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Arterial pulse wave propagation across stenoses and aneurysms: Assessment of 1-D simulations against 3-D simulations and *in vitro* measurements

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Supplementary Material

This document shows comparisons between 1-D and 3-D model pressure and flow waveforms for all cases simulated in this study that were not shown in the main text. All results for the common carotid artery (Figs. S1 to S5) were calculated using the 1-D model with (black) and without (blue) the stenosis model. Average (avg), maximum (max), systolic (sys) and diastolic (dias) relative error metrics are shown in each plot. These metrics were calculated as described in Section 2.3 of the main text. For the common carotid artery, the first column shows relative errors without the stenosis model and the second column with the stenosis model. Results for the abdominal aorta and aortic bifurcation are provided in Figs. S6 to S8 and S9 to S11, respectively.

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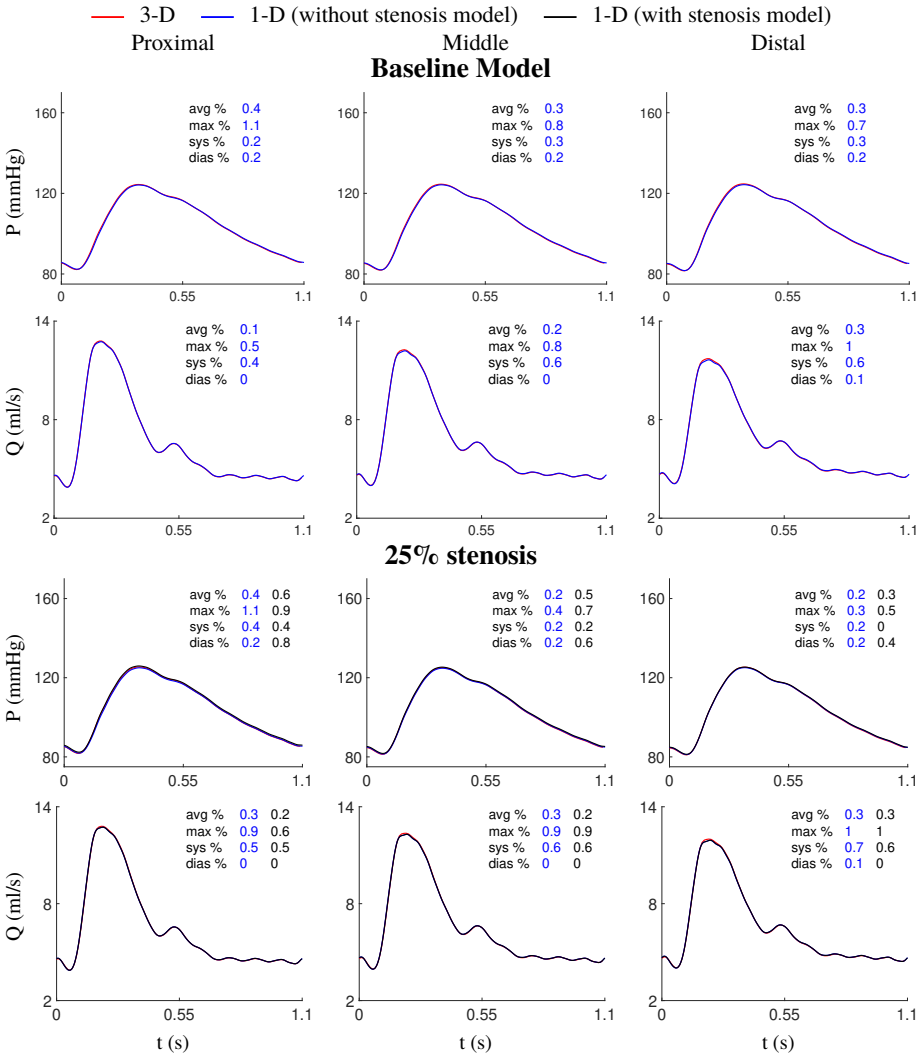

Figure S1. Results for the common carotid artery at (top) baseline and (bottom) with a 25%, 48-mm-long stenosis.

