PJSS Vol. 75, No. 1, January-June, 2020

PJSS PHILIPPINE JOURNAL OF SURGICAL SPECIALTIES

PATACSI COVID-19 Crisis-Driven Recommendations on Vascular Surgery

Nelson S. Bambalan, MD; Arnel Q. Ayro, MD; Bernard M. Baluga, MD; Rafael Angelo S. Fernandez, MD; Lara F. Lapeña-Kare, MD; Pio V. Purino Jr., MD; Aquileo C. Rico, MD; Emmanuel C. San Pedro, MD; Ad Hoc Committee for Vascular Surgery

Philippine Association of Thoracic, Cardiac and Vascular Surgeons, Inc.

Introduction

As we are facing an extended enhanced community quarantine for the COVID-19 pandemic, the Philippine Association of Thoracic, Cardiac and Vascular Surgeons, Inc. is releasing a surgical triage recommendations on vascular surgery to cut down on elective surgical procedures. This surgical triage along with other guidelines will help surgeons in their decision making for their patients to avoid contagion of the virus and direct the necessary resources of the hospitals needed for the management of critically-ill patients during the COVID-19 pandemic. We, as surgeons, have the moral obligation to assist in flattening the COVID-19 curve.

Disclaimer

- The COVID-19 PATACSI vascular recommendations are intended to guide vascular surgeons plan their course of action, the best way possible, during this time of pandemic. These are general guidelines intended to mitigate the spread of coronavirus and augment existing institution based protocols. The recommendations are subject to changes with the introduction of additional international and local guidelines in the treatment of COVID-19. It is important that we respond responsibly with this evolving health problem.

Preoperative Phase Recommendations:

1. All vascular surgery patients are presumed to be PUI/PUM and COVID-19 positive, hence, it is mandatory for all members of the operating team including anesthesia, nurses as well as 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 COVID-19 Pandemic.

2. All patients for vascular surgery should have COVID-19 testing done.

    2.1. For emergent and urgent cases, swab testing should be done prior to procedure, if possible.

        2.1.1. No need to wait for the result pre-operatively, depending on the urgency of the case.

        2.1.2. Testing should be done in the immediate post-operative setting, if not done pre-operatively.

3. Surgeons should consider postponing elective surgical procedures and should consider non-operative management whenever clinically appropriate for the patient.

4. Appropriate and timely surgical care should be based on sound surgical judgment, 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 contagion is also achieved. The Society, therefore, would classify cases as to Emergent, Urgent and Elective cases. As such, we further recommend performing only Emergent and Urgent cases.

    5.1. Emergent Case - Life threatening situation which needs immediate surgical intervention. Surgeons should also take into consideration the prognosis of patients especially those in extremis so as to avoid performing unnecessary surgeries that may further expose the health care workers to the virus.

    5.2. Urgent Case - Procedures that can be done in 24-48 hours so as to give time to re- stratify the risk of the patient for the procedure.

    5.3. Elective Case - Cases where the procedure can be delayed indefinitely.

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

6. All emergent and urgent cases should have a Chest CT scan prior to the contemplated procedure to have at least a knowledge of the probable COVID-19 status of the patient pending result of an appropriate PCR test.

7. Consent should be taken beforehand explaining the possibility that a patient may contract the virus during his/her hospital stay.

8. With the extension of enhanced quarantine program, scarcity of resources like mechanical ventilators and blood products may develop.

    8.1. Check for availability of mechanical ventilators and oxygen supply.

    8.2. Ensure availability of blood products in the area and support community programs for blood donation. Observe judicious infusion of blood products.

Operative Phase Recommendations:

1. The surgical approach which renders the team less exposed to the patient is preferred. Consider an approach with less operative time to lessen exposure to patient and possible risk of contamination from the virus.

2. Develop a hospital policy for managing patients in the operating room with known or suspected COVID-19 infection. COVID patients should be cohorted in a separate location from non-COVID patients as much as possible.

3. A conscious effort to minimize the number of staff that is exposed to the patient is advocated. Cluster work that needs to be done for a patient to minimize patient room entry/exits and need for PPE donning/doffing. Restrict non-essential personnel from the operating room. We recommend to limit the OR team to the following numbers:
    - Surgeons including assist - 2-3 persons
    - Anesthesia personnel - 2 persons.
    - Nursing personnel- 2 persons

4. Surgeons should avoid or minimize use of electrocautery as the smoke generated may contain viable cells which is a risk for possible infection. Use smoke evacuator if electrocautery 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. We also advocate performing surgical procedures in a negative pressure environment if feasible.

Post-Operative Phase Recommendations:

1. When able, post-op patients should be taken to isolation room for monitoring and care however, considering the lack of such rooms, recovery of the patient can be monitored in the OR suite where the procedure has been done after which the patient is then transported to designated suspected, probable, or confirmed COVID ward.

2. Consider ICU capacity of the hospital and the critical care needed by the patients.

Recommendations for Vascular/Dialysis Access:

1. It is recommended that when feasible, a dialysis catheter should be placed even in cases for CVP monitoring and peripheral vascular access as this patient may develop AKI needing temporary dialysis treatment. Likewise, this would minimize surgeon exposure from repeated surgical procedures.

