Acute compartment syndrome

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Acute compartment syndrome (ACS) is characterized by increased pressure within an anatomic space surrounded by non-expandable structures. ACS can develop in various body regions, including the extremities and the visceral cavity. In ACS of the extremities, in more than two-thirds of the cases, the forearm or the lower leg is affected. ACS has been described to occur in patients with open and closed fractures or in the absence of an underlying fracture. The treatment consists of emergent dermatofasciotomy regardless the cause. The goal of the treatment is to release the intramuscular pressure in the affected compartments. Timely surgery is of utmost importance, as inadequate or delayed surgical release may result in further tissue damage and substantial local (e.g., Volkmann's contracture, amputation) or systemic complications (e.g., organ failure, death). Therefore, awareness for the development of ACS and its early diagnosis are of major significance [1, 2]. Clinical examination including patient's history and physical examination is crucial but may lead to delayed diagnosis and treatment of ACS particularly in certain subsets of patients (e.g., children, geriatric or unconscious patients). In these cases, needle compartment pressure measurement has been recommended for objective compartment pressure determination with a high sensitivity and

specificity [3]. However, the recommendations regarding standardized diagnostic procedures as well as indications about intracompartmental pressure threshold levels are inconclusive. They may vary according to the patient's condition (alert, oriented versus intubated and on vaso-pressors) [1].

In the current issue of the *European Journal of Trauma and Emergency Surgery*, we have therefore tried to compile the current evidence regarding experimental and clinical evidence of this on-going challenge. It appears that the standardized diagnostic and therapeutic algorithms are needed which should include answers to the following questions:

- Which patient is at risk to develop an ACS and therefore should be examined for signs of ACS?
- What are the clinical signs ("red flags") for ACS?
- What are the indications for intracompartmental pressure measurement and how should this technically be performed?
- What are the indications for immediate surgery?
- What are the tips and tricks for ACS surgery?
- How is the clinical and surgical management after dermatofasciotomy?
- How should patients with imminent ACS be treated?

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Conflict of interest F. Hildebrand and H.-C. Pape declare that there are no conflicts of interest.

Ethical standards The authors comply with the ethical guidelines for authorship and publishing in the *European Journal of Trauma and Emergency Surgery*.

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