Supplementary data
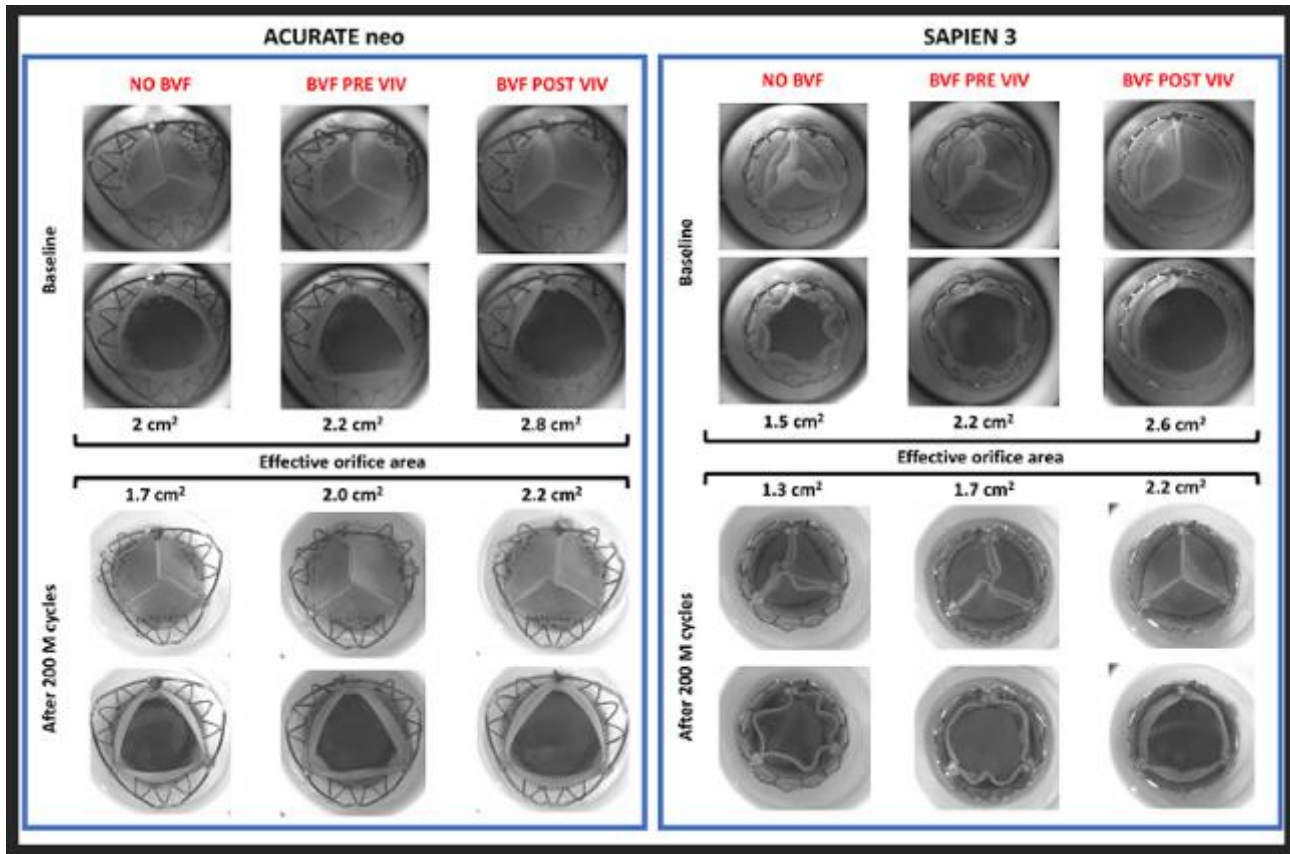