Supplementary Material

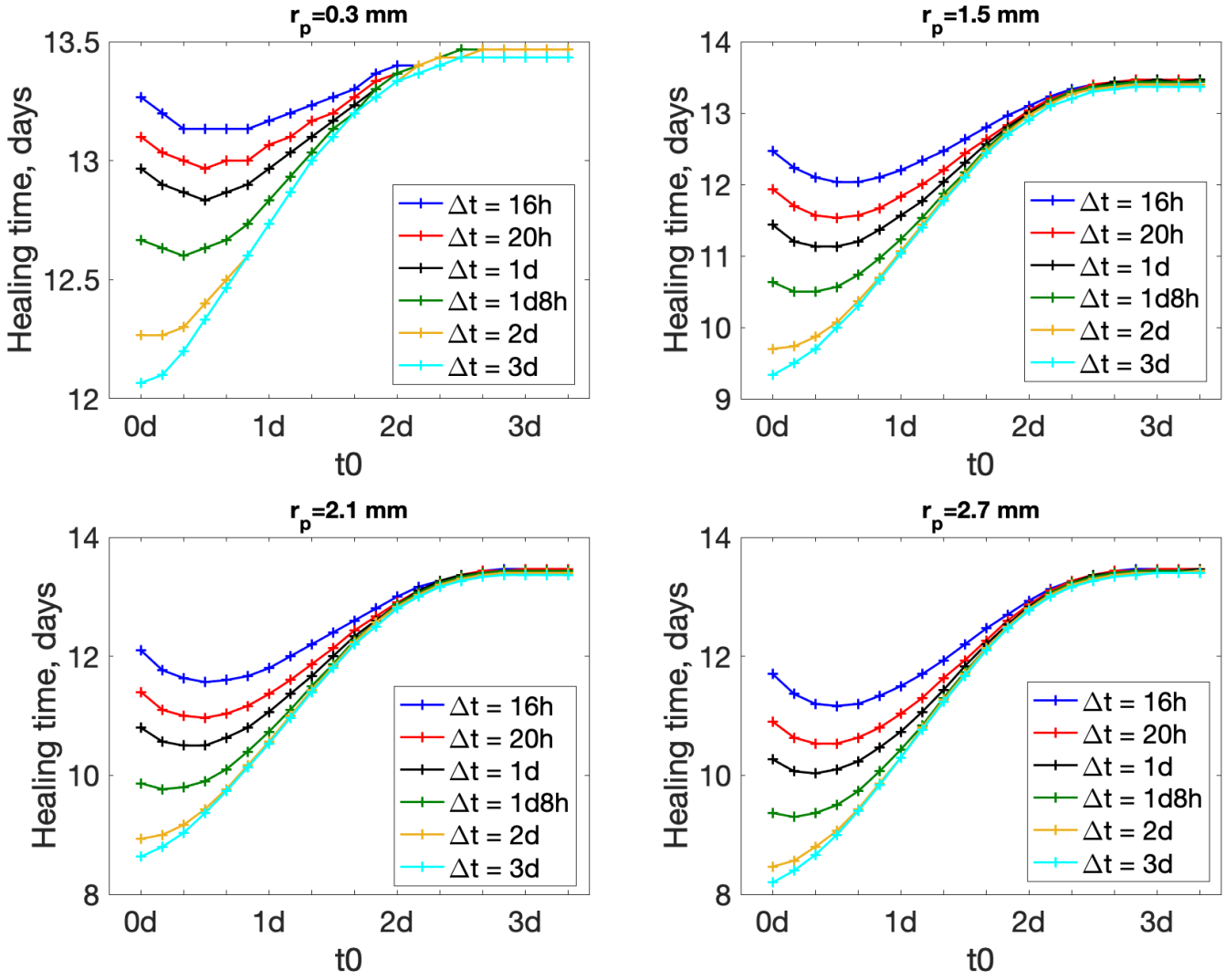

Figure S1. Wound healing time dependence on treatment beginning time t_0 for different values of treatment duration Δt and actuator position r_p.