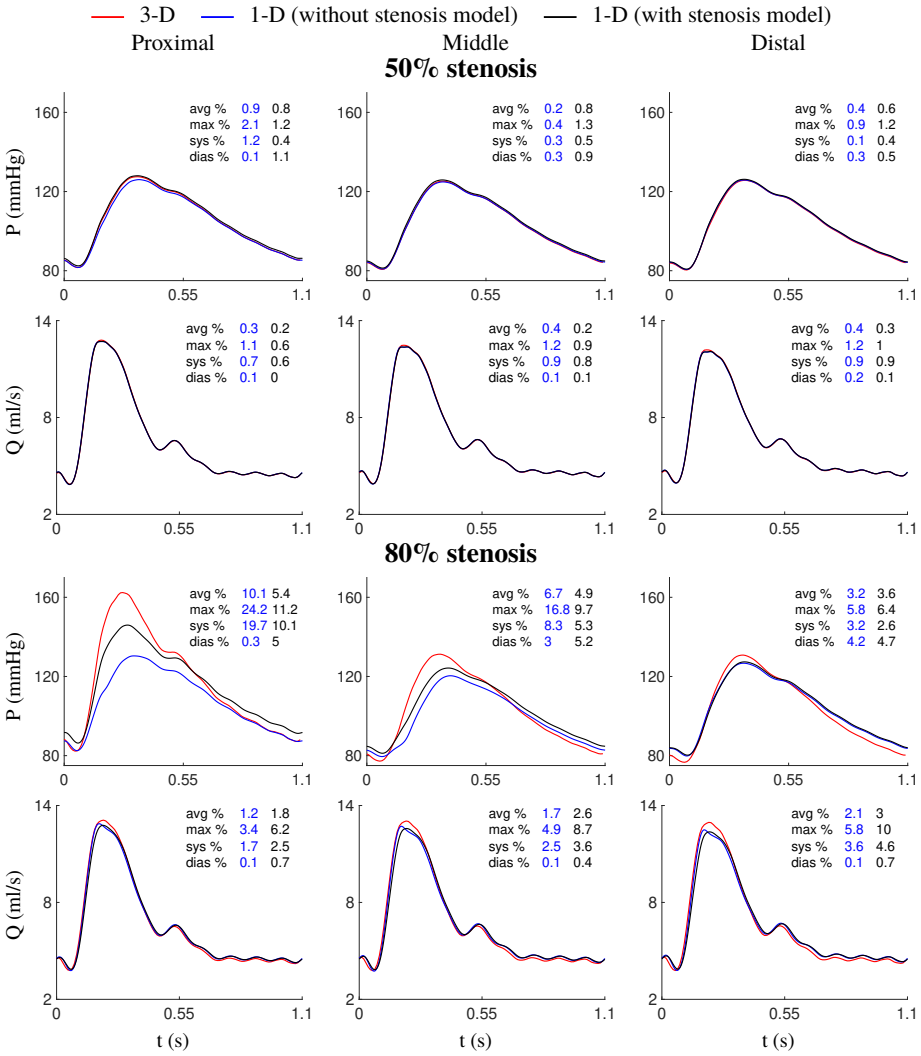

Figure S2. Results for the common carotid artery with a 50% (top) and an 80% (bottom) 48-mm-long stenosis.

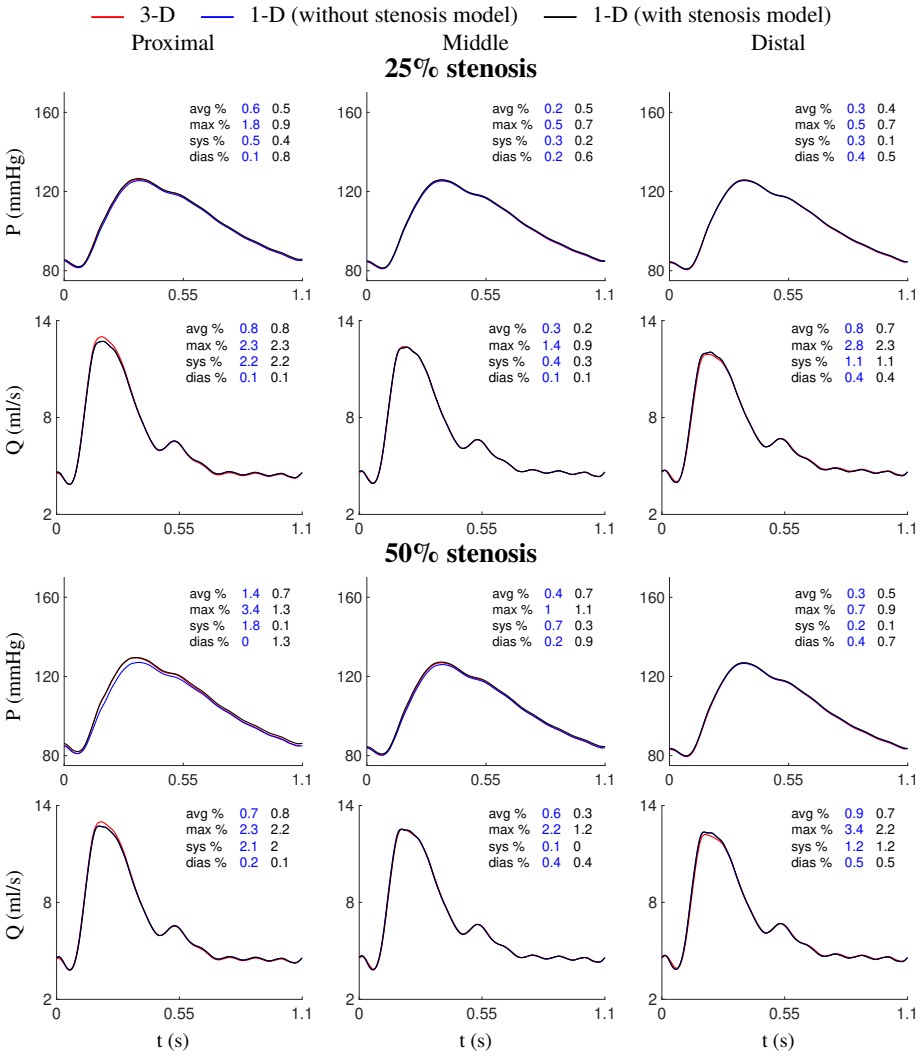

Figure S3. Results for the common carotid artery with a 25% (top) and a 50% (bottom) 72-mm-long stenosis.

