

## INVITED COMMENTARY

## COVID-19 in Vascular Surgery

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In this issue, Spanos *et al.*<sup>1</sup> have described how the sudden onset of the COReNA Virus Disease (COVID-19) pandemic in China and the global spread of the Severe Acute Respiratory Syndrome Corona Virus 2 (SARS-CoV-2) have affected the provision of vascular surgery. This pandemic found the majority of the health systems unprepared, despite the alarming warnings coming from infection specialists since the epidemic of the original SARS virus in 2002-2004.

In order to cope with the expected wave of severely ill patients to be admitted in the hospitals, governments adopted different strategies, from total lockdowns to free propagation of the virus in the community aiming in achieving “herd immunity”. Along the course of the pandemic and while data from other affected countries started to pile, strategies have been completely altered or modified, something that is described by Spanos *et al.*<sup>1</sup> in his work.

Most strategies agreed in a number of points. All available resources should be used mainly in treating COVID-19 patients, other cases should be deferred in time if possible, medical personnel should be protected and rotated, and screening of suspected patients should be performed. Despite the simplicity of these points, the reality of the pandemic proved the contrary. Thus, alike the different approaches governments had, every health institution, medical association or specialty college published respective guidelines on what cases can be deferred, what should be considered urgency and emergency, and how clinics should be run.

Most COVID-19 vascular surgery guidelines seem to agree on what patients should be treated immediately; acute limb ischemia, vascular trauma and aortic aneurysm rupture.<sup>2,3</sup> As it was described in Spanos *et al.*,<sup>1</sup> these principles are reflected in the recommendations that were presented by Hellenic Society of Vascular and Endovascular Surgery (HSVES). All other cases can be deferred for later, although there is no global

consensus on the timing of these deferrals. Carotid disease seems to be the most ambiguous in terms of the procedure timing, a situation described by Spanos *et al* in their manuscript.

Some institutions have suggested that even emergency or urgent cases should be treated in ways that minimize the procedure time, the hospital stay, the need for blood products and occupancy of Intensive Care Units (ICU) or High Dependency Units (HDU). Therefore, procedures should be performed by experienced physicians to minimize the time, while the least possible staff should be present in the operation theatre to minimize personnel exposure. In some cases, treatment should be more aggressive in order to minimize length of stay, the need of readmission and follow-up clinic visits; a good example for this is diabetic foot/gangrene and surgical debridement. In cases where both open and endovascular techniques can be performed (e.g. ruptured aneurysms), the endovascular procedure should be preferred in order to minimize the procedure time, the use of blood products and the length of stay. It is interesting to note that the COVID-19 guidelines oppose guidelines issued by the same or other institutions; Royal College of Surgeons’ guidance opposes the initial NICE guidelines regarding EVAR.<sup>4</sup> A number of centers in Greece cannot strictly adhere to these principles, mainly because there is no emergency endovascular service. Minimizing theatre personnel and rotation of teams are already in place in most vascular units in Greece, as mentioned by Spanos *et al.*

Clinics cannot be run in the usual manner, since social distancing is either imposed or suggested. The UK National Health System has already introduced virtual vascular outpatient clinics where bidirectional audio and video connection between the patient and the physician is established.<sup>5</sup> The Athens Medical Association has introduced a service called “Doctor Next 2 Me”, which allows any patient can connect to a physician through a smart phone or a computer.<sup>6</sup> Although this service has attracted attention from the public, it focuses on COVID-19 related consultations. It is a promising technology and could be used for virtual vascular consultations in the future.

Apart from the clinical aspect, the pandemic also affects other parts of vascular surgery. Education and training also suffer from the imposed social distancing and travel bans. The European Society for Vascular Surgery (ESVS) is already considering an online only Annual Meeting, while other vascular meetings are already either cancelled or postponed. The

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HSVES annual and the LIVE meetings are already postponed, while other local meetings are affected, too.

Vascular training is also affected, as number of patients has decreased due to the abovementioned guidelines. Societies are researching online tools to continue providing training. The necessity of online solutions is such that ESVS is considering reintroducing vascular e-learning,<sup>7</sup> only a couple years after shutting down a promising e-learning project. HSVES has already taken advantage of novel tools and has held its first *imeeting*, receiving very positive feedback. It remains to see to what extent online activities can substitute or replace activities that previously required the physical presence of a vascular surgeon or a trainee.

This short review of the current management of patients with vascular disease,<sup>1</sup> shows that it is rather clear that the pandemic will alter all clinical, educational and training activities of vascular surgeons around the globe. The Hellenic vascular community has reacted promptly to this changing environment and has put significant efforts to address the difficulties risen from the new situation.

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