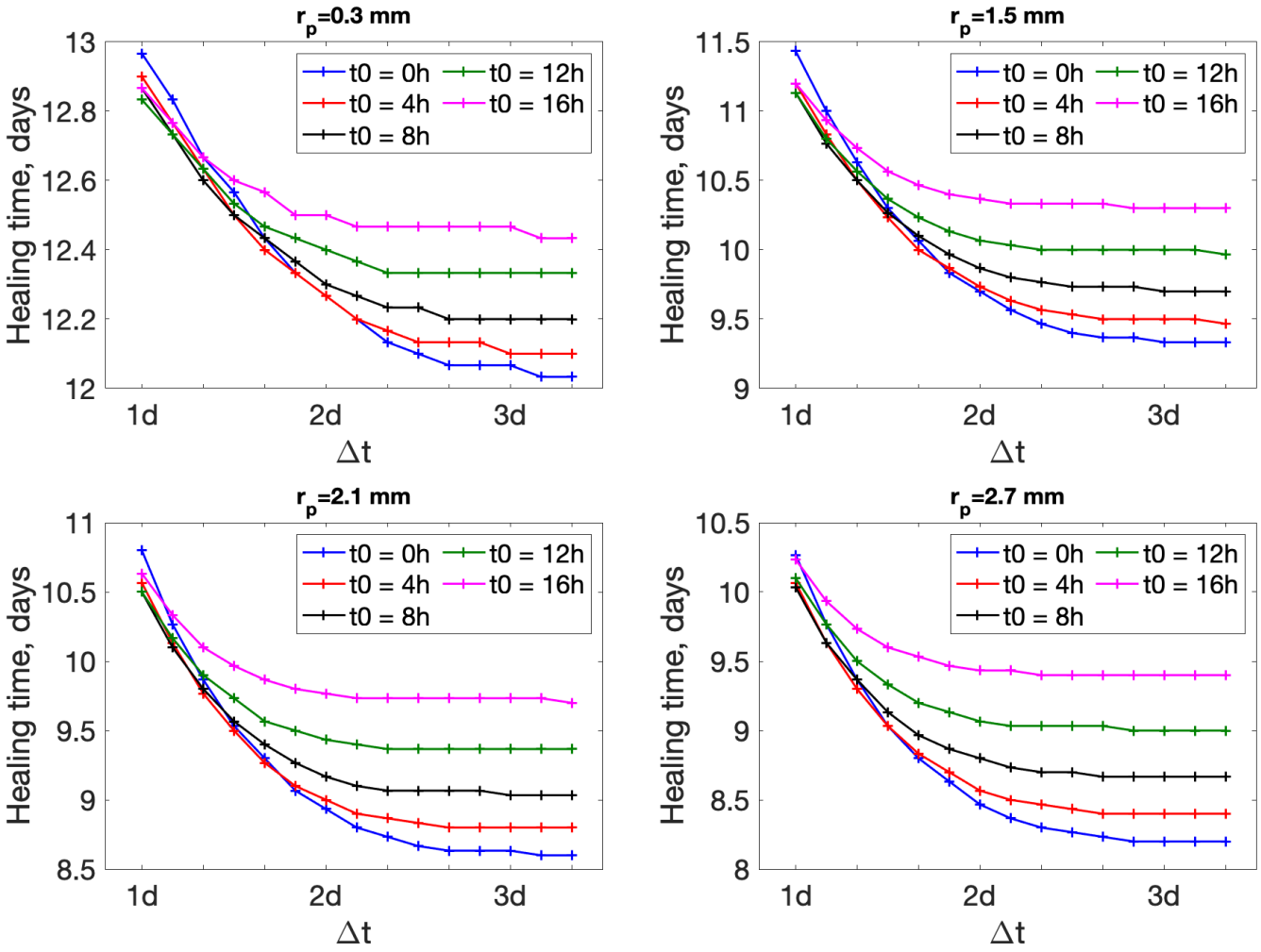

Figure S2. Wound healing time dependence on treatment duration Δt for different beginning time t_0 and actuator position r_p.