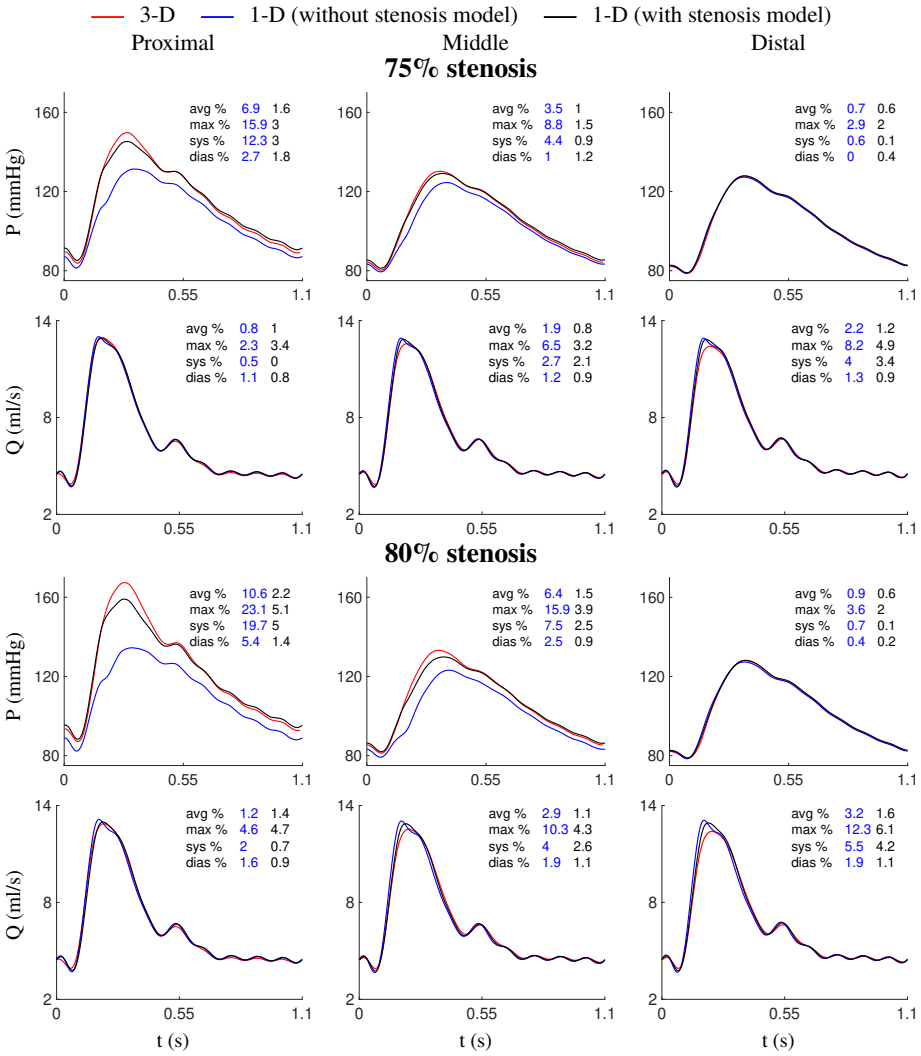

Figure S4. Results for the common carotid artery with a 75% (top) and an 80% (bottom) 72-mm-long stenosis.

