ROUNDTABLE DISCUSSION

ESRD in the Age of the COVID-19 Pandemic

Managing patient needs, coagulation concerns, telemedicine use, and a look at what we can learn from the pandemic.

WITH DIRK M. HENTSCHEL, MD; KAREN WOO, MD, MS, DFSVS, FACS; AND PRABIR ROY-CHAUDHURY, MD, PHD, FRCP (EDIN)

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ENSURING SAFETY

How would you summarize your group's approach to managing chronic kidney disease (CKD) and end-stage renal disease (ESRD) patient care needs versus potential COVID-19 exposure? How have you decided which patients need care right away?

Dr. Hentschel: Surgical and interventional providers in our group practice dialysis access care as their primary activity. We have followed the joint Vascular Access Society of the Americas–American Society of Diagnostic and Interventional Nephrology guidelines, which prioritize maintenance of the dialysis access options in use.[1] We are also continuing to fast-track access creation (peritoneal dialysis [PD] or hemodialysis catheters, autogenous and prosthetic access creation) where indicated. We were fortunate that our pre-, post-, and periprocedural spaces allowed us to physically separate non–COVID-19 and COVID-19 patients. In addition, our hospital instituted strict personal protective equipment (PPE) guidelines early on and has been able to provide the appropriate level of protective gear.

Dr. Woo: At the University of California, Los Angeles (UCLA), we have been performing only urgent and emergent cases from mid-March up until around mid-May. We have considered new fistula and graft creations to be nonurgent, and we have taken care of all other acute access issues, including acute occlusions, ruptures, and infections that require intervention.

Dr. Roy-Chaudhury: My general comment in the context of vascular access is that it's always a risk-benefit ratio

dependent on (1) the patient, (2) the vascular access need, and, most importantly, (3) the level of COVID-19 cases in that specific community. So, in the case of the surge in New York City, I would say it's okay to focus on making sure that everyone has an access that works, which would mean thrombectomies and tunneled dialysis access, ideally in outpatient centers. However, in a more stable situation, as in North Carolina for example, the patient and the vascular access need are the most important. Ideally, using outpatient vascular access centers, especially for patients > 65 years, would make a lot of sense.

What has been the hardest decision you've had to make in this regard?

Dr. Hentschel: Clinically, many patients with active COVID-19 infection display hypercoagulability. Although thrombectomies are part of our daily clinical activity, we wondered if thrombus formation in otherwise asymptomatic patients was, in fact, a presenting COVID-19 symptom. There has not been sufficient testing available to explore this further; looking back, none of our staff experienced a work-related COVID-19 infection.

Dr. Roy-Chaudhury: The hardest decision has been accepting that I said and believe that catheters are okay in a surge situation!

Dr. Woo: We have not encountered any really difficult decisions in this population.

What safety measures have you implemented to protect yourself, your team, and patients who require care?

Dr. Roy-Chaudhury: Dialysis units have been a lot more stringent and proactive in implementing safety measures than most other places, and these measures should be adopted by the vascular access centers (eg, temperature taking, questionnaires, gowning, masks). I think we also need negative COVID-19 tests within 24 to 48 hours for everyone who will undergo a procedure. In my mind, we also need to ultimately test the staff, both for their peace of mind and patients' safety.

Dr. Woo: The most important safety measure has been trying to keep patients at home. UCLA has adopted universal masking. Everyone who comes to campus is screened with a temperature check, asked questions about their symptoms, and given a mask. Any patients undergoing any procedure must have a negative COVID-19 test within 48 hours. Any patients undergoing a procedure without a negative COVID-19 test within 48 hours are treated as patients under investigation, and we follow the protocol for increased PPE and use the procedure/operating rooms dedicated to COVID-19.

Dr. Hentschel: In addition to a separate procedure space, our technologists separated into two teams that covered separate days. Had one team been unknowingly exposed to a COVID-19–positive patient, the other team could continue to work. The hospital supported the slight increase in work hours, and the staff was willing to work longer hours on the days they were on.

COAGULATION CONCERNS

Early anecdotal and now published reports have described prothrombotic conditions associated with COVID-19. What concerns does this raise for you specifically in patients on dialysis?

Dr. Hentschel: We wondered about an increase in thrombectomies and hope to adopt testing for COVID-19 in patients presenting with complete or partial access thrombosis when sufficient testing with fast turnaround is available.

