Perkembangan semen tulang sebagai bahan fiksasi pada perawatan bedah tulang di bidang kedokteran gigi

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Abstrak

The first bone cement developed by Charnley in the 1960s using polymethyl methacrylate (PMMA) remains the most widely used material for fixation of orthopaedic joint replacement. In the field of dentistry, polycarbocylate and glass ionomer cements first came to prominence as dental cements in the late 1960s and early 1970s. Although biocompatible, the zinc component results in the formation of a fibrous collagen capsule around the zinc polycarboxylate cement in vivo, which compromises the strength of the intermediate region between the bone and cement. Glass ionomer cements were anticipated to have potential in orthopaedic applications. The discovery of a well integrated intermediate layer between bone and many bioactive ceramic phases from the calcium-phosphate systems, such as hydroxyapatite (HA), resulted in the development of new cements incorporating such phases. Investigations into bioglass and apatite/wollastonite glass-ceramics prompted the development of off-the-shelf bone graft substitute materials. Synthetic hydroxyapatite is commercially available and serves primarily as a scaffold in order to facilitate the bone regeneration process. Many investigations have ranged from the development of castable bioactive materials to modified bioactive composites. This article attempts to give a broad overview of the different types of cements.