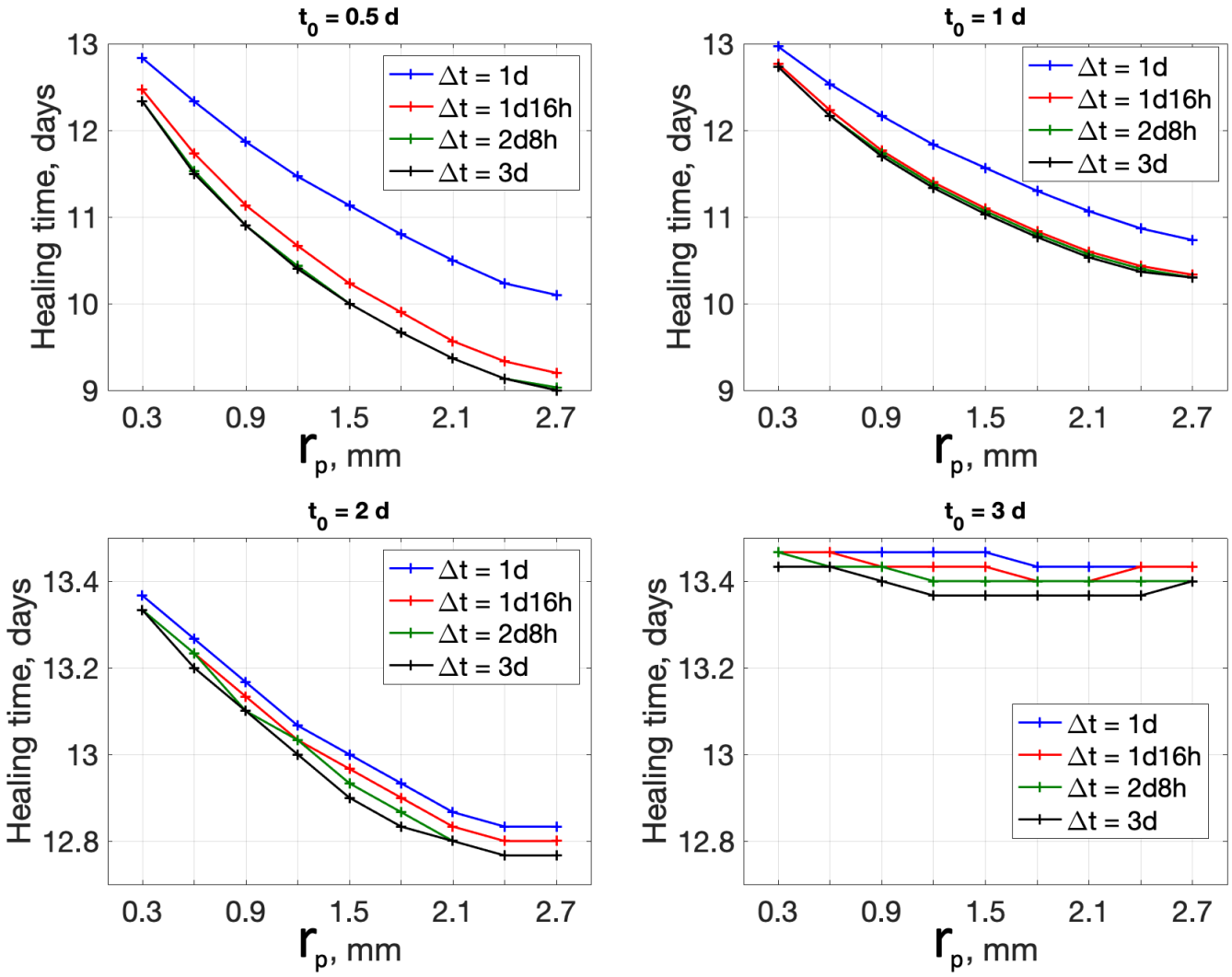

Figure S3. Wound healing time dependence on actuator position r_p for different Δt and t_0

