To define the optimal timing for an operation in terms of diameter, the risk of complications in the natural history must be weighed against the operative risk: In this respect, important advancements in knowledge, through large observational studies, have taken place in the last decade. The relation between maximum diameter and risk of AAEs has been revised (Fig. 16): (i) The curve indicating this relation actually shows 2 'hinge points', with the first at 52.5 mm [340]; (ii) thresholds have been traditionally extrapolated from the analysis of diameters in dissected aortas; however, predissection aortic tubular tract diameters are 18–32% smaller [196, 337, 345]; (iii) the greater importance of the phenotype of the dilatation over the absolute diameter has been ascertained [82, 336, 338]. The greater severity of the 'root phenotype' dilatation (root diameter > ascending diameter), with faster progression and higher risk of ATAAD, was initially recognized uniquely for BAV-related aortopathy [82, 87, 339]. Then, in 2 independent large series, 1 BAV and 1 mixed, the 'hinge point' of the ATAAD-risk curve (increasing from 1% to 4–5%) was consistently found at 50 mm for the root diameter and at 52–53 mm for the tubular diameter [336, 341]. The root phenotype, together with short stature, was an independent risk factor for a composite end-point of ATAAD, rupture and aorta-related death [336]. More recently, in patients with purely TAV-associated non-syndromic aortopathy who

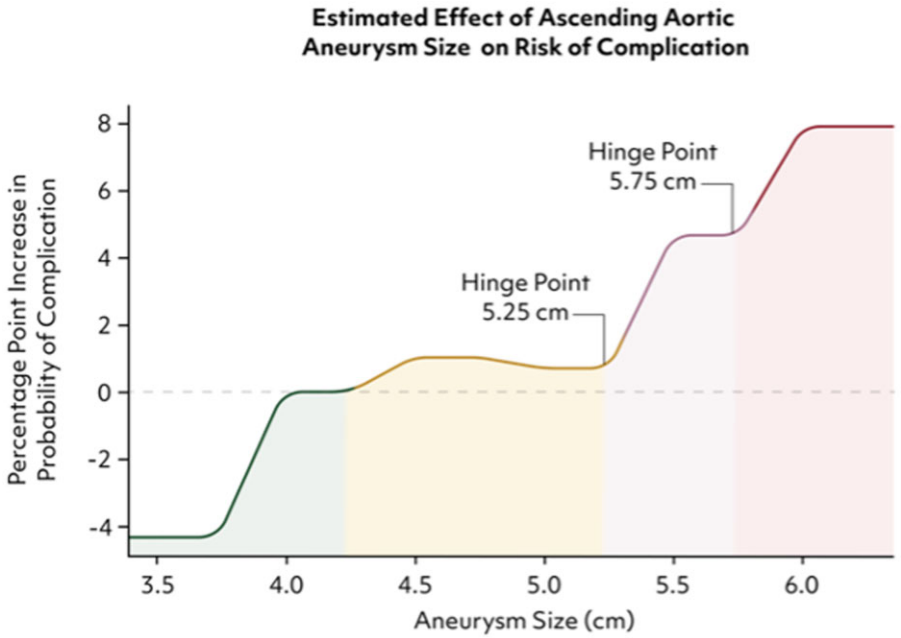

Figure 16: Hinge points for increased risk of size-associated complications.

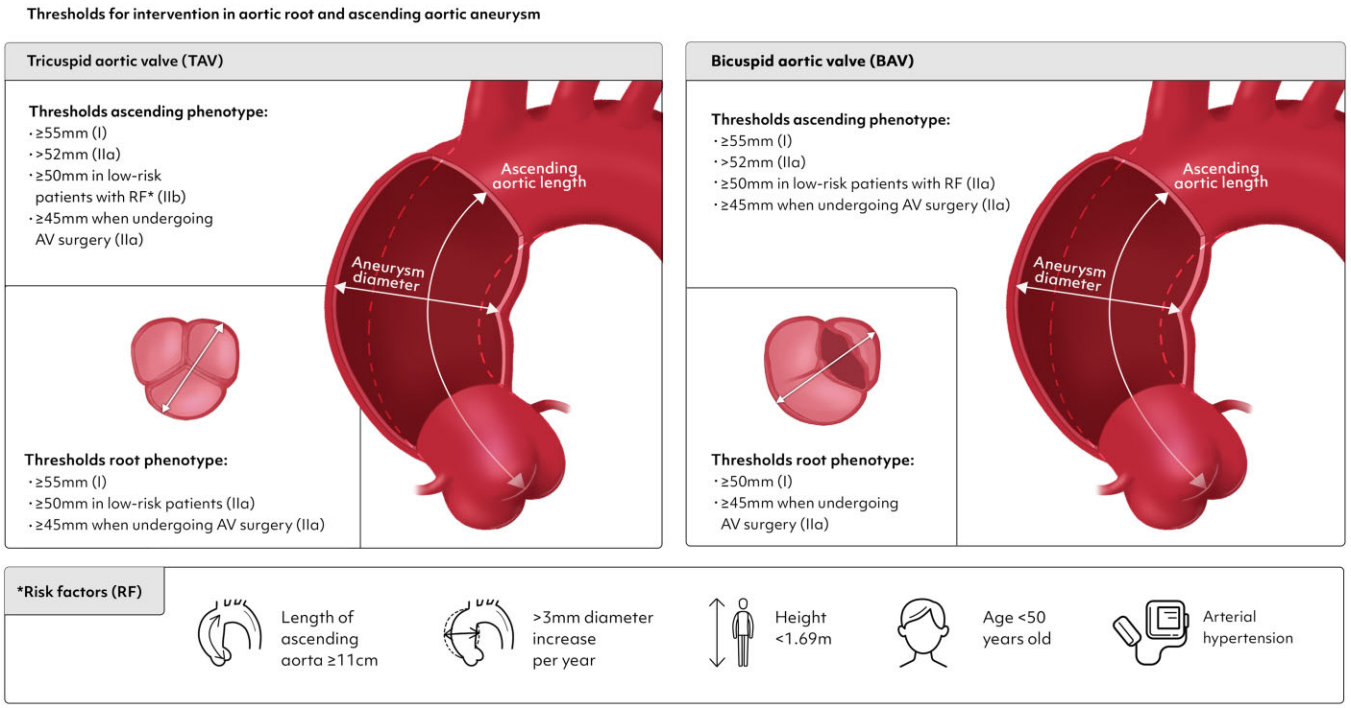

Figure 17: Thresholds for intervention in aortic root and ascending aortic aneurysm. AV: aortic valve.