



Oncovascular Surgery and the Making of the Oncovascular Surgeon

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Patients diagnosed with tumors that are located in vicinity of the major axial vessels are inconsistently managed because they are often considered unresectable. The management of these patients remains at the periphery of various established sub-specialties that are prevalent under the current medical specialty. These patients are required to be treated by an oncovascular surgeon. This article discusses some key points in understanding the reasons for establishing a specialty branch, oncovascular surgery, to treat complex tumors with vessel invasion. This article also reviews important issues about leadership and how to train and educate oncovascular surgeons.

Key Words: Oncovascular, Vascular encasement, Oncovascular surgeon

Received September 27, 2019

Revised November 26, 2019

Accepted December 4, 2019

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Vasc Specialist Int 2019;35(4):189-192 • <https://doi.org/10.5758/vsi.2019.35.4.189>

INTRODUCTION

Despite increasing areas of subspecialization in medicine and surgery, some pathologies continue to lie on the margins of multiple specialties. That is, there is no single physician that is dedicated to the in-depth studying practice of these pathologies. A clear example is the treatment of tumors that lie close to major axial vessels. In the previous issue of *Vasc Specialist Int*, Han et al. [1] and Han [2] made the effort to direct the spotlight on the relevance of “oncovascular surgery (OVS)”. These patients are at the margin of four established subspecialties (Fig. 1), and their management requires particular knowledge from each subspecialty without the need to study the whole spectrum. Well-organized collaborations between each subspecialty would make the management of such patients far more successful and will result in less morbidity than the current situation. These subspecialties include surgical oncology, vascular surgery, microvascular surgery, and transplant surgery. Multidisciplinary teams are required for the creation

of optimal treatment plans for patients with complicated malignancies.

WHO SHOULD TAKE THE LEAD?

The answer to this difficult and complex question will vary from one institution to the next and will likely depend on the resources available to each. The treatment of oncologic diseases requires cooperation from different specialties; the choice of a team leader is less about territory or competition and more about forming effective and efficient teams through leadership and enthusiasm. However, this raises several important questions. Should the team leader be the one who examines the patient in the clinic? Should it be the physician who calls the need for surgical management? Who is going to lead the primary surgery and head postoperative care? These questions highlight the need for the creation of OVS as a subspecialty to offer proper and consistent services for these patients. Oncovascular surgeons will be educated and trained with material that

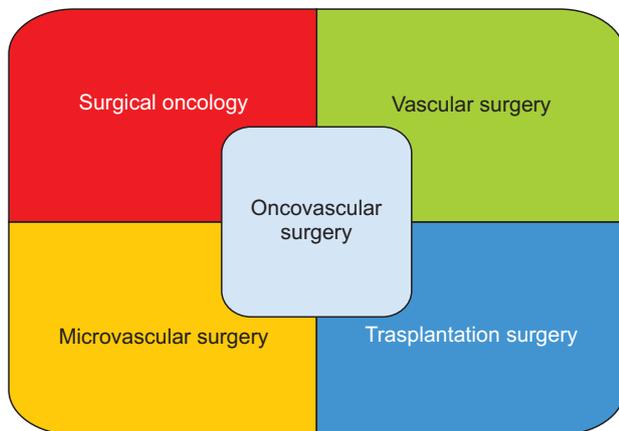


Fig. 1. Understanding oncovascular surgery and its place in relation to current and prevalent subspecialty systems: a hybrid subspecialty, an intersection zone.

covers the four subspecialties mentioned above and shall take on the role of a strategist more than anything else. Oncovascular surgeons will be involved in the total care of the patient from planning, execution, and post-treatment care while coordinating the multidisciplinary team to meet the demands of the different components of the procedure.