Dr. Roy-Chaudhury: To me, it brings to light how little we know about COVID-19, not just in the acute setting—where the answer is more heparin, citrate anticoagulation, or to use sustained low-efficiency dialysis when you need only 8 hours of anticoagulation every day instead of 24 hours as in continuous renal replacement therapy—but more importantly, in the chronic outpatient hemodialysis unit where the problems (coagulation and others) are still unknown regarding outpatient hemodialysis patients whose COVID-19 is mild enough to not need hospital admission or in those who have been discharged from the hospital.

How does this affect your decision-making as to preventive measures, surveillance, and therapy selection if you need to treat a clotted access?

Dr. Roy-Chaudhury: I've discussed some of these issues previously, but my overall comment is that we desperately need more data, more research, and, most importantly, a registry of hemodialysis patients who have had COVID-19.

Dr. Hentschel: We already use anticoagulation with heparin during most interventions, but we have used slightly higher doses when we suspect or know about COVID-19 infection (eg, 4,000 units of heparin instead of 2,000 units). We are not in dialysis units directly to

monitor. During follow-up visits for physical exams, we have a lower threshold for evaluating needle insertion site aneurysm for wall-adherent thrombus, and we have initiated anticoagulation for 1 to 3 months using direct oral anticoagulants.

Lastly, our standard approach for treating a clotted access is to use systemic heparinization with local mechanical maceration in the access and aspiration of thrombus fragments, followed by instillation of tissue plasminogen activator. We have seen a slight increase in large-volume thrombus and use a modified mini-incision thrombectomy approach.

Dr. Woo: We treat clotted access the same way we always have. Before the pandemic, we would anticoagulate after opening up a clotted access in a patient. So, we do the same thing now. We have not adopted any preventive measures for thrombosis or additional surveillance/monitoring, and we have not perceived an increase in the incidence of permanent access thrombosis during the pandemic. We discussed this during the Society for Vascular Surgery (SVS) town hall on dialysis access,[2] and the other panelists agreed.

ACCESS CREATION

Whether due to practice restrictions or efforts toward keeping patients out of the hospital during this time of increased risk, has your decision-making/algorithm for access creation changed at all?

Dr. Woo: We postponed new fistula and graft creations that were scheduled but are starting to do them again. The surgeons don't do catheters here—those are done in radiology and that has continued as needed.

Dr. Hentschel: Our group has a long-standing goal to create relatively low-flow accesses in the forearm, usually radial artery–based. They often require slightly longer maturation periods than a straight upper arm brachiocephalic autogenous access. We also aim to present to the dialysis unit accesses with a long usable segment and will perform side branch ligations and lipectomies in the forearm and upper arm autogenous accesses to achieve this goal. These additional procedures pay off in the long run, but they extend the maturation period. During the 6 weeks of the most intense COVID-19 activity at our center, we deferred several revisions in pre-ESRD patients with a stable estimated glomerular filtration rate. For patients who initiated with a tunneled catheter, we deferred access creation for 2 to 6 weeks to allow the COVID-19 occupation in the hospital to decrease. Similarly, COVID-19–positive patients would receive the procedure with the lowest risk of aerosolizing (eg, a tunneled catheter with local anesthesia instead of intubation for dialysis access creation). There are changes in practice that were discussed but did not need to be realized, such as the insertion of PD catheters under ultrasound and fluoroscopic guidance without general anesthesia.

TELEMEDICINE

How have you incorporated telemedicine into your practice?

Dr. Woo: UCLA has significantly increased the use of telemedicine.

Dr. Roy-Chaudhury: Yes, yes, and yes! This is a silver lining of this COVID-19 era that we really need to capitalize on. However, as we do so, we also need to do our very best to minimize disparities.

Dr. Hentschel: We have used telemedicine, including video and sound transmission, to triage patients from rehab facilities for outpatient endovascular procedures.

What have been the biggest challenges in implementing telemedicine?

Dr. Hentschel: Although certain types of access dysfunction can be identified through telemedicine, evaluation for access creation or revision often requires a real physical exam, possibly assisted by ultrasound evaluation. During the COVID-19 peak, we were fortunate to maintain a joint access clinic with the access surgeons and endovascular proceduralists in attendance. This allowed an urgent evaluation of patients outside of an emergency room setting.