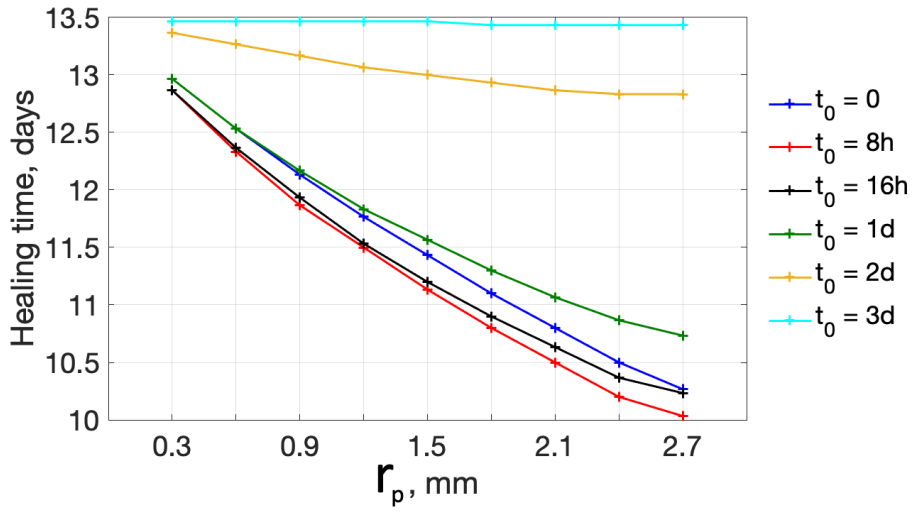

Figure S4. Wound healing time dependence on the ion pump position x_p, plots for different beginning time t_0, $\Delta t = 1$ day