A competent oncovascular surgeon should have a passion to serve advanced cancer patients, not a drive to possess or dominate the field. There are several combinations when creating a team for oncovascular surgery; The potential members of the team include vascular, cancer, and oncovascular surgeons as well as reconstructive microsurgeons. Current treatment modalities for oncovascular diseases involve consultations with cancer and vascular surgeons for the planning and execution of surgical interventions. However, this approach is limited in that it frequently leaves patients with no alternative treatment options. Furthermore, the management of such patients has reportedly been inconsistent, with no regular follow-up consultations due to the presence of other impeding factors. These are the limitations we wish to change to work *towards more consistent management of these patients and towards making inoperability a thing of the past*. Optimal therapy for advanced cancer patients with tumor vascular invasions requires at least one surgeon with an overview of the disease pathology and required operative technique to oversee surgical management. Considering the complexity of these surgeries, this surgeon should be the oncovascular surgeon.

THE ONCOVASCULAR SURGEON: PRIMARILY A VASCULAR SURGEON OR A CANCER SURGEON?

It matters little whether an oncovascular surgeon started

as a cancer surgeon or as a vascular surgeon as the set of skills and knowledge required by this subspecialty can be acquired later on regardless of the physician's starting specialty, provided that the candidate dedicates the needed time and energy to receive appropriate surgical exposure. The more important requirement for an oncovascular surgeon is the passion to serve patients; starting the program is not the problem, it is in finishing it.

HOW TO USE THE TIME OF THE ONCOVASCULAR SURGEON?

Whether they started as vascular surgeons or as cancer surgeons, an oncovascular surgeon will usually practice other procedures in addition to OVS. The authors believe that oncovascular surgeons will generally be more useful in current practice serving cancer patients rather than treating aneurysmal diseases and atherosclerosis; the continuous technological developments in these fields create depth that is out of the scope of OVS. The authors would generally recommend to allocate oncovascular surgeons to surgical oncology along with the adjoining field of reconstructive microsurgery because the skills, mindset, and knowledge they will gain in this arrangement will be tremendously useful in their development. As another equally efficient alternative when available; the oncovascular surgeon will be useful in a hospital in which open aneurysm surgeries, vascular trauma operations, and management of infected grafts are frequently performed by dedicated vascular surgeons.

TRAINING AND EDUCATION PROGRAMS FOR THE ONCOVASCULAR SURGEON

The authors suggest the following training program for OVS. First, aspiring oncovascular surgeons must learn general surgical oncology to allow them to be proficient with procedures concerning all parts of the body. Second, they must receive rigorous training in open vascular surgery along with a general introduction to endovascular surgery. Third, because pediatric oncovascular practices will require proficiency with reconstructive microvascular surgery, the training of future oncovascular surgeons must cover important techniques in this field. Finally, oncovascular surgeons must also be proficient in transplantation surgery. Complete details regarding the training programs involving the aforementioned fields are beyond the scope of this conceptual article and require a dedicated document. At the onset, the proposed program may appear to be so labor-intensive to the point of being impractical. During the early years of the program, this may have been true. However, hav-

ing experienced the program as described, the author can confidently claim that it can be structured in a manner that is far less labor-intensive without sacrificing efficiency. It is important to note that the education of cancer surgeons in basic vascular surgery techniques that require dissection and handling of blood vessels, such as lymphadenectomy procedures, should not be confused with *training oncovascular surgeons*. Similarly, programs that offer cancer surgery training to vascular surgeons as a method to increase their skill of different anatomical fields is different from a program that trains oncovascular surgeons specifically.

Another critical limitation regarding the practicality of the proposed training program is that the required case-load and variety are only available in a few large-volume centers; there are several proposed methods to overcome this. First, most of the training can be outsourced in two manners. The basic elements of OVS mentioned above can be taught in local training hospitals with the intent to focus on oncovascular practices towards the end. With this, an aspiring oncovascular surgeon can be assigned to a 1-year fellowship in a transplant unit; this setup has an additional advantage to the unit in that they do not have to eventually provide a permanent job to the aspiring oncovascular surgeon, which is a win-win situation in a sense. Additionally, laboratory training can help mitigate large distances in training when properly designed. Second, the education required for OVS training can be centralized to a few dedicated centers. These centers must take the responsibility of educating these surgeons and offering them opportunities to transfer to other centers to start a new program of oncovascular surgery wherever needed.

