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Proposed resumption of surgery algorithm after the coronavirus SARS-CoV-2 pandemic



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The novel coronavirus SARS-CoV-2 (COVID-19) pandemic has crippled vascular surgery practices around the world with almost 4 million cases and >260,000 deaths as of May 6, 2020.¹ To preserve hospital resources including personal protective equipment and ventilators as well as to “flatten the curve” of exposure of patients and health care providers to COVID-19, most centers have imposed limitations on elective/scheduled surgical practices.² For vascular surgeons, this may include limiting procedures, such as for peripheral artery disease with claudication, asymptomatic carotid artery disease, small aortic aneurysm, superficial venous disease, and most dialysis access. Many vascular procedures, however, are urgent, with delay in treatment resulting in loss of limb or life. In the aftermath of such a global dampening of practice, resumption of surgical services needs to be thoughtful to optimize the care of patients and to minimize risk to the health care team. A joint statement from the American College of Surgeons, American Society of Anesthesiologists, Association of Perioperative Registered Nurses, and American Hospital Association suggests that this return of service should not occur until several factors are met, including a sustained reduction in the rate of new regional COVID-19 cases for 14 days and the availability of both personal protective equipment and COVID-19 testing.³ In addition, they recommend case prioritization to ensure that those patients with the highest needs will be treated first, although they do not specifically comment on these cases, deferring instead to local committees created to adjudicate all cases. At Saint Louis University, we have adopted the Elective Surgery Acuity Scale to aid in decision-making regarding delay in surgery for patients during this time of peak pandemic (Fig 1). Patients are sorted on the basis of the acuity of diagnosis and health status into tiers from 1 (low-acuity procedures) to 3 (high-acuity procedures). Those in tiers 1 and 2 are preferentially delayed, whereas those in tier 3 proceed to surgery. These

guidelines were adopted by the American College of Surgeons as well as by the Centers for Medicare and Medicaid Services in their recommendations for elective procedure scheduling during the pandemic.⁴ To prepare for resumption of surgical practice, we have developed an algorithm to prioritize surgical care of patients in our center based on these same tiers, the results of COVID-19 testing, and the availability of intensive care unit beds (Fig 2). Those with active COVID-19 diagnoses (or those who are symptomatic and in testing) should be delayed. First priority of procedure should go to the healthiest patients with the highest acuity needs and the lowest need for intensive care. This system will allow care to be delivered to the patients with the highest need and also optimize outcomes from these procedures when performed. We wish to share this protocol with your readership who may be struggling with creating a system to address the backlog of cases that have undoubtedly developed in their practice. We welcome any comments or feedback as this is an untested algorithm at this time.

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Tier	Definition	Locations	Examples	Action
1				
1a	Low acuity surgery/healthy patient	HOPD, ASC, Hospital with low/no COVID-19 census	PAD with Claudication, Varicose veins, ESRD in need of dialysis (>3 months)	Postpone surgery
1b	Low acuity surgery/unhealthy patient	HOPD, ASC, Hospital with low/no COVID-19 census		Postpone surgery
2				
2a	Intermediate acuity surgery/healthy patient	HOPD, ASC, Hospital with low/no COVID-19 census	Small asymptomatic AAA, PAD with rest pain, asymptomatic carotid stenosis	Postpone surgery if possible; consider ASC
2b	Intermediate acuity surgery/unhealthy patient	HOPD, ASC, Hospital with low/no COVID-19 census		Postpone surgery if possible; consider ASC
3				
3a	High acuity surgery/healthy patient	Hospital	Ruptured AAA, PAD with tissue loss, symptomatic carotid stenosis	Do not postpone
3b	High acuity surgery/unhealthy patient	Hospital		Do not postpone

Fig 1. Elective Surgery Acuity Scale for management of patients during COVID-19 peak pandemic. Patients are sorted on the basis of the acuity of diagnosis (numerically 1-3) and health status of the patient (a, healthy; b, unhealthy). Those in tiers 1 and 2 are delayed if at all possible, whereas those in tier 3 are performed. AAA, Abdominal aortic aneurysm; ASC, ambulatory surgery center; ESRD, end-stage renal disease; HOPD, hospital outpatient department; PAD, peripheral artery disease.

