Philippine Association of Thoracic, Cardiac and Vascular Surgeon, Inc. COVID-19 Crisis-Driven Recommendations on Vascular Surgery

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INTRODUCTION:

In light of the current extended enhanced community quarantine for the COVID-19 pandemic, the Philippine College of Surgeons has recommended limiting elective and urgent procedures. The recommendations take into consideration the aggressive nature of the COVID-19 disease, the relatively immunocompromised state of surgical patients, safety of involved healthcare professionals, limitations in hospital resources, and possible staff shortage. In conjunction with this, the Philippine Association of Thoracic, Cardiac and Vascular Surgeons, Inc. (PATACSI), has formulated recommendations for classification and selection of vascular procedures to be performed during this period. These will aid surgeons' decision-making in order to maximize present manpower, minimize both the staff and patients' potential exposure to infection, and direct the necessary resources for the management of critically ill patients during this time.

DISCLAIMER

- The COVID-19 PATACSI vascular recommendations are intended to guide vascular surgeons in planning the best management strategies during the pandemic. These general guidelines are intended to mitigate the spread of the novel coronavirus infection and augment existing institution-based protocols. The recommendations are subject to change with the introduction of additional international and local guidelines for the treatment of COVID-19. It is imperative that we respond responsibly in light of this evolving health problem.

PREOPERATIVE PHASE RECOMMENDATIONS:

1. All vascular surgery patients are presumed to be PUI/PUM and possibly COVID-19 positive, hence, it is mandatory for all members of the operating team including anesthesiologists, nurses, and other OR personnel to wear full Protective Personal Equipment during the procedure. Likewise, donning and doffing of these PPE's should be done based on existing guidelines of the Philippine College of Surgeons During the COVID-19 Pandemic.

2. All patients for vascular surgery should be tested for COVID-19.
    2.1. For emergent and urgent cases, swab testing should be done prior to procedure, if possible.
        2.1.1. Depending on the urgency of the case, it may not be necessary to wait for the results of the test.

        2.1.2. If not done pre-operatively, testing should be done in the immediate post-operative setting, and patients are to be treated as COVID-19 positive cases until proven otherwise.
3. Surgeons should consider postponing elective surgical procedures and consider non-operative management whenever clinically feasible for the patient.

4. Appropriate and timely surgical care should be based on sound surgical judgment, patient risk, and availability of resources and hospital personnel.

5. Triaging of vascular surgery procedures should be done to determine which procedures can be delayed in lieu of the current situation to maximize resources during this pandemic. In doing so, minimizing exposure to the pathogen is also achieved. PATACSI, therefore, classifies cases into Emergent, Urgent and Elective. As such, we recommend performing only Emergent and Urgent cases.
    5.1. Emergent Case – Life-threatening situation which needs immediate surgical intervention. Surgeons should take into consideration the prognosis of patients, especially those in extremis to avoid performing unnecessary surgeries which may not be beneficial to the patient and may further expose the health care workers to the virus.

    5.2. Urgent Case - Procedures that can be done in 24-48 hours to allow risk stratification of the patient for the procedure and possibly re-evaluate necessity of surgery.

    5.3. Elective Case - Cases where the procedure can be delayed until the COVID-19 situation stabilizes

(Please refer to the table below for Triaging/ Classification of Vascular Cases for Surgery)

6. All emergent and urgent cases should have at least a plain Chest CT scan prior to the contemplated procedure to evaluate the COVID-19 status for patients who have either pending or negative swab results. Please be reminded that due to the high false-negative rates (at least 30-50%) of oronasal swab tests for COVID-19, chest CT scan findings related to this disease may be present even with a negative swab result.

7. Prior to admission, the possibility of contracting the infection during the patient's hospital stay must be thoroughly discussed with the patient and his/her family, and an informed consent or waiver must be signed accordingly.

8. With the extension of enhanced community quarantine program, scarcity of resources such as mechanical ventilators and blood products may arise.

    8.1. The availability of mechanical ventilators and oxygen supply must be ensured prior to performing any surgical procedure.

