



Some guest words on this manual

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“A new era for surgery would become, if we were be able to stop the flow in a major artery without exploration, external compression and ligation...”
(circa 1864)

Professor Nicolay Pirogov
Russian surgeon & founder of field surgery

In his quote, the Russian scientist and medical doctor Professor Nicolay Pirogov foresaw a time in the field of medicine when the bleeding vessel could be managed from a remote location without the need for an operative incision and direct exposure. Although he did not use the term “endovascular”, one can infer he may have pictured the use of devices deployed inside of and proximal to, the disrupted vessel to control bleeding and repair the injury. Less than 100 years

after Pirogov, Lieutenant Colonel Carl Hughes from the Walter Reed Army Medical Center reported on the use of a primitive intra-aortic balloon catheter to control hemorrhage during the Korean War. Fast forward another half century and the field of surgery is immersed in a technological revolution in which ever smaller and easier catheter-based devices are being innovated and applied to manage vascular disease. As documented in this Top Stent manual, today's advances promise to extend beyond the management of just vascular disease and will make the aspirations of Pirogov and Hughes to use endovascular techniques for injury and hemorrhagic shock a reality.

In the pages and chapters that follow, a stellar line-up of authors has provided a timely summary of the most germane topics related to learning, performing and instructing a basic skillset of endovascular techniques to manage vascular injury, hemorrhage and shock. In its inaugural edition, Top Stent has struck a balance with comprehensive and candid content in a brief and versatile format. Included are chapters dedicated to proper and usable vascular access and the three main categories of endovascular techniques (i.e. the “toolbox”) for trauma and injury care: 1. resuscitative endovascular balloon occlusion of the aorta (REBOA), 2. stents and stentgrafts and 3. embolization tools and devices. The manual also dedicates space to addressing less conventional, non-aortic uses of balloon occlusion and even speaks to the emerging model of the hybrid -open and endovascular- operating room.

Reflecting the military expertise among its contributors, Top Stent reports on the potential for endovascular techniques to be used across a spectrum of combat casualty care settings: point of injury, en-route and fixed facilities. This perspective is forward-leaning and sure to inform a diverse range of providers (military and civilian) as they consider the most appropriate location for application of these new and potentially lifesaving technologies; today and in the years to come. As evidence of its honest structure, Top Stent dedicates a chapter – and comments throughout – to the limitations of endovascular techniques and possible complications associated with their use. The text provides a “how to” summary of performing, learning and training these techniques and concludes with a fitting list of major points or “pearls”.

To the credit of its leader and senior editor Dr. Tal Hörer, the Top Stent manual extends and formalizes past work from the Endo-Vascular hybrid Trauma and bleeding Management or EVT_M movement. The Top Stent manual is



timely and sure to serve as a resource for cases at hand and to spur the movement in a more informed manner to maximize the life-saving potential of endovascular approaches in years to come. Congratulations to the cast of dedicated authors and contributors on this impressive accomplishment – Pirogov and Hughes would certainly find this discussion fascinating!

Thomas Larzon

Pioneer in endovascular surgery

With cane and hat, without any delay, please send the patient to the operating room! These were the rules when I started to learn vascular surgery 30 years ago. Abdominal or back pain, a palpable pulsating abdominal mass and hemodynamic chock were the clinical signs, the triad for a ruptured abdominal aneurysm. That made sense when the scanning time for the abdomen was almost half an hour and the only available method was open surgery.

The diagnosis was not always correct and I have found myself with one and another kidney stone or pancreatitis but that was accepted by my senior colleagues as well having a 50% mortality rate. Over time treatment has drastically changed as you know well and EVAR has been accepted and now dominates treatment of ruptured aneurysms.

We all have moments we never forget and one of these golden moments was in 2000 when a patient literally dropped dead in the OR in front of me. A pending thoracic aortic aneurysm had actually ruptured. But it turned out that her days were not counted. We were to meet many times in the coming years – thanks to an aortic occlusion balloon, simultaneous CPR and a thoracic stentgraft.

I have been fortunate to have the right work at the right time in the right place and I now see that history repeats itself when it comes to trauma care. It will be very interesting to follow the development that up to now only is in its infancy with the REBOA concept. I congratulate all of you, young, established and future doctors who will dedicate your work to create the future of trauma care. Together we can do it. What a challenge!