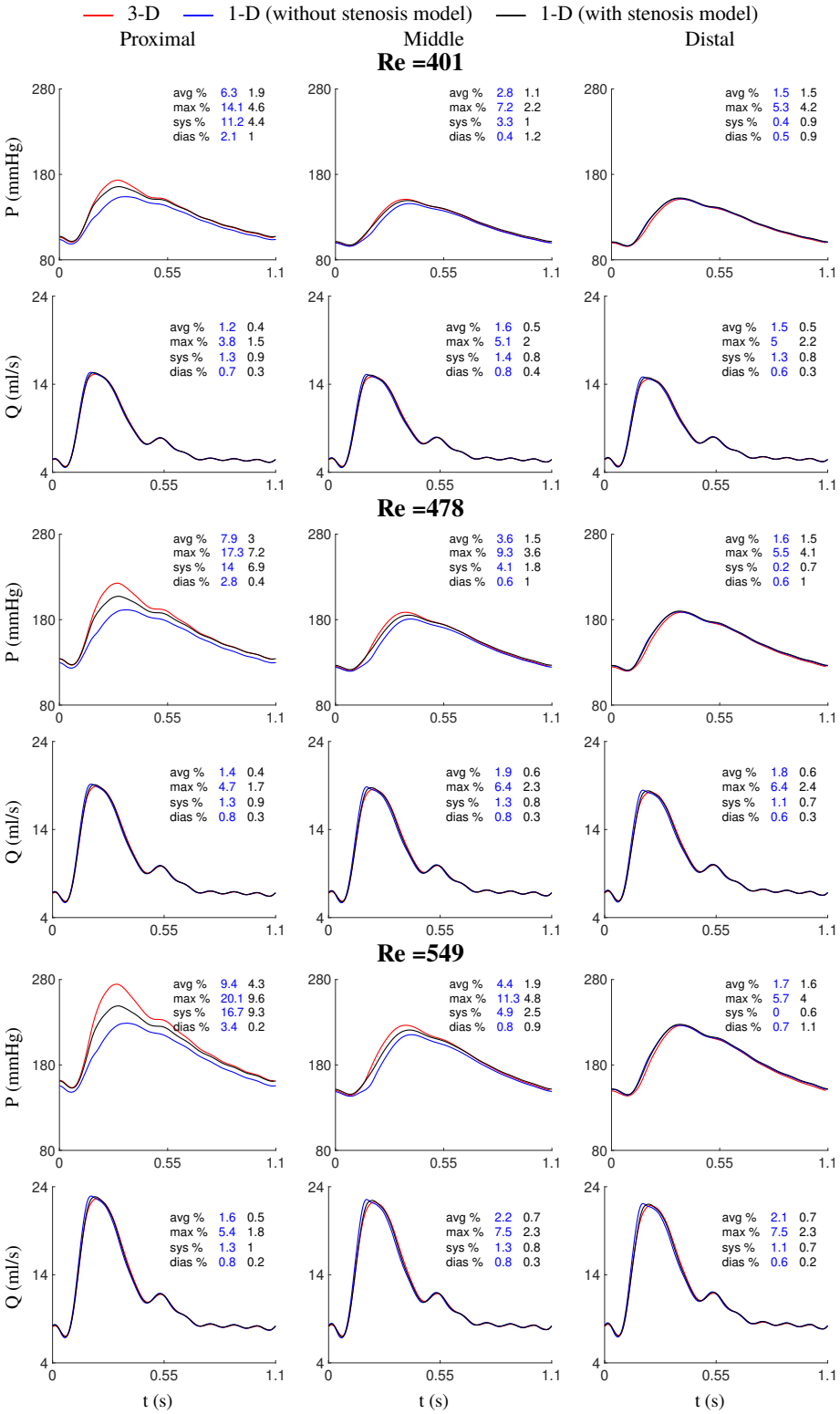

Figure S5. Results for the common carotid artery with a 75 %, 48-mm-long stenosis, for Reynolds numbers of 401 (top), 478 (middle), and 549 (bottom).

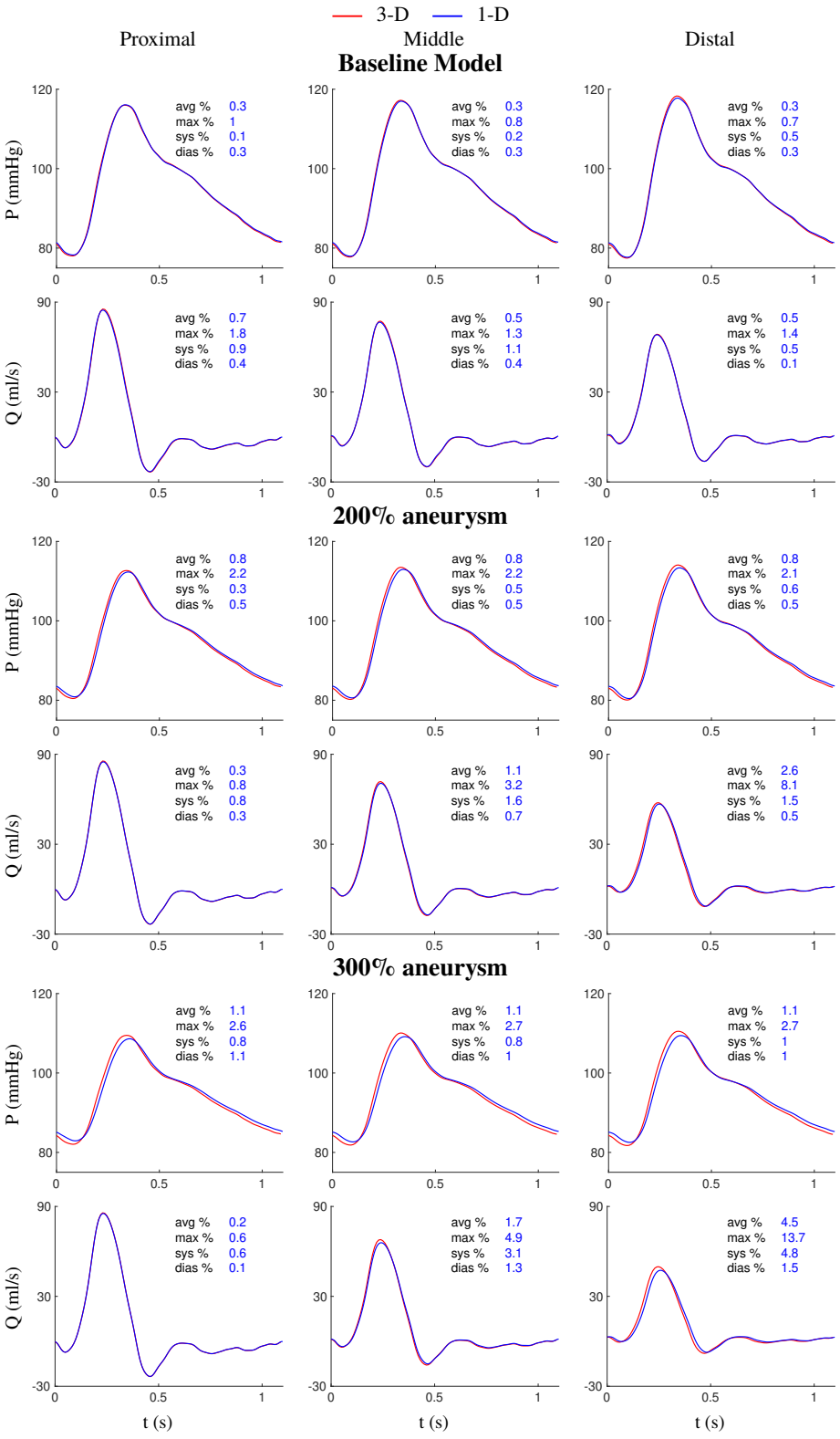

Figure S6. Results for the abdominal aorta at baseline (top), and with a 200% (middle) and 300% (bottom) 80-mm-long aneurysm.

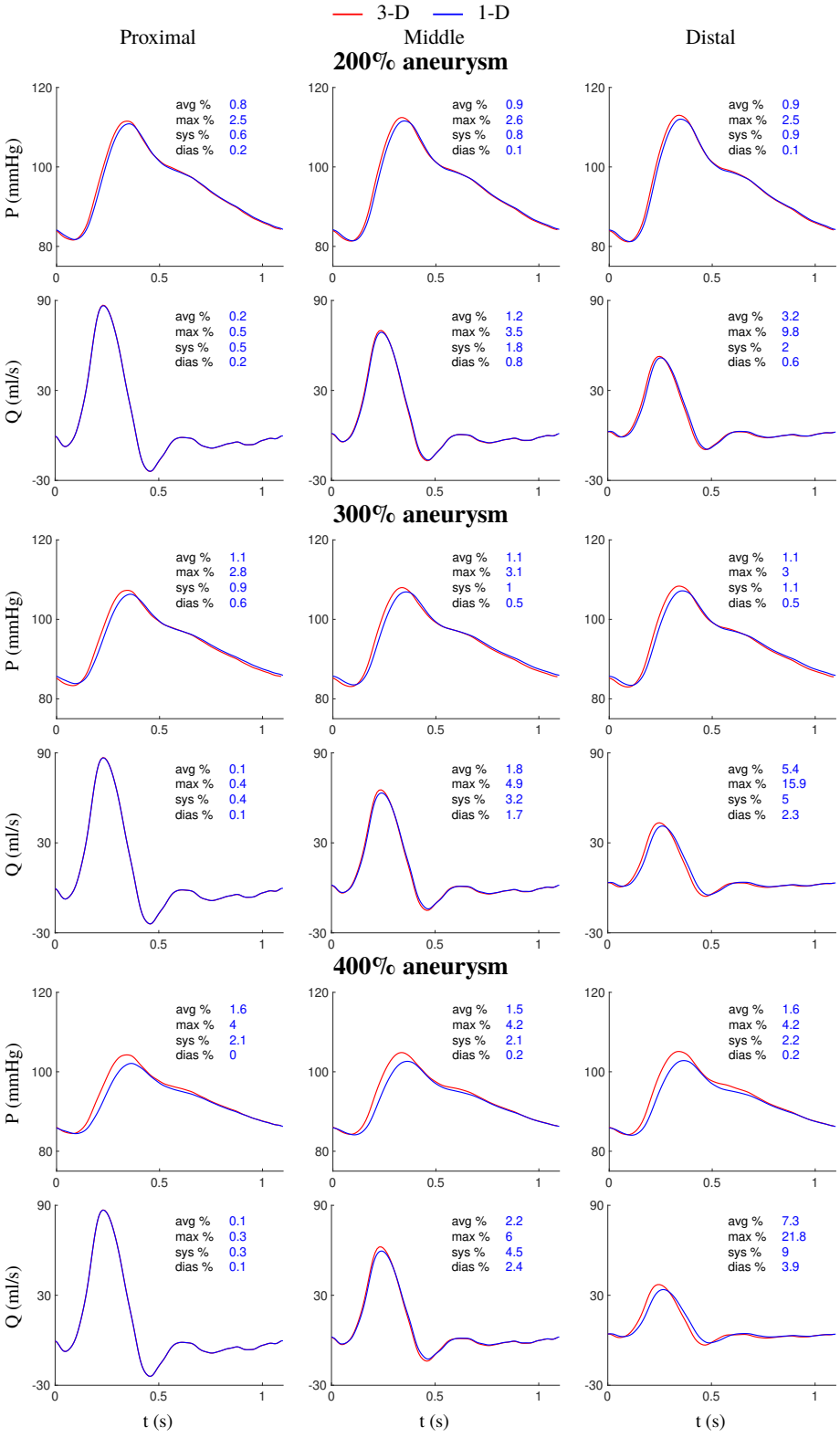

Figure S7. Results for the abdominal aorta with a 200% (top), 300% (middle) and 400% (bottom) 100-mm-long aneurysm.

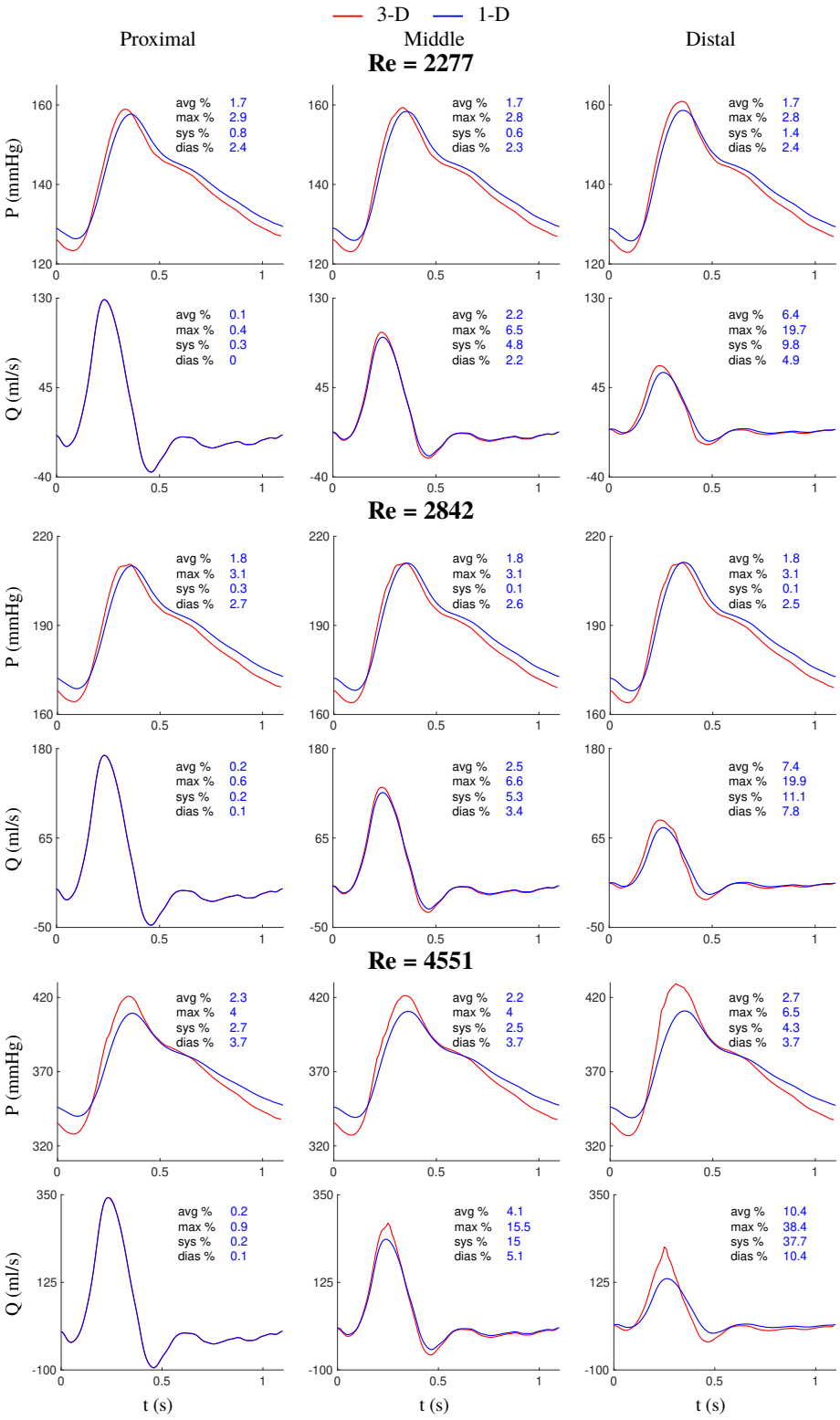

Figure S8. Results for the abdominal aorta with a 400%, 80-mm-long aneurysm, for Reynolds numbers of 2277 (top), 2842 (middle), and 4551 (bottom).

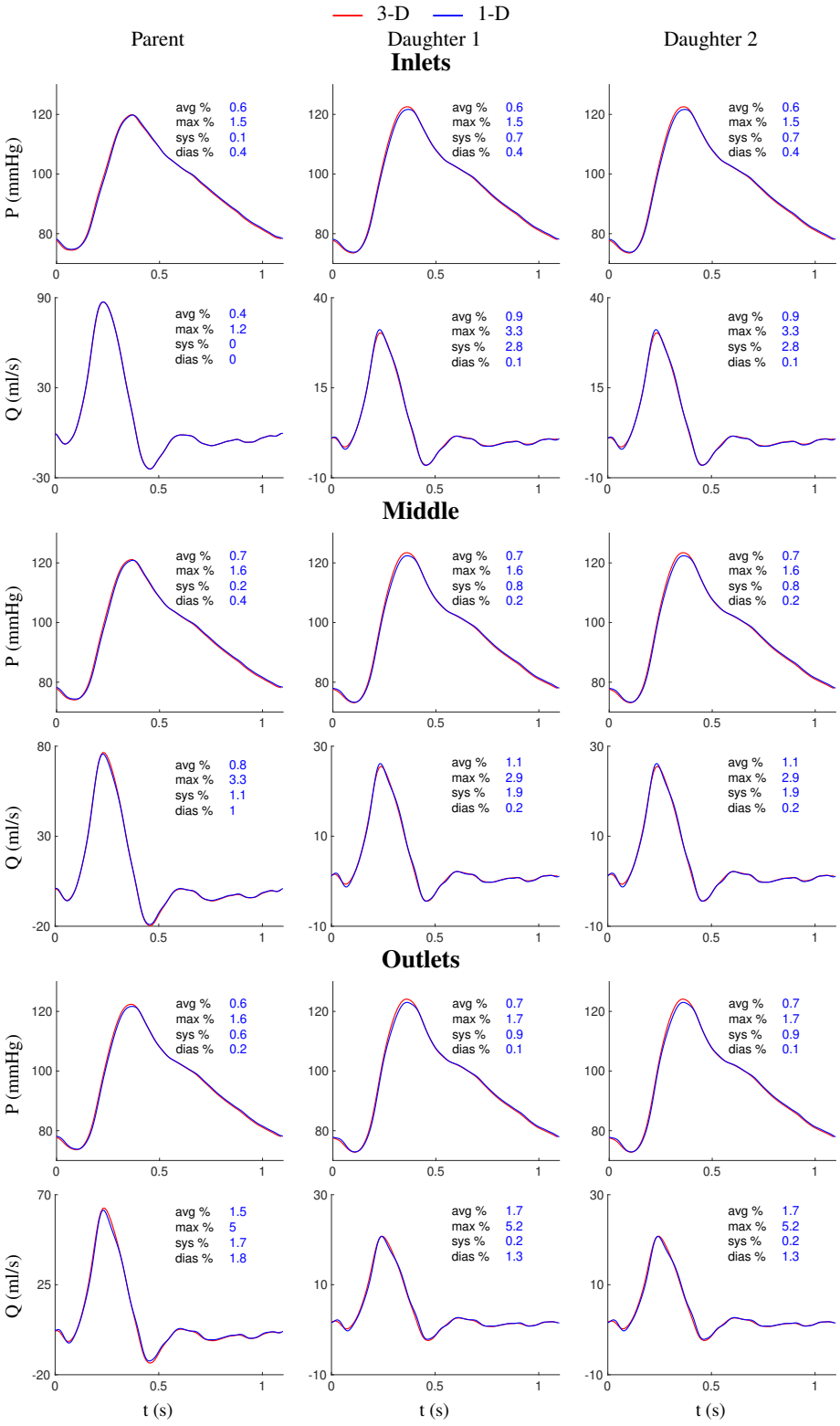

Figure S9. Results for the aortic bifurcation at baseline at the inlet (top), middle (middle) and outlet (bottom) of the parent vessel, daughter vessel 1 and daughter vessel 2 shown in Fig. 7a.

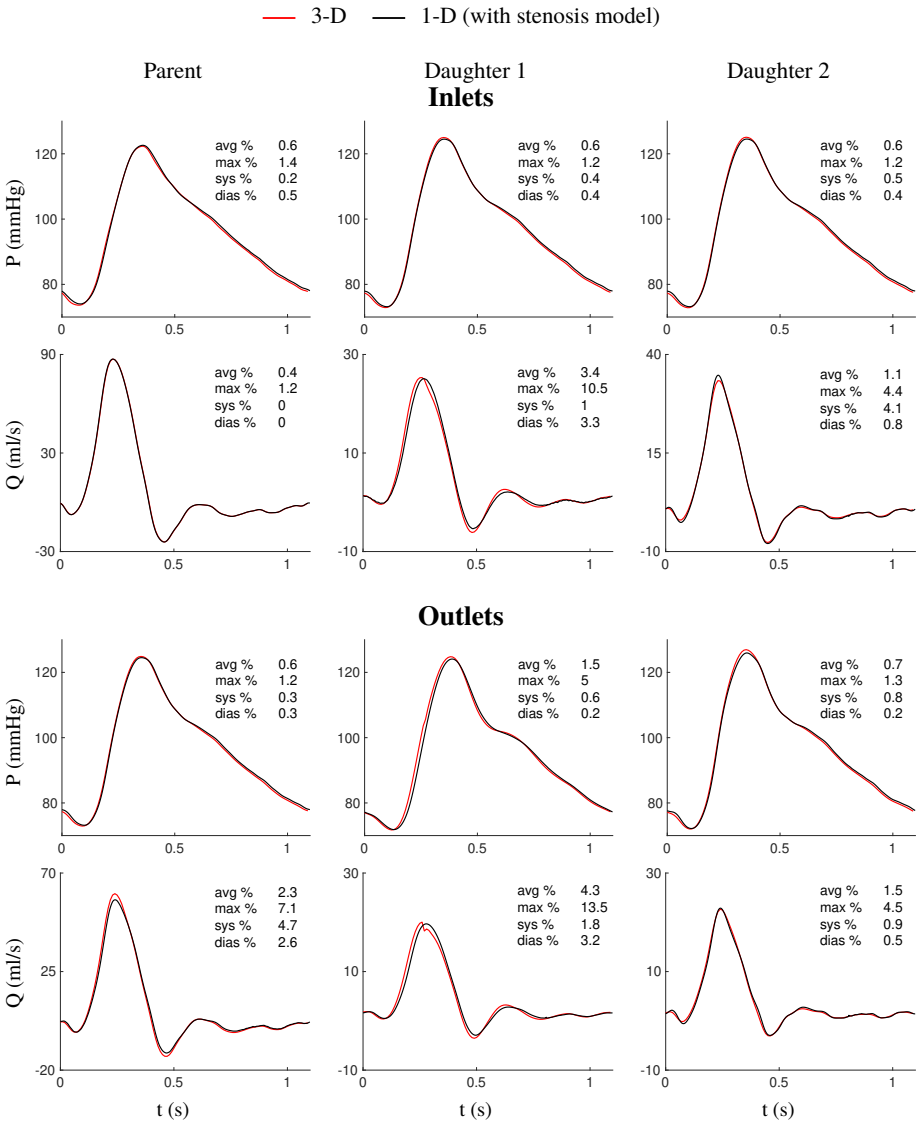

Figure S10. Results for the aortic bifurcation with a 85% stenosis in the middle of the daughter vessel 1.

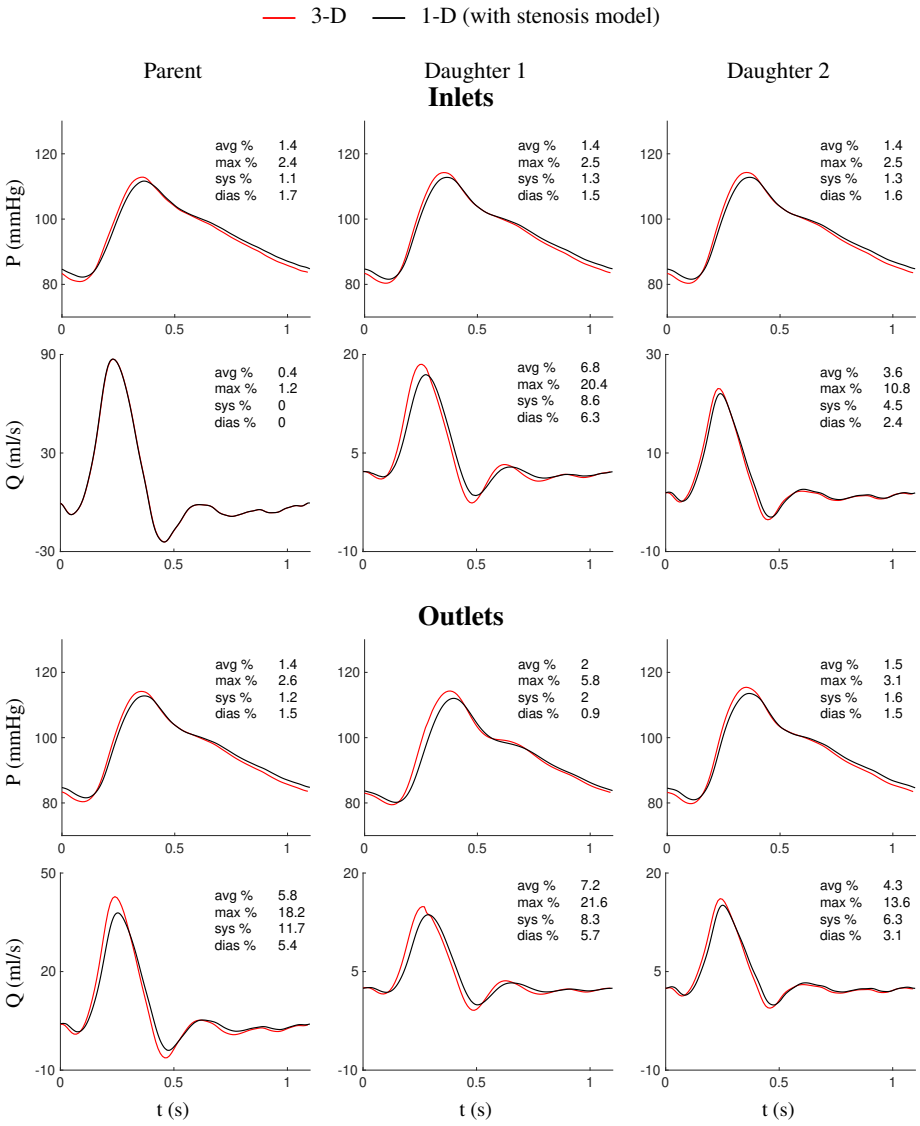

Figure S11. Results for the aortic bifurcation with a 85% stenosis in the middle of the daughter vessel 1 and a 300% aneurysm in the middle of the parent vessel.