Dr. Woo: As vascular surgeons, much of our patient population is older and has difficulty making the technology work. Oftentimes, we have to involve their family members or caregivers to help them. However, once they get it to work, our patients are very grateful for the ability to have a visit without needing to leave their homes and possibly expose themselves to the virus.

Dr. Roy-Chaudhury: The biggest challenges have been technology, authorized platforms, and patients who are either not able to do it medically or are just limited in terms of using the technology. I strongly believe that there is a huge opportunity for innovative and simple technologies that could address these issues, and the authorized platform and Health Insurance Portability and Accountability Act issues have been or are being resolved at warp speed.

When restrictions due to COVID-19 are lifted, how do you think telemedicine can and should be implemented? What have you learned about its capabilities during this time?

Dr. Hentschel: Communication between dialysis units and providers, including the transmission of access photos, is an important element of dialysis access care to reduce the number of appointments to which a dialysis patient must travel. Also, it often allows for correct triage for urgent interventions, such as skin ulceration with wet scabs. Our group did this prior to COVID, but going forward, we expect that there will be a more systematic effort to allow information in and improve the communication out—for instance, for maps drawn on a patient's access to guide needle insertions.

Dr. Roy-Chaudhury: My sincere hope is that we will continue to stay at the same level or even increase the use of telemedicine. At the same time, we also need to identify which patients would most benefit from this. Again, we need to do everything possible to make sure that we reduce disparities in care as we do this, not increase them. Perhaps this is also a great opportunity for human factors engineering.

Dr. Woo: Telemedicine is very useful when it saves a patient from needing to come to the hospital. Particularly in the vascular surgery population where a significant proportion of patients are not independently mobile, it makes having a visit much easier for them. This is particularly useful for postoperative visits where we typically do a wound check and make sure the patient feels well. At the same time, we use imaging extensively in vascular surgery; if a patient needs an ultrasound or another type of imaging for which he or she needs to come to the hospital anyway, then we would see them in person. Overall, patients love being able to visit with us from the comfort of their homes and not have to drive in, park, wait, and deal with all the challenges of coming to the office.

THE BIG PICTURE

What can be learned from how practices have adapted and protocols that can be put in place in the event of second surges or future events?

Dr. Roy-Chaudhury: There is a huge opportunity in all of this to improve virtual care. I also think that COVID-19 has forever changed our awareness of the importance of public health and infection control, and I think there will be major ancillary benefits from this, such as less morbidity and mortality from the coming flu season.

Dr. Woo: UCLA has done a great job of putting together a plan of hospital utilization, with multiple tiers of how we would handle levels of the pandemic. This plan could be applied to any type of disaster situation that stresses the hospital system. We have also learned a lot about reusing and conserving PPE. Again, these strategies could be applied to any type of disaster situation.

Dr. Hentschel: Systems must be developed and adjusted in iterative fashion depending on the availability of "staff, stuff, and space," as Paul Farmer said. This is largely driven by local factors, for instance, availability of PPE, overall hospital policy regarding testing, and procedural space. It appears clear that providing care in an ambulatory fashion rather than admitting a patient reduces the amount of PPE used, decreases exposure opportunities for patients and staff, and has at least equivalent clinical outcomes.

Has the pandemic highlighted any opportunities for further unification of the various specialties that care for patients with CKD/ESRD?

Dr. Hentschel: Short lines of communications are key to success.

Dr. Woo: In the SVS town hall, many panelists discussed the importance of working together with nephrologists to prioritize access needs. This is something that should be occurring all the time, but it is especially important when resources are limited by something like a disaster.

Dr. Roy-Chaudhury: I think that COVID has taught us that we all need to work together locally, nationally, and globally. Each specialty involved in vascular access needs to learn from the other specialties involved so that we can provide the best possible individualized care to our patients. Maybe the virus will bring us all together, locally, nationally, and globally. ■

1. American Society of Diagnostic and Interventional Nephrology. Maintaining lifelines for ESKD patients – ASDIN and VASA joint statement. Accessed May 18, 2020. https://cdn.ymaws.com/www.asdin.org/resource/resmgr/covid_19/Maintaining_lifelines_ASDIN_.pdf
2. SVS Vascular. SVS town hall #6. Youtube page. Accessed May 18, 2020. https://youtu.be/i1XYMkpmaDk