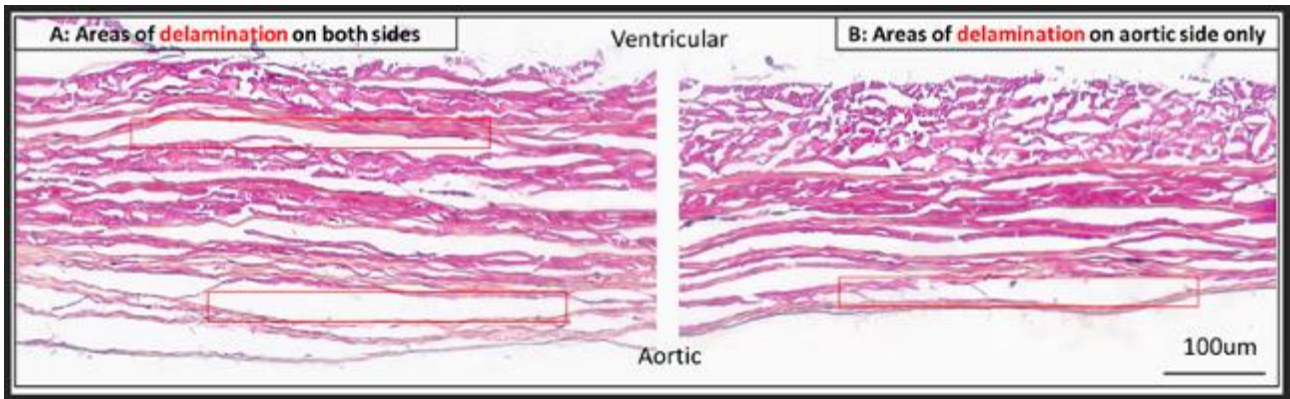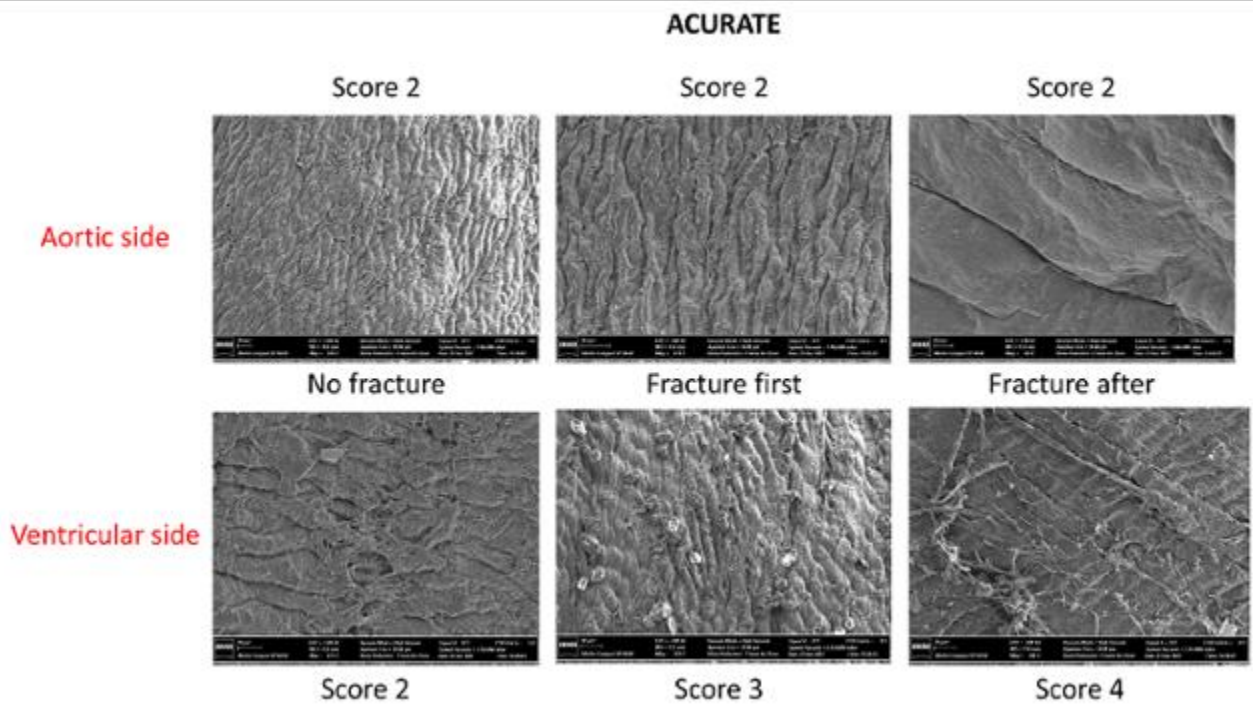

