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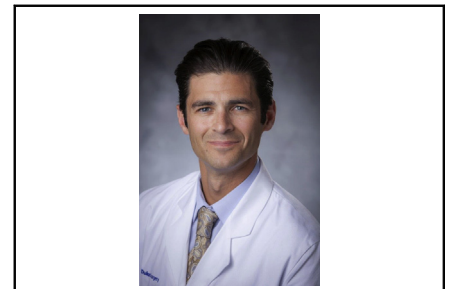
Commentary: The benefits of a little forethought

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Technological innovation is most elegant when it serves to facilitate. As I write this, my 2 oldest children sit at a desk in my home being tutored in math by a man on the other side of town. Ahh, the wonders of Zoom, Skype, and so on, and their ability to allow for my boys to advance their mathematical knowledge. Incidentally, did you know that when Sir Isaac Newton was sent home from Cambridge to the family estate during the Great Plague of London in 1665 (in that previous era of “social distancing”), he essentially developed the foundation for calculus? I can assure you that is not happening at my “estate.”

In the report by Lee and colleagues,¹ they have recounted their experience in performing bilateral lung transplantation in 2 patients with Kartagener syndrome. One fundamental key to their intraoperative success was their use of the 3-dimensional reconstruction of each patient’s pulmonary arterial anatomy to assist in operative planning. As they clearly stated, understanding the anatomy before transplantation was fundamental to achieving an optimal outcome. Thus, the advances in technology facilitated a concrete understanding of an atypical situation and produced positive results.

Certainly, when it comes to performing transplantation in these rare patients, an appreciation of the variability in the pulmonary artery anatomy is a necessity preoperatively. Intraoperatively, this requires that dissection be undertaken with this variability in mind such that the length of the recipient pulmonary artery is maximized. Back table preparation must also emphasize preserving as much of the



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CENTRAL MESSAGE

Advances in technology facilitate preoperative planning and help achieve optimal outcomes in unique clinical situations.

donor length as possible. Finally, should there be any anticipation of the need for an additional conduit, the procuring team should be alerted and advised to return with some additional donor aorta. The use of donor aorta for reconstruction of the left main pulmonary artery in cases of pulmonary artery aneurysm has been well described with excellent results.²

Because patients with Kartagener syndrome are afflicted by significant bronchiectasis with the subsequent accumulation of profound airway secretions, intraoperative ventilation can be an issue during the initial dissection. In addition, others have found placement of double-lumen tubes difficult in these patients.³ In these cases, the use of central or peripheral venoarterial extracorporeal membrane oxygenation will obviate the need for double-lumen tubes, because extended periods of interrupted ventilation will be possible during hilar dissection, and more aggressive intraoperative bronchoscopy can be performed through a large standard endotracheal tube to clear tenacious secretions.

I congratulate the authors on their success with the transplant of these 2 recipients.¹ Once again, their case report has emphasized that what we do before to prepare has immeasurable benefits, especially when faced with unique situations. Who knows, perhaps the virtual tutoring conducted at my house will yield an eventual winner of the Fields Medal. Okay, probably not, but, then again, you never know what a little forethought will produce.

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