The safety and efficacy of transcatheter aortic valve replacement procedures are directly related to proper imaging. This report revisits the existing noninvasive and invasive approaches that have concurrently evolved to meet the demands for optimal selection and guidance of patients undergoing transcatheter aortic valve replacement. The authors summarize the published evidence and discuss the strengths and pitfalls of echocardiographic, computed tomographic, and calibrated aortic balloon valvuloplasty techniques in sizing the aortic valve annulus. Specific proposals for 3-dimensional tomographic reconstructions of complex 3-dimensional aortic root anatomy are provided for reducing intermodality variability in annular sizing. Finally, on the basis of the sizing approaches discussed in this review, the authors provide practical recommendations for balloon-expandable and self-expandable prostheses selection. Strategic use of echocardiographic, multislice computed tomographic, and angiographic data may provide complementary information for determining the anatomical suitability, efficacy, and safety of the procedure.