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bone and cartilage tissue engineering for facial reconstructive surgery

In facial reconstructive surgery, new techniques based on the principles of tissue engineering have moved over the last decade from the bench closer to the bedside, where they are being combined with the principles of plastic surgery. In particular, mechanically competent cartilage grafts and osteoinductive constructs vascularized by flaps are envisioned to replace autolo-

generate a graft that can be implanted at different sites of the head and neck by applying the same surgical techniques as in reconstruction using autologous grafts. Engineering of a cartilage graft would start from obtaining a small biopsy from the nasal septum, ear, or rib cartilage. This procedure can be performed under local anaesthetic in a minimally invasive fashion and will not

donor age. To overcome these limitations, specific regulatory molecules (e.g., growth factors, hormones, metabolites) have been employed as medium supplements during the different culture phases. Results indicate that expansion of chondrocytes in the presence of growth factors not only increases the cell proliferation rate, but also maintains the ability of the