Appropriation is the mother of invention

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Keeping an open mind with regard to repurposing old techniques promotes innovation.

Central Message

Borrowing aspects of operations to be applied for different physiologic result than intended can provide novel solutions to complex clinical problems.

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Keith Reemtsma was legendary for reminding junior faculty that “every good idea you have was previously described by the Germans in the 19th century” (K. Reemtsma, personal communication). Although he meant this (as he intended many such aphorisms) to be amusingly provocative, he also promoted the notion that simply because ideas or operations had been discarded (or infrequently applied), did not necessarily mean that they could not have innovative new applications. In congenital cardiac surgery, most recently this has been exemplified by the renaissance of the Potts shunt for use “in reverse” in patients with pulmonary hypertension.¹ In this issue of the *Journal*, Paul and colleagues² describe a novel application of a hepatic vein-to-systemic vein shunt to address hepatic venous congestion and portal hypertension in a teenager with heterotaxy.

The increasing appreciation of the salutary effects of hepatic factor in suppressing the development of pulmonary arteriovenous malformations has provided renewed interest in surgical techniques that can help to provide more balanced quantities of the hepatic elixir to bilateral lung fields in patients with a single ventricle. In particular, for those single-ventricle patients with heterotaxy syndrome and anomalous systemic venous return (eg, interrupted inferior vena cava), there has been recent interest in pursuing hepatic vein-to-(hemi)azygous vein shunts to provide hepatic factor to the lungs via an ultimate Kawashima cavopulmonary connection.^{3,4}

In the case described by Paul and colleagues,² the clinical challenge was how to afford decompression of an obstructed left-sided hepatic venous confluence into the systemic circulation when anatomic barriers such as atrial situs, hepatic varices, and atrioventricular valves preclude the creation of an unimpeded baffle or simple off-pump interposition graft.⁴ Borrowing in part from the techniques of hepatic-to-azygous vein shunts as well as those of extracardiac Fontan conduits, the authors successfully used a ringed

polytetrafluoroethylene tube graft to unload the hepatic afterload into the innominate vein with excellent clinical result.⁵

Although the authors maintain that a hepatic-to-azygous vein interposition graft would have been fraught with complications due to varices, one can imagine an aggressive interventionalist suggesting that the patient consider a different kind of appropriation: One that takes the percutaneous bravado of a transhepatic portocaval shunt (eg, TIPS procedure) and creates a hepatic vein to azygous vein connection, in essence an intrahepatic systemic to systemic bypass. Whatever the connection, all venous drainage must ultimately lead to Rome (without obstruction), and the successful normalization of the patient's hepatic chemistries proves this concept.

Necessity, undeniably, is the mother of invention, but sometimes it is borne by new life hacks—a knife as a screwdriver or a lighter as a bottle opener—simple, clever, and often transformative. Keeping an open mind with regard to repurposing old paradigms not infrequently promotes innovation.

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