ETHICS IN RESOURCE- CONSTRAINED SETTINGS: WHEN PALLIATION IS MORE IMPORTANT THAN ANOTHER SCAR

To the Editor:

Pradegan and colleagues¹ report a minimally invasive subaxillary approach to perform a bidirectional cavopulmonary anastomosis in a patient with single-ventricle physiology, and the commentary by Dodge-Khatami² suggests that avoiding an additional scar in 2-staged palliation would promote the patients' best interests. Although we understand Dodge-Khatami's concerns, we respectfully disagree with the assumption that the surgeons planned the surgical approach "for their comfort," given the setting of this case report.

The operation took place in the Dominican Republic (DR), which is a middle-income country with limited independent cardiac surgical services. The country relies on 5 local cardiac surgeons for a population of 10.8 million people, concurrently supported by visiting teams to operate on children with congenital heart defects (CHDs).³ At a birth rate of 19.7 per 1000 people, more than 2000 children are estimated to be born with CHD in the DR annually, on top of the existing CHD burden, rheumatic heart disease prevalence, and growing ischemic heart disease incidence rates.⁴

The rationale of a traditional sternotomy approach for the Glenn procedure, in addition to its ease and long-standing experience, aligns with the inevitable need for a resternotomy for final Fontan palliation. As Dodge-Khatami argues, this avoids the creation of 2 scars, which would occur when performing a subaxillary approach in the primary procedure, whereas the safety of resternotomy has improved significantly in recent years.

Nevertheless, the setting of DR's limited economic and material resources requires trade-offs on a daily basis. The ethical principle of justice requires that the distribution of scarce resources benefit the entire population while respecting other principles as well: autonomy, manifested in the informed consent process, and beneficence and nonmaleficence, acting in the patient's best interest. Cost constraints may lead surgeons to avoid the use of

sternotomy and cardiopulmonary bypass (CPB), especially if another approach not requiring CPB is available. Similarly, preoperative catheterization might not be performed due to financial constraints, as in this case. Finally, postoperative intensive care time and hospital length of stay put considerable stress on a facility's capacity, especially when only 1 or 2 facilities serve an entire country.

Moreover, primary approaches play a significant role in defining patients' quality-adjusted life years, especially in low- and middle-income countries, in which patients are commonly lost to follow-up for financial reasons (eg, procedural, transportation, and family's opportunity costs). Those who do not return for final Fontan palliation will have only a hidden subaxillary scar, and for those who do return, the added costs of an initial on-pump sternotomy approach seem not to outweigh a second, subtle scar.

As long as quality (comparable postoperative outcomes) is maintained and patient autonomy and informed consent are respected, a cost-containment approach can be a sensible decision. CPB is expensive, and in this case, resources are scarce. The off-pump minimally invasive method may allow for an additional patient to be treated for every 8 to 10 such patients.⁵ Dodge-Khatami's criticism that this approach is "for the surgeons' comfort" seems unjustified, and the authors are to be commended for their innovative technique in a resource-limited environment for their patients' benefit.

Dominique Vervoort, MD^a

Robert M. Sade, MD^b

Jessica G. Y. Luc, MD^c

^aJohns Hopkins Bloomberg School of Public Health
Baltimore, Md

^bDivision of Cardiothoracic Surgery
Department of Surgery and Institute of Human Values in
Health Care

Medical University of South Carolina
Charleston, SC

^cDivision of Cardiovascular Surgery
Department of Surgery

University of British Columbia
Vancouver, British Columbia, Canada

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References

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**REPLY: ETHICAL
CONSIDERATIONS
WHILE ATTEMPTING
CONGENITAL HEART
SURGICAL CARE WITH
LIMITED RESOURCES
AT DISPOSAL: ONE**

SCAR IS STILL BETTER THAN TWO

Reply to the Editor:

Vervoort and colleagues¹ challenge my response in an invited commentary² regarding a report on an infant with single-ventricle physiology who qualified for a primary bidirectional cavopulmonary anastomosis (Glenn operation), in the setting of a developing program with limited resources and a visiting team helping the local team as best they could.³ I commended the authors for achieving good outcomes, perioperatively and out to 2 years follow-up, while sparing preoperative catheterization and cardiopulmonary bypass to perform off-pump surgery using a temporary veno-venous shunt. This was done by relying on intraoperative direct pressure measurements (which is smart) and out of financial necessity for the program (which is commonplace in many underserved countries with constrained resources), respectively.

I did take a position on the chosen surgical approach in a baby with single-ventricle physiology, a minimally invasive subaxillary thoracotomy, which I found unjustified, given the fact that the infant will inevitably go on to need Fontan completion, requiring a second surgical incision through a midline sternotomy.

We are indebted to Dr Sade as a leader in our field, bringing us wisdom and clarity on ethical principles through his writings, presentations, teachings, and editorial guidance.⁴ The Letter to the Editor defends the choice made by the surgical team from an ethical standpoint, given their circumstances. I shall try to respond to the points made in order of their appearance:

Justice. I fully agree that distribution of scarce resources should benefit the entire population. Having had the privilege to go on yearly congenital heart surgical humanitarian missions in underserved areas, I realize the demographic needs, understand the goal in achieving the

same results with less resources available than back home, and treat as many children as possible in the shortest time available. I have been in the shoes of Predegan and colleagues,³ who boldly improvise under difficult conditions, and still get the children through with laudable outcomes.⁵⁻⁷ Their innovation is to be commended and is not at question.

Autonomy and Beneficence. I fully agree that both were respected, and that informed consent was obtained with an infant/child who has been doing well.

Nonmaleficence. My commentary and wording were not directed at the authors of the case report, but *The Journal* Editor asks us to provide thought-provoking narratives. The aim was to point out that minimally invasive surgery should not be considered lightly as a simple cosmetic tool or to serve our comfort level as surgeons, but rather as a true means to enhance children's lives when used selectively. Please remember that I am a big fan of minimal invasive thoracotomy for the repair of certain congenital heart defects.

In my opinion, neonates, infants, children, and even adolescents who undergo surgery for a congenital heart defect, with single or biventricular physiology, with a predictable and probable need for future redo surgery, should not undergo a minimal invasive approach through 1 scar, given the predictable and probable need for a future second scar. I sincerely doubt that performing an operation from a lateral approach, which involves extensive dissection close to the aorta, the superior vena cava, the pulmonary arteries, the sinus node, and the aid of a temporary veno-venous shunt, will preclude adhesions that will make a future first-time sternotomy for completion of Fontan a walk in the park.

In agreement with the authors, in a setting with minimal resources, real cost considerations, and the desire to help as many patients as possible during a limited time span, I also would have skipped the costly and cumbersome preoperative diagnostic cardiac catheterization, obtained intraoperative measurements to confirm the safety of the procedure, and performed the bidirectional Glenn surgery off-pump.³ However, the procedure could have been done through a median sternotomy, extubation could have been done in the operating room to spare precious ventilators and nursing staff, and the infant could have been discharged from the intensive care and hospital in the same time frame. Whether the child will be lost to follow-up—common in certain countries—or whether future adhesions will be minimized when going back through the front for Fontan completion is speculative. One can only hope that the patient will be followed up and will return for future care.

In summary, although I agree that successful palliation is more important than an additional scar, the same outcome, using the same diagnostics and technique and in the same setting of constrained resources, could have and