Finite element simulation in biomechanics: bone and dental cements

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SUMMARY

This paper is concerned with the accuracy of numerical modelling in implant analysis. The discretisation error in a given finite element calculation is estimated and the mesh is refined accordingly. Furthermore the need for accurate modelling of the constitutive laws of the involved material is stressed. An isotropic model for bone is tested versus an orthotropic one. When modelling the setting process of a polymer based tooth filling, time dependent viscous flow occurring in the restorative material is taken into account and the results are compared to the linear case.