    8.2. Ensure availability of blood products in the facility and ancillary community programs for blood donation. Judicious infusion of blood products is to be observed.

9. Consider the ICU capacity of the hospital and the level of critical care that may be required post-operatively for efficient preparation and resource allocation.

OPERATIVE PHASE RECOMMENDATIONS:

1. The surgical approach which renders less exposure to the healthcare team and the patient is preferred. Consider an approach with a shorter operative time and a technique which will minimize contact, either by droplet or aerosolization, with respiratory secretions of the patient.

2. Review and develop insititutional policies for transporting and managing suspected or confirmed COVID-19 patients in the operating room. COVID patients should be cohorted in a separate location from non-COVID patients.

3. A conscious effort to minimize the number of staff that is exposed to the patient is advocated. Cluster the work that needs to be done on a patient to lessen staff exposure and conserve PPE donning/doffing movements. Restrict non-essential personnel from entering the operating room. We recommend to limit the OR team to the following numbers:
   - Surgeons (including assist) - 2-3 persons
   - Anesthesiologists - 2 persons
   - Nursing staff- 2 persons (scrub nurse and circulating nurse)

4. Surgeons should avoid or minimize use of electrocautery, as the smoke generated may contain viable cells which may be a source of infection. Use a smoke evacuator/ suction if electrocautery use cannot be avoided.

5. Aerosol-generating procedures should only be performed while wearing full personal protective equipment (coverall, goggles, N95 mask, face shield, disposable impermeable gown, double gloves, and shoe cover).

6. Performing surgical procedures in a negative pressure environment is advocated.

POST-OPERATIVE PHASE RECOMMENDATIONS:

1. Post-op patients should be taken to an isolation room for post-anesthesia monitoring and care. However, considering the inavailability of such rooms, the post-anesthesia recovery of the patient may be monitored in the OR suite where the procedure has been done; after which the patient is transported to a designated COVID-19 ward.

RECOMMENDATIONS FOR VASCULAR/DIALYSIS ACCESS FOR COVID-19 CASES:

1. It is recommended that, when feasible, a central venous catheter should be placed for CVP monitoring, venous access for medications and fluids, and possible hemodialysis in cases of acute kidney injury. The use of a hemodialysis catheter during the initial insertion instead of a regular non-HD capable CVC is advised, as this avoids repeated exposure of the surgical staff when the need for conversion to a hemodialysis catheter arises.

2. For in-patients needing vascular access, a triple lumen dialysis catheter is advised, and a double lumen dialysis catheter is recommended for outpatient dialysis access.

3. These are the sites of CVC insertion in order of decreasing preference:
   - Right internal jugular vein (preferred site)
   - Left internal jugular vein
   - Right femoral vein
   - Left femoral vein
   - Subclavian vein

4. The appropriate catheter length should be utilized for the corresponding sites to avoid catheter malfunction:
   - Right IJ vein – 12 - 15cm
   - Left IJ vein – 20cm
   - Femoral vein – 24cm
   - Subclavian vein - 20cm

5. Use of ultrasound-guided venipuncture is highly encouraged to avoid repeated cannulations and complications.

6. Temporary catheters are advised to be placed instead of tunneled catheters. Likewise, the use of grafts and AVF creation should be avoided at this time.

7. Revision and takedown of AVF/AVG should be done on a case to case basis. (Please see table below)

8. Subcutaneous administration of low molecular weight heparin should be considered at prophylactic (100 units/kg/24h) or even therapeutic (100 units/kg/12h) doses even in the absence of catheterization. COVID-19 patients are known to develop hypercoagulable states and LMWH may prevent clot and microthrombus formation during the course of infection.