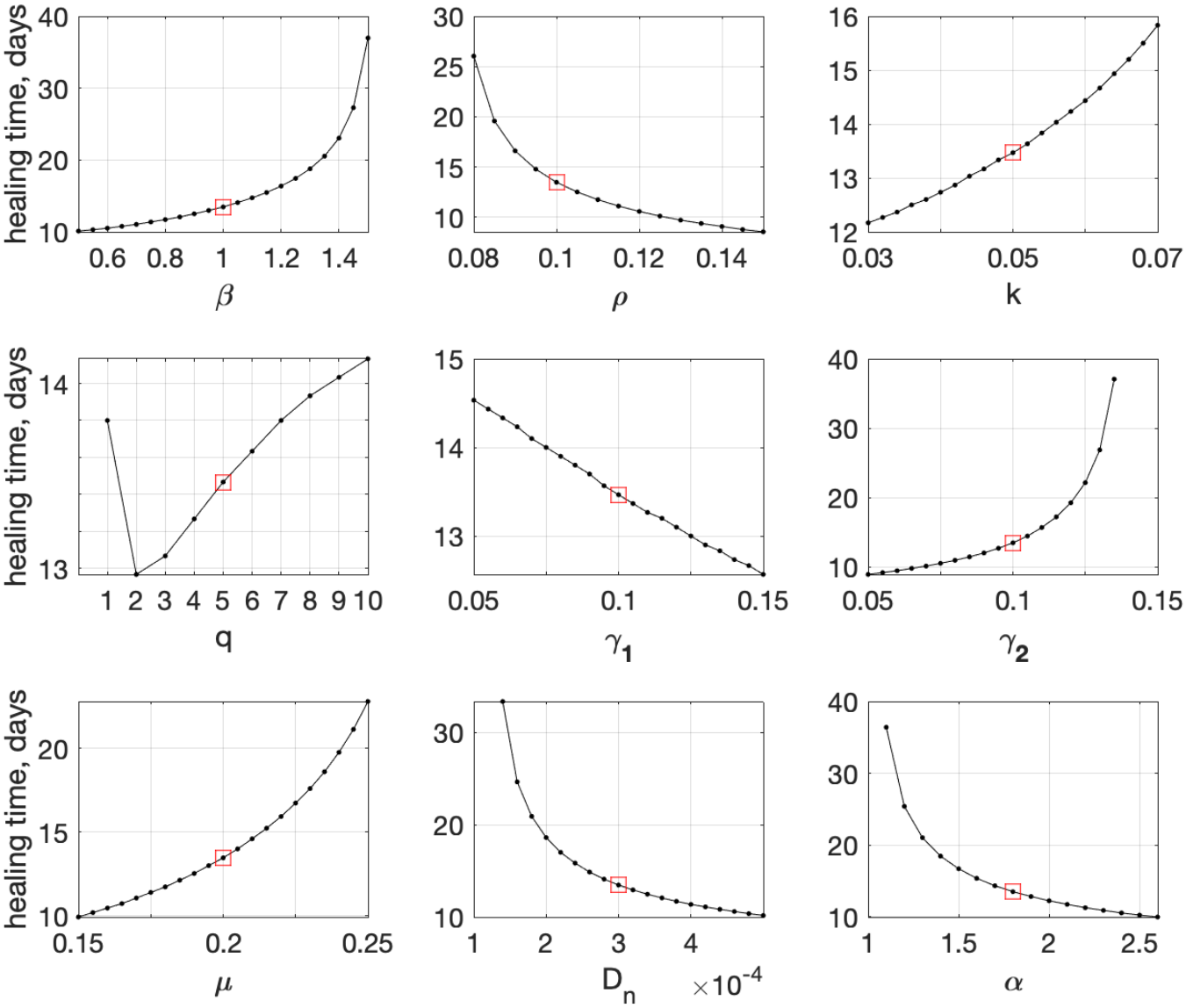

Figure S5. Sensitivity of the model to variation of parameters. Wound healing model simulations were performed without actuator. Wound healing time dependence on the parameters is shown. Each plot corresponds to variation of one parameter, while other parameters were set as in table 1. Red frame marks the main scenario shown in Figure 2 of the main text.

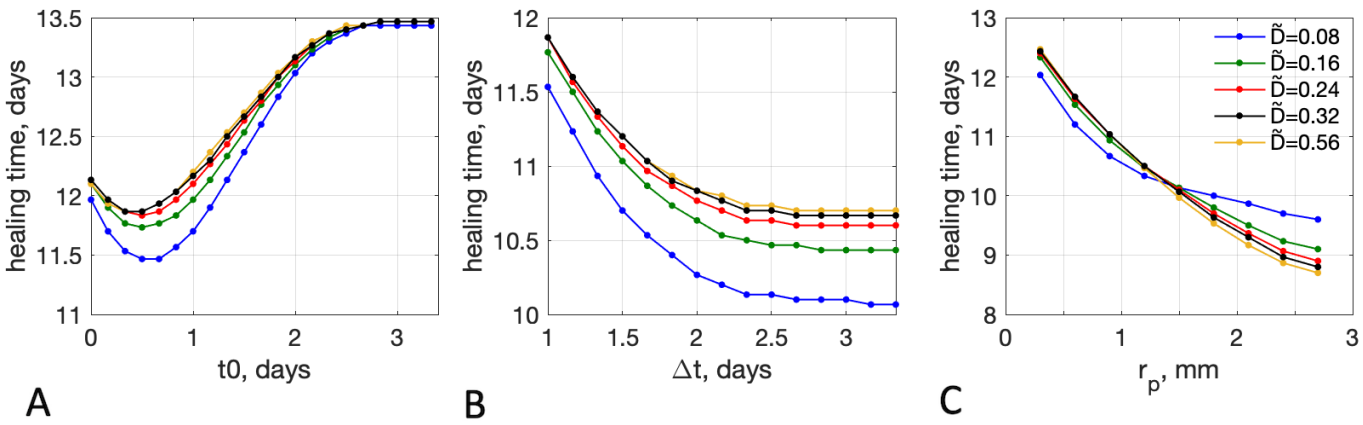

Figure S6. Sensitivity of the model results to variation of parameter $\tilde{D}$. Wound healing time dependence on: (**A**) treatment beginning time t_0 ($\Delta t = 1$ d, $r_p = 0.9$ mm); (**B**) treatment duration Δt ($t_0 = 8$h, $r_p = 0.9$ mm); (**C**) actuator position r_p ($t_0 = 0$, $\Delta t = 1$d 16h).