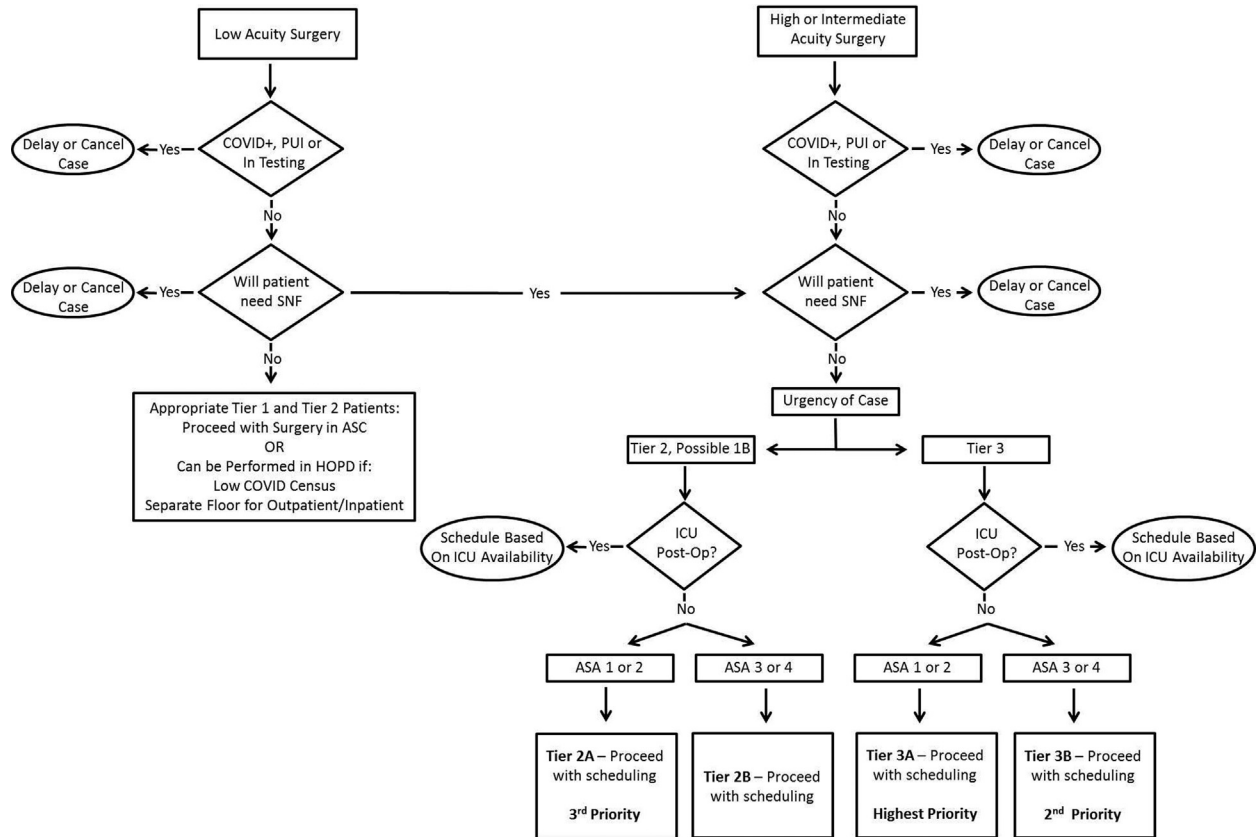


Fig 2. Resumption of surgery algorithm based on acuity of case and health status of the patients. The healthiest patients with the highest acuity should be preferentially scheduled in the inpatient setting, whereas those with low acuity should be scheduled in the outpatient setting. ASA, American Society of Anesthesiologists; ASC, ambulatory surgery center; HOPD, hospital outpatient department; ICU, intensive care unit; PUI, person under investigation; SNF, skilled nursing facility.