

# CURRENT CONCEPTS REVIEW

## THE ROLE OF GROWTH FACTORS IN THE REPAIR OF BONE

### BIOLOGY AND CLINICAL APPLICATIONS

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- ▶ Growth factors (bone morphogenetic protein, transforming growth factor-beta, fibroblast growth factor, platelet-derived growth factor, and insulin-like growth factor) are proteins secreted by cells that act on the appropriate target cell or cells to carry out a specific action.
- ▶ Because growth factors are expressed during different phases of fracture-healing, it has been thought that they may serve as potential therapeutic agents to enhance bone repair.
- ▶ The selection of an appropriate carrier or delivery system for a particular growth factor is essential in order to induce a specific biologic effect.
- ▶ There are a number of potential clinical applications for growth factors in the enhancement of bone repair, including acceleration of fracture-healing, treatment of established nonunions, enhancement of primary spinal fusion or treatment of established pseudarthrosis of the spine, and as one element of a comprehensive tissue-engineering strategy that could include gene therapy to treat large bone-loss problems.