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F. Schulze considered the evolution of hypersurfaces in $\mathbb{R}^{n+1}$ with normal speed equal to a power $k > 1$ of the mean curvature. He obtained the levelset solution u of the flow as the C^0-limit of a sequence u^ϵ of smooth functions solving the regularized levelset equations. We prove a rate for this convergence. Then we triangulate the domain by using a tetraeder mesh and consider continuous finite elements, which are polynomials of degree ≤ 2 on each tetraeder of the triangulation. We show in the case $n = 1$ (i.e. the evolving hypersurfaces are curves), that there are solutions u_h^ϵ of the above regularized equations in the finite element sense, and estimate the approximation error between u_h^ϵ and u. Our method can be extended to the case $n > 1$, if one uses higher order finite elements.