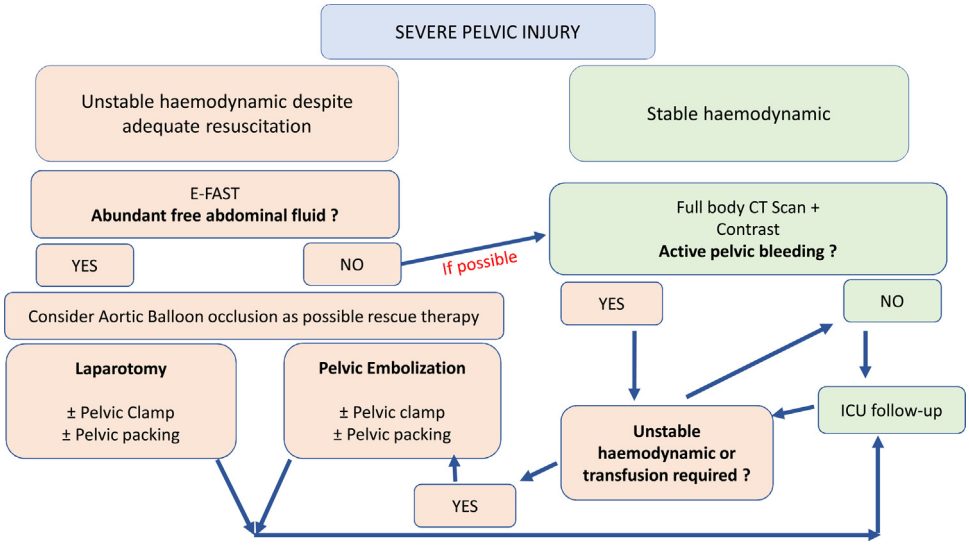

Fig. 1. Decision making algorithm for the management of patients with severe pelvic injury. E-FAST: Extended Focused Assessment Somography for Trauma; ICU: Intensive Care Unit; CT: Computed Tomography.

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these patients to a trauma centre fully equipped to treat all aspects of trauma, including angiography and embolization if needed.

Another very important point highlighted by these guidelines is the central place of CT-scan for decision-making. The experts recommend "performing a thoraco-abdomino-pelvic CT-scan with contrast before angiographic embolization in patients with severe pelvic trauma if allowed by the patient's haemodynamic status". In a stable or stabilised patient, the complete inventory of injuries and sources of bleeding revealed by extravasation of contrast agent is critical to correctly prioritise embolization or surgery. In case of arterial pelvic bleeding and haemorrhagic shock, angiography with non-selective embolization is probably the best option to rapidly control bleeding. However the benefit of such procedure relies on the delay needed to stop the haemorrhage, as shown by the increased mortality after 60 min [6], reaching 75% if embolization is performed after 3 h [7]. Every effort should be made to avoid unnecessary lost of time and to allow patients to benefit from early embolization.

In case of situations making impossible CT-scan and/or transfer to angiographic embolization in the first hour from admission, the experts suggest performing a surgical pre-peritoneal pelvic packing in association with an external fixation. This procedure has been shown in non-randomised studies be as effective as pelvic angiography for stabilizing hemodynamically unstable patients with pelvic fractures [8–10]. In France, this procedure is rarely performed. We call for a better training of trauma teams for damage control surgery procedures, including pelvic packing, especially for centres without access to angiography facilities. Pelvic packing can be performed by non-specialised surgeons and could allow early bleeding control and more stable transport to level 1 trauma centres.

Finally, aortic balloon occlusion of the aorta has been recently shown to be effective in controlling pelvic bleeding [11,12]. This promising method can be applied as soon as the prehospital settings, and allows temporary control of haemorrhage. However, no strong recommendation can be done today, as more evidence are needed to better define the place of aortic balloon occlusion in the early management of pelvic trauma patients.

The present guidelines will certainly be very helpful for clinicians facing a severe trauma patient with pelvic injury. They strongly support multidisciplinary discussion, involving emergency physicians, anaesthesiology and critical care physicians, but also radiologists and surgeons. This multidisciplinary approach is probably the key for efficient management of these complex patients.

Disclosure of interest

The authors declare that they have no competing interest.

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