Supplementary Figure 1. Images from the valves at baseline and after 200M cycles.

Images taken from high-speed videos. The upper 2 lines show the valves in a closed and open position at baseline, according to BVF timing. The 2 lower lines shows the same configuration after accelerated wear testing up to 200M cycles.
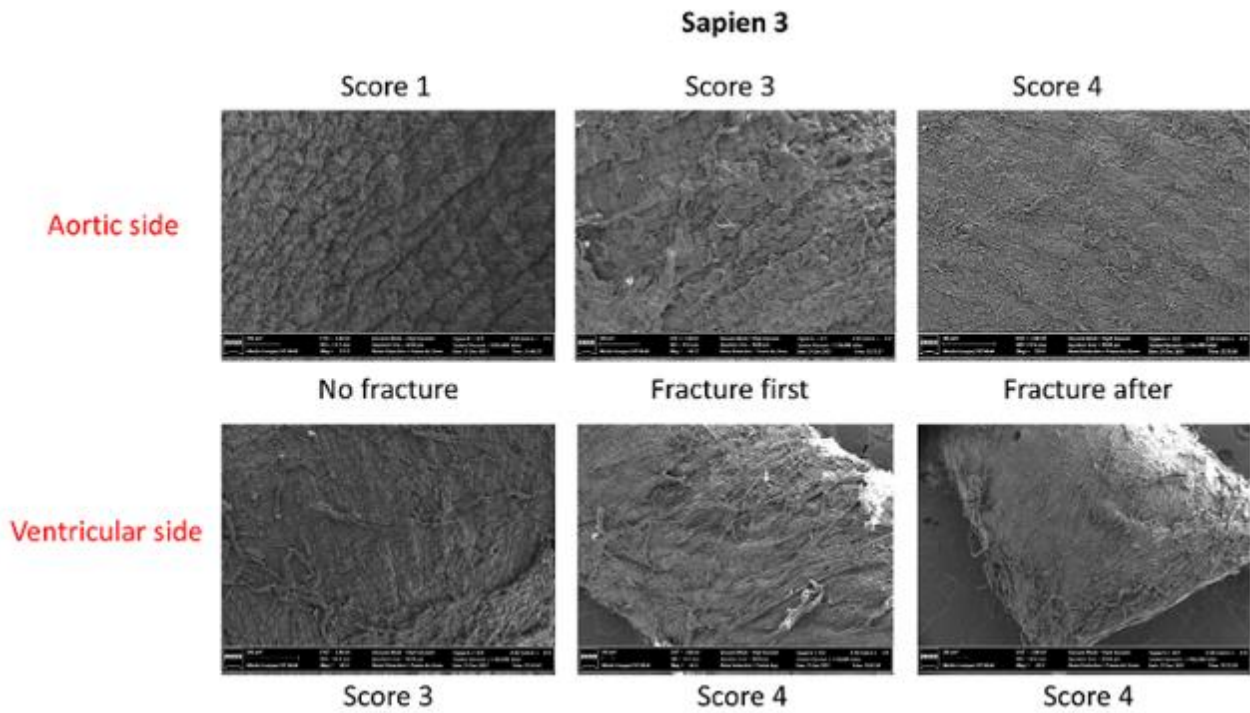
Supplementary Figure 2. Delamination areas seen on the ACn with no fracture.

Areas of delamination seen on the ACn with no fracture, often seen throughout the leaflet (A) and

sometimes isolated to the aortic side (B).

Supplementary Figure 3. SEM images of the ACn leaflet according to BVF timing.

Sample of ventricular and aortic side of the ACn leaflet with each timing of fracture is shown. The damage score ranges from 1 to 4 with the following corresponding degree of damage: Score 1: no bundle detachment or fracture. Score 2: collagen fibres, fractures only. Score 3: collagen bundles, detachment only. Score 4: collagen fibres, fracture and bundle detachment

Supplementary Figure 4. SEM images of the S3 leaflet according to BVF timing.

Sample of ventricular and aortic side of the S3 leaflet with each timing of fracture is shown. The damage score ranges from 1 to 4 with the following corresponding degree of damage: Score 1: no bundle detachment or fracture. Score 2: collagen fibres, fractures only. Score 3: collagen bundles, detachment only. Score 4: collagen fibres, fracture and bundle detachment