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. Site of CVC in order of decreasing preference:
   - Right IJ (preferred site)
   - Left IJ
   - Femoral (Right)
   - Femoral (Left)
   - Subclavian - last option

4. The appropriate catheter length should also be utilized for the different site aforementioned to avoid catheter malfunction.
   - Right IJ - 15cm
   - Left IJ -20cm
   - Femoral catheter - 24cm
   - Subclavian 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 use of grafts and creation of AVF should be avoided at this time.

7. Revision and takedown of AVF/AVG should be done in 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) dose even in the absence of catheterization. COVID-19 patients are known to develop hypercoagulable state and LMWH may block clot formation and prevent microthrombus formation in the early phase of infection.

Triaging of Vascular Cases for Surgery:

	EMERGENT	URGENT	ELECTIVE
AAA	• Ruptured TAAA or AAA • Aneurysm associated w/infection or Prosthetic graft infection • TBAD with malperfusion	• Symptomatic TAAA or AAA • AAA > 6 cm • TAAA >7cm	• AAA ≤ 6cm • TAAA ≤ 7cm
PERIPHERAL ANEURYSM	• Peripheral aneurysm, Symptomatic • Femoral or Popliteal aneurysm, Symptomatic • Pseudoaneurysm Repair: rapidly expanding, complex • Symptomatic non-aortic intra-abdominal aneurysm	• Peripheral aneurysm, Asymptomatic	• Femoral or Popliteal aneurysm, Asymptomatic • Asymptomatic non-aortic intra-abdominal aneurysm
AV MALFORMATIONS			• AVMs
AORTIC DISSECTION	• Acute aortic dissection with rupture or malperfusion		
AORTIC EMERGENCY NOS	• AEF with septic/hemorrhagic shock, or signs of impending rupture		

	EMERGENT	URGENT	ELECTIVE
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	• Carotid asymptomatic >80 for CEA or CAS	• Asymptomatic carotid artery stenosis
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	• AV fistula and graft placement for dialysis (ESRD, CK4, and CK5 only)
MESENTERIC	• Symptomatic acute mesenteric occlusive disease • Mesenteric angio/bypass	• Chronic mesenteric ischemia	
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 - rest pain or tissue loss	• Peripheral Angiograms and endovascular therapy for Claudication • Surgical Procedures for Claudication
THROMBOLYSIS	• Lysis, Arterial and venous	• URGENT	

	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
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	
PORT-A-CATH		• Port for immediate infusion needs • Port removal for infection	• Port Removal

References

1. American College of Surgeons. 2020. COVID-19: Considerations For Optimum Surgon Protection Before, During and After Operation. [online]
   Available at: https://www.facs.org/covid-19/clinical-guidance/surgeon-protection [Accessed 14 April 2020].
2. American College of Surgeons. 2020. COVID-19: Elective Case Triage Guidelines For Surgical Care. [online]
   Available at: https://www.facs.org/covid-19/clinical-guidance/elective-case [Accessed 14 April 2020].
3. Vascularsociety.org.uk. 2020. COVID-19 Virus And Vascular Surgery – Vascular Society. [online] Available at: https://www.vascularsociety.org.uk/professionals/news/113/covid19_virus_and_vascular_surgery [Accessed 14 April 2020].
4. ResearchGate. 2020. Considerations On The Use Of Vascular Access Devices In Patients With COVID-19 (And Some Practical Recommendations). [online]
   Available at: https://www.researchgate.net/publication/340492337_Considerations_on_the_use_of_vascular_access_dev ices_in_patients_with_COVID-19_and_some_practical_recommendations
   [Accessed 16 April 2020].
5. England.nhs.uk. 2020. Clinical Guide For The Management Of Vascular Surgery Patients During The Coronavirus Pandemic. [online]
   Available at: https://www.england.nhs.uk/coronavirus/wp-content/uploads/sites/52/2020/03/specialty-guide-management-of-vascular-surgery-patients-v1-20-march-2020.pdf
   [Accessed 16 April 2020].
6. 2020. [online] Available at: https://www.researchgate.net/publication/340492337_Considerations_on_the_use_of_vascular_access_dev ices_in_patients_with_COVID-19_and_some_practical_recommendations
   [Accessed 16 April 2020].
7. Vijayan, A., American Society of Nephrology 2020. Practical Aspects Of Renal Replacement Therapy In Hospitalized Patients With COVID-19 With AKI Or ESRD. [online] Asn-online.org. Available at: http://www.asn-online.org/ [Accessed 2 April 2020].
8. Working Group of 2019 Novel Coronavirus, Peking Union Medical College Hospital. Diagnosis and clinical management of Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) infection: an operational recommendation of Peking Union Medical College Hospital (V2.0). Emerg Microb Infect. 2020;9:582–5.
9. Taylor & Francis. 2020. Clinical Observation And Management Of COVID-19 Patients. [online]
   Available at: https://www.tandfonline.com/doi/full/10.1080/22221751.2020.1741327 [Accessed 16 April 2020].