Mediastinal trauma: a foreword to the special series

Trauma is a leading cause of death and disability, and can have long lasting impacts on society and the economy. Mediastinal trauma in particular is challenging for several reasons. The mediastinum contains vital structures such as heart, airway, great blood vessels, and esophagus. Injuries to these structures carry a high rate of mortality. Because of the close proximity in which these structures lie, in a confined space, multiple concomitant injuries are often present. While the presentations of patients with injuries in this region can be dramatic and acute, diagnosis of these injuries can at times be challenging, requiring multimodality investigation. Surgical access is also challenging, requiring a knowledge of a variety of techniques, including endoscopic, endovascular and interventional radiologic approaches. Our knowledge of best management is often based on case reports, rather than randomized controlled trials because of the nature of these injuries, which some of them leading to death on scene.

Herein, the collected authors provide a comprehensive review of the most common and severe aspects mediastinal trauma, including presentation, work up and management.

Drs. Williams and Agzarian have reviewed the topic of traumatic mediastinal injuries from the perspective of the general thoracic surgeon. Although, mediastinal trauma is highly morbid, it is infrequent, and many general thoracic surgeons do not have dedicated training in trauma. Nonetheless, thoracic surgeons are often the most responsible physicians for these patients, and their perspective is crucial.

Dr. Galeiras has provided an important review of smoke inhalation injury, including thermal damage to upper airway, chemical inflammatory damage to lower airway and systemic injury. A wide range of presentations are possible, and a management approach emphasizing minimizing further insult and prioritizing a secure airway is emphasized, with special mention made of the use of extra-corporeal membrane oxygenation in refractory cases.

Dr. Antonescu *et al.* have outlined in their review the presentation and management of blunt and penetrating airway injuries. Again, the crucial consideration is to secure the airway via intubation with use of bronchoscope. Work up may include computed tomography to assess the extent of injury and to rule out other injuries such as esophageal and vascular injury. Operative intervention depends on the degree and location of injury.

Drs. Jogiat and Strickland have classified patients with penetrating transmediastinal trauma to three categories based on the hemodynamic stability and propose an algorithm for management. This is one of the most challenging injury patterns in all of trauma surgery, and a clear, well-defined plan for diagnosis and treatment is essential.

For blunt cardiac injury, Dr. El-Andari *et al.* reviewed the current literature, emphasizing the lack of enough data for standardized approach and optimal management. They recommend establishment national or multicentric registries for data collection, to review the outcomes of such patients, and propose guidelines for management of blunt cardiac injuries.

Drs. Naidoo and Hardcastle have provided a review of traumatic injury to great vessels of the mediastinum, highlighting the impact of the advancement in the field of imaging and endovascular therapy. As a result, endovascular repair has been used to manage aortic injury, with reduced morbidity.

Drs. Doyle and Diaz-Gutierrez discuss the management of sternal fractures. They emphasize the need to differentiate between isolated, uncomplicated sternal fractures and those that occur in the setting of multiple injuries. For the former, conservative management is often the preferred approach, though surgical stabilization may be needed in select cases. For more complex injury patterns, sternal fracture may rarely be associated with blunt cardiac trauma, and the need to identify which patients require further investigation is discussed.

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