TRIAGING/CLASSIFICATION OF VASCULAR CASES FOR SURGERY

	EMERGENT	**URGENT**	**ELECTIVE**
AAA*	• Ruptured TAA or AAA • Aneurysm associated w/infection or prosthetic graft infection	• Symptomatic TAA or AAA • AAA > **5.5**cm • TAA >**6cm**	• AAA ≤ **5.5cm** • TAA ≤ **6cm**
AORTIC DISSECTION*	• Acute aortic dissection with rupture or malperfusion	• Symptomatic Chronic Type A or type B • Chronic Type A or Type B >**6cm**	• Chronic Type A or Type B ≤ **6cm**
AORTIC EMERGENCY NOS	• AEF with septic/hemorrhagic shock, or signs of impending rupture		
AV MALFORMATIONS	• Ruptured, actively hemorrhaging AVM		• Non-ruptured, non-hemorrhaging AVM
THROMBOLYSIS	• Lysis, arterial and venous	•	•
BYPASS GRAFT COMPLICATIONS	• Infected arterial prosthesis without overt sepsis, or hemorrhagic shock, or impending rupture	• Revascularization for high grade re-stenosis of previous intervention	• Asymptomatic bypass graft /stent restenosis
CAROTID	• Symptomatic carotid stenosis: CEA and TCAR	• Asymptomatic carotid stenosis >80 for CEA or CAS	• Asymptomatic carotid artery stenosis
MESENTERIC	• Symptomatic acute mesenteric occlusive disease • Mesenteric angio/bypass	• Chronic mesenteric ischemia	

***Aortic Connective Tissue Disease not included.**

	EMERGENT	URGENT	ELECTIVE
DIALYSIS	• Thrombosed or nonfunctional dialysis access • Infected dialysis access • Fistula revision/ takedown for ulceration/ pseudoaneursym • Renal failure with need for dialysis access	• Fistula Revision/ takedown/ ligation for malfunction/ steal/ high output cardiac failure	• AV fistula and graft placement for dialysis (ESRD, CK4, and CK5 only)
PERIPHERAL VASCULAR DISEASE	• Acute limb ischemia • Limb ischemia: Progressive tissue loss, acute limb ischemia, wet gangrene, ascending cellulitis • Fasciotomy for compartment syndrome	• Peripheral vascular disease: Chronic limb threatening ischemia with rest pain or tissue loss	• Peripheral angiograms and endovascular therapy for claudication • Surgical procedures for claudication
PERIPHERAL ANEURYSM	• Peripheral aneurysm, Symptomatic • Femoral or Popliteal aneurysm, Symptomatic • Pseudoaneurysm Repair: rapidly expanding, complex • Symptomatic non-aortic intra-abdominal aneurysm	• Peripheral pseudoaneurysm, asymptomatic	• Femoral or popliteal aneurysm, asymptomatic • Asymptomatic non-aortic intra-abdominal aneurysm

	EMERGENT	URGENT	ELECTIVE
THORACIC OUTLET SYNDROME		• Symptomatic venous TOS with acute occlusion and marked swelling • Thoracic Outlet Syndrome, arterial with thrombosis • Thoracic Outlet Syndrome, venous with thrombosis	• Thoracic Outlet Syndrome, Neurogenic • Thoracic Outlet Syndrome, Venous
TRAUMA	• Traumatic injury with hemorrhage and/or ischemia		
VENOUS	• Acute iliofemoral DVT with phlegmasia	• IVC filter placement • Massive symptomatic iliofemoral DVT in low risk patient	• IVC filter removal • Procedures for Ulcerations secondary to venous disease • Asymptomatic May Thurner syndrome • May Thurner without thrombus • Varicose veins, GSV ablations; • Vein excision/ phlebectomy; • Vein sclerotherapy

	EMERGENT	URGENT	ELECTIVE
WOUNDS/ GANGRENE/AMPUTATION	• Amputations for infection/necrosis (TMA, BKA, AKA) • Lower extremity disease with non-salvageable limb (amputation)	• Deep Debridement of Surgical wound infection or necrosis • Amputations for infection/necrosis (toes) • Gangrene/Significant Ulcer >2cm • Wound Debridements	•
IMPLANTED VASCULAR ACCESS DEVICE		• Port for immediate infusion needs (for non-COVID19 patients only) • Port removal for infection	• Non-infected port removal

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