



ELSEVIER

Correspondence

Endovascular Surgery during COVID-19 Virus Pandemic as a Valid Alternative to Open Surgery

Dear Editor,

As August 8, 2020, in Italy, more than 35,000 deaths from COVID-19 have been diagnosed. The acute phase of the outbreak seems resolving in Italy. The region Lombardia has suffered from severe problems during the acute phase of the outbreak (March–April 2020) with 16,000 diagnosed COVID-19–related deaths (49% of the COVID-19–related deaths in Italy). In the area surrounding Pavia during the acute phase of the outbreak (March–April), out of the documented 4,200 deaths, 1,225 were related with COVID-19 infection with a mortality rate of 181/100,000 inhabitants and an increase in deaths of 138% in comparison with the same period of the previous years. Mean age of the patients dying from the disease was 81 years. In the elderly population, the simultaneous occurrence of COVID-19 infection and the presence of diffuse atherosclerotic disease is inevitably a common clinical scenario, namely in the region Lombardia with a high proportion of elderly population.^{1–3} Contamination of health operators is another important matter. Out of 250,000 COVID-19–positive cases documented in Italy, 30,000 were health workers. These data should be analyzed taking into consideration that most of the health workers were tested, whereas only 15% of the general population was tested.^{1,2}

In this scenario, many generally accepted evidence-based indications to surgery should be re-evaluated taking in mind several specific matters, like as the prevention of contamination for patients and health workers. During the lock down period, elective, deferrable surgeries have been rarely performed. There is a general attitude to prefer therapeutic schema which implies a reduced risk for complications and/or the risk for hospital admission. In patients with major, life-threatening complications requiring surgical intervention, a careful assessment of risk and benefits is always required, but in the pandemic period, the possibility of contamination should be added to the usual considerations.^{3,4} In almost all hospitals, visits

from relatives are not allowed, so that the patient undergoing major surgery should expect a significant isolation time with inevitable negative psychological consequences. Endovascular surgery can be performed under locoregional anesthesia, avoiding general anesthesia with endotracheal intubation, reduced postoperative pain, and intensive care unit permanence. The possibility of pulmonary complications, which may predispose and to aggravate COVID-19 contamination and clinical course, is reduced. Hospital stay is shorter. Endovascular procedures which have the same results of standard surgery, or even a marginal less effective result, are preferred. The possibility to defer the standard, more effective surgical operation at later times, after having resolved the emergency situation by a less risky endovascular procedure, is a reasonable clinical perspective.⁵

During the acute phase of the outbreak, we have preferred to perform endovascular procedures whenever possible. [Table I](#) shows the arterial procedures performed during the acute phase of the outbreak (in free or COVID-19–positive patients) and during the same period of the previous year. During the acute phase of the outbreak, 10 patients with COVID-19 had arterial surgery.

Since the end of May, there has been a steady and significant decrease in contamination and mortality rates in Italy and in Pavia. Nowadays, less than 5 COVID-19 deaths per day are reported in Italy as related to COVID-19 infection. Slowly the number of elective vascular procedures is increasing. There are fewer admissions to the hospital of COVID-19–positive patients; hospital beds and intensive care unit beds are available. Still, the isolation rules remain either in the hospital or for the general population. We are moving cautiously to the new phase, and endovascular surgery is still playing a primary role in this delicate moment.

Antonio Bozzani
Vittorio Arici
Giulia Ticozzelli
Guido Tavazzi
Antonio V. Sterpetti
Francesco Mojoli

No funds were received for this work.
The authors have no conflicts of interest to declare.

Ann Vasc Surg 2020; ■: 1e.1–1e.1
<https://doi.org/10.1016/j.avsg.2020.09.043>

© 2020 Elsevier Inc. All rights reserved.
Published online: ■■■

Table I. The arterial procedures during the acute phase of the outbreak and during the same period of the previous year

Operative vascular procedures at the vascular surgery department of Fondazione IRCCS Policlinico San Matteo of Pavia during phase 1 of the COVID-19 versus same period of the previous year				
	March 1–April 30, 2020		March 1–April 30, 2019	
	Emergency	Elective	Emergency	Elective
AAA				
EVAR	2	0	4	12
Open	0	0	5	18
Carotid				
CAS	0	0	0	3
CEA	0	0	5	27
PAD				
PTA/stent	9	0	8	18
Open	6	0	6	12
Acute thrombosis	6	0	8	0
Amputation	4	0	3	9

Operative vascular procedures at the vascular surgery department of Fondazione IRCCS Policlinico San Matteo of Pavia during phase 1 in the patients with COVID-19

	March 1–April 30 2020	
	Emergency	Elective
AAA		
EVAR	2	0
Open	0	0
Acute thrombosis		
PTA	3	0
Embolectomy	3	0
Amputation	1	0

AAA, abdominal aortic aneurysm; EVAR, endovascular aortic repair; CAS, carotid artery stenting; CEA, carotid endarterectomy; PAD, peripheral arterial disease; PTA, percutaneous transluminal angioplasty.

Raffaele Bruno

Franco Ragni

Fondazione Irccs Policlinico San Matteo

University of Pavia

Pavia, Italy

REFERENCES

1. Ponkilainen V, Kuitunen I, Hevonkorpi TP, et al. The effect of nationwide lockdown and societal restrictions due to COVID-19 on emergency and urgent surgeries. *Br J Surg* 2020;. <https://doi.org/10.1002/bjs.11847>. Epub ahead of print.
2. Sterpetti AV Lessons learned during the COVID 19 virus pandemic. *J Am Coll Surg* 2020;230:1092–3.
3. Bozzani A, Arici V, Franciscone MM, et al. Severe acute Respiratory Syndrome Coronavirus 2 infection and the Upper limb deep vein thrombosis risk. *Ann Vasc Surg* 2020;66: 11–3.
4. Harrison G. COVID-19; addressing our reality and maintaining our resilience. *Br J Surg* 2020;. <https://doi.org/10.1002/bjs.11906>. Epub ahead of print.
5. COVIDSurg Collaborative. Global guidance for surgical care during the COVID-19 pandemic. *Br J Surg* 2020;107:1097–103.