HOW SHOULD ONCOVASCULAR SURGEONS OPERATE WITHIN THE CURRENT SYSTEMS? WHERE WILL THESE PATIENTS BE SERVED?

It will be hard to convince surgeons from different specialties to refer every single patient with a tumor in the vicinity of major vessels to a specialized oncovascular unit. Oncovascular surgeons will likely have to navigate between different units and centers for their procedures; they might have a dedicated unit but this will not receive the same number of referrals as it would during invitations for patient co-management with different teams and units. However, this pattern does not compromise the management of the patient and therefore there is no need to change it. A consensus needs to be reached that the aim of oncovascular surgery as a subspecialty is to serve all patients consistently; it is not to prove a point by establishing an independent unit despite knowing that patients might be underserved.

The strict sequestration of oncovascular surgeons in a closed unit, as a means of forcing patient referrals, is not productive in the author's opinion. First, we need to acknowledge the presence of oncovascular surgery. Second, it must be accepted that the development of OVS will be pushed forward significantly with the continued training of oncovascular surgeons. Third, a dedicated unit must be established to manage patients within or outside as deemed necessary and with absolute flexibility. If in the future, the situation evolves where most patients are appropriately and quickly referred to the unit, then that would be excellent. However, this need not be sought with intense eagerness in my opinion.

Oncovascular surgeons should, even in their dedicated unit, be open to receive help from other surgical specialties.

Oncovascular surgeons will need to be very open-minded physicians as the capability to conform to different systems is a necessity; what they should never fail to do is to manage the general strategy of the operation.

Otherwise, everything else is negotiable and interchangeable, and different setups will present with varying degrees of efficiency. However, none of them are as crucial to the success of the surgery as the general strategy—the strategy that the oncovascular surgeon must lead without fail.

The authors are a reductionist in my way of thinking; surgery to me is not much different from construction engineering or mathematics. We have been taught early in our practice that there is a universal formula for all oncovascular surgeries that applies everywhere else in the human body. OVS is a single strategy that has been given different names depending on the region. However, the details of this are beyond the scope of this article. This article was written only to offer the readers a brief insight into the approach for the making of an oncovascular surgeon; perhaps the most important component of OVS.

CONCLUSION

Oncovascular surgery needs the creation of a breed of oncovascular surgeons trained in specific aspects of oncology, vascular surgery, microvascular surgery, and transplantation surgery; only then will they emerge as oncovascular surgeons. These surgeons can start from any of the aforementioned disciplines before proceeding to study the other, or they may study two or more at the same time. The important thing is to fulfill at least the first two before the end. Passion and dedication to serving cancer patients is an indispensable requirement in any aspiring oncovascular surgeon. It is a surgery that one does by his heart and not only by skill or knowledge, as the latter will come spontaneously and generously when one possesses the former. Fi-

nally, a dedicated oncovascular unit is a welcome addition, and managing patients in this unit will be healthier to the overall aim of oncovascular surgery.

On this occasion, the authors will quote Steven Weinberg, a theoretical physicist and the author of the book “The discovery of subatomic particles” [3]. “...Speaking of my own experience, most of what I learned about physics and mathematics. I have learned only when there was no alternative, when I simply had to learn something in order to get going with my own work... This sort of book may be closer to the actual education of working scientists than many of the books and courses we design for students who specialize in science.”

CONFLICTS OF INTEREST

Kareem Sallam has been a member of the editorial board of Vasc Specialist Int since 2019.

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Concept and design: HK, KS. Writing the article, final approval, overall responsibility: KS.

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