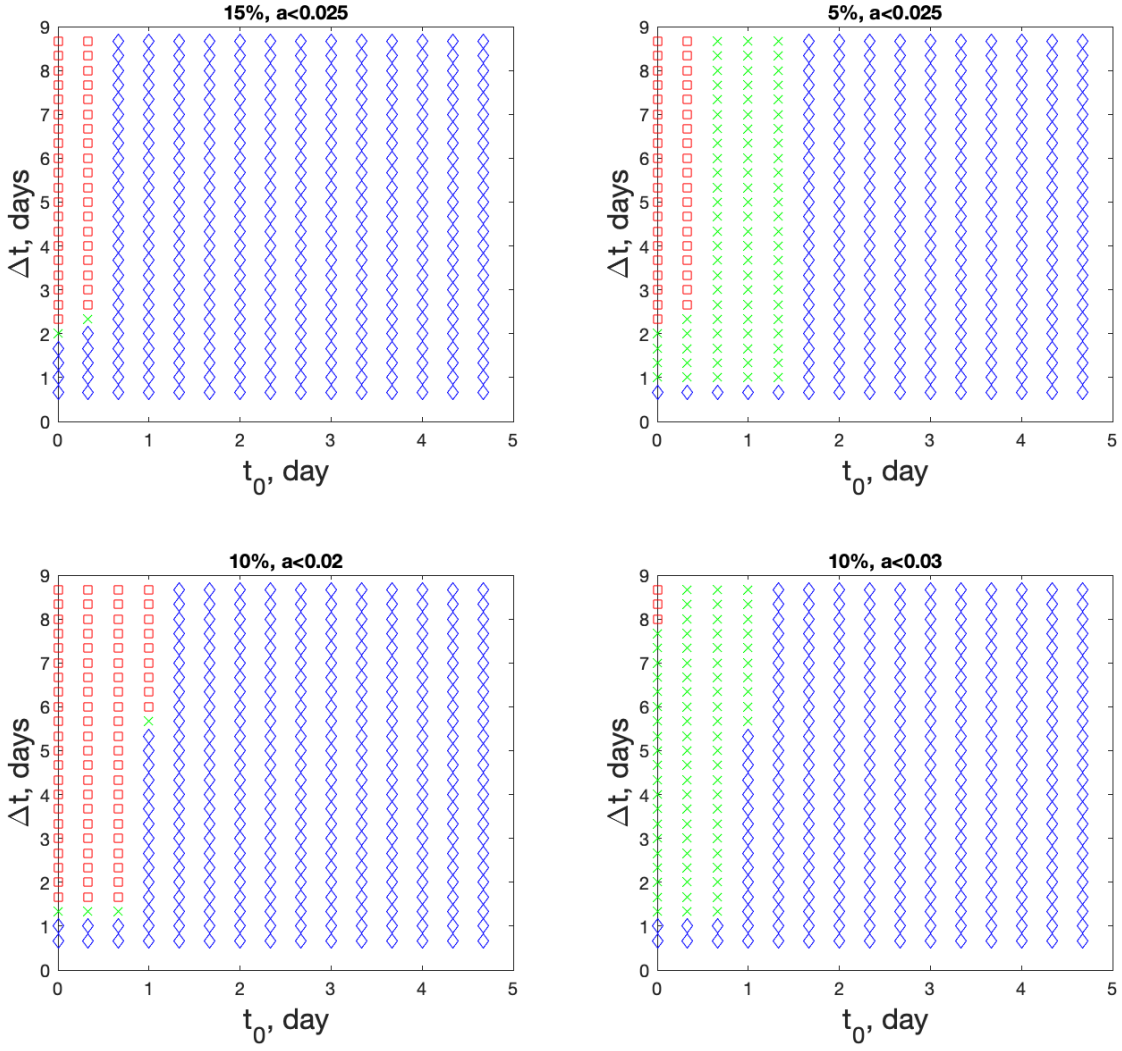

Figure S7. Parametric plane of optimal treatment regimes for several selections of the thresholds: green crosses – the safe and beneficial regimes of treatment; red squares – wound cleaning (defined as time when debris $a <$ threshold is reached) takes longer time than wound healing; blue diamonds – wound healing time is diminished less than estimated percent in comparison with non-treated wound (compare to Figure 7 of the manuscript).