**Supplementary information**

**Modeling the effect of blood vessel bifurcation ratio on occlusive thrombus formation**

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**Mathematical derivation for shear rate on thrombus surface**

Equation for shear rate on thrombus surface for a fully developed steady Newtonian flow reads as

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Substituting the above in equation

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Substituting these in, we get

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This could be further simplified as the first few terms in could be grouped as the inlet shear rate in the parent vessel.

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| So equation is simplified to, |  |
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The variables used for resistances, diameters and lengths in these equations are depicted in Figures 3(a), (b) and (c).

Simplifying we obtain as

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Similarly can be written as

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For equation we need

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Substituting in, we get equation (9) (in the manuscript) to describe the shear rate on the thrombus surface at different stages of occlusion.

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This model describes the instantaneous shear rate on thrombus surface at any stage of occlusion defined by occlusion ratio.