Windkessel model:





Q = Flow rate of fluid

Ps = Additional pressure induced due to Q

I want to simulate this model in COMSOL. In study 1, I applied pressure at the domain so that it expands (can refer to results in attached model). In study 2, I want to use the solution 1 as initial condition for study 2. In addition to that, the material stiffness (manipulated by Ta) increases with time, so as the domain will contract. As the domain 2 contracts, the mechanism of contraction will be controlled by Windkessel model described above. Q is the fluid flow rate, which is equal to rate of change of volume of domain 2 (Q=-dV/dt). Ps is the additional pressure induced which in turn applied at inner surface of domain 1 (Boundary Load pressure=Pr+Ps).

I don’t know which physics should I use for better simulation of windkessel model described above. In the attached model, I used Global ODEs and DAEs physics to represent the condition but failed.

Hope can help me on this. Thanks