with a single left/noncommissure, asymmetry, and a root phenotype aortopathy. Most of these patients are young adults faced with more difficult perioperative decisions about timing and treatment than a typical BAV patient.

Our tools for understanding this complex condition will continue to improve. We will gain a better understanding of the genetics and embryologic processes of maldevelopment. New imaging techniques allow for the quantitative fusion of anatomic and physiologic details. We are learning how biomechanics and mechanotransduction lead to the progression of pathology. Improved artificial intelligence systems will identify patterns from imaging and statistical signals. As our knowledge improves, so will our need to communicate across disciplines so that each individual

patient we meet can receive the best precision care for his or her congenital aortic valve condition.

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Commentary: Parley at the summit

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Drawing from his fascination with Mount Everest expeditions, Winston Churchill used the term *summit* to describe a high-level meeting between international powers to define the world order in the 20th century. A distinguished list of coauthors, many of whom are international leaders in bicuspid aortic valve (BAV) disease, are to be commended for their efforts to provide us with a new system of nomenclature and classification for patients with a BAV.¹ The authors intend to standardize language for anatomy, diagnosis,

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CENTRAL MESSAGE

This new nomenclature and classification system for patients with a bicuspid aortic valve aims high but its complexity may be challenging in clinical settings.

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treatment, and data collection in such patients, reflecting recently gained ground in our evolving understanding of this complex disease from genetic, hemodynamic, and clinical standpoints.

With a prevalence of 1%-2% in the general population,² BAV disease is the most common congenital cardiovascular malformation and is seen relatively often by surgeons and clinicians in their daily practice. Its heterogeneous presentation includes a wide spectrum of conditions, such as pure aortic valve stenosis, endocarditis, aortic dissection, and aortopathy, which may lead to aortic valve regurgitation. Thus, the practice and management strategy among surgeons varies,³ even with the help of

available guidelines from surgical societies.⁴ Several important descriptive classifications have been published in the past, including those from Sabet, Roberts, Angelini, Schaefer, and Sievers.⁵⁻⁹ The Sievers classification is the most commonly used system in cardiac surgery for collecting data, reporting outcomes, and guiding therapy for patients with BAV.

As we gain a better understanding of conditions involved in congenital BAV, the literature guiding our knowledge is often updated. Clearly, several important points can be extracted from this consensus.¹ We agree with the authors that within the spectrum of abnormal aortic valves, having a unicuspid aortic valve is a rare clinical occurrence; this condition typically presents in younger patients (ie, those younger than age 40 years), usually results in a mixed state of aortic valve stenosis and regurgitation, and may include dilation of the aortic annulus, or less frequently, the ascending aorta.¹⁰ As such, the unicuspid condition should have a separate nomenclature. This separation is critically important because, in this young patient population, the choice of surgical valve repair or replacement directly affects long-term prognosis. Additionally, the nomenclature suggested by these esteemed authors integrates and highlights several important points, namely establishing the presence of aortopathy and understanding the role of symmetry and phenotype (such as having a fused BAV, a 2-sinus BAV, or a partly fused BAV). Additionally, it should be determined whether any identified raphe is calcified. These are important characteristics, especially in the era of transcatheter aortic valve replacement, where a calcified, long, or very asymmetric raphe, could be associated with increased risk of complications and mortality.¹¹

This new nomenclature¹ is thoroughly comprehensive but far more complex for the clinician to use than existing standards. Thus, time will tell how often this new classification is incorporated into surgical practice, and care may be needed as surgeons simplify its key aspects in their conversations with patients. Without a doubt, this work will change the way

surgeons think about BAV disease. An improved understanding of this disease will drive the development of appropriate therapy. Eventually, this information will be used to formulate standard terminology, especially as pertaining to genetic markers and coronary anomalies associated with the BAV condition. There is an undeniable value in having a unified method of reporting to ease comparison of surgical techniques and related outcomes across various institutions. This integration of emerging research and high-quality clinical data will undoubtedly stimulate aortic centers to develop personalized therapy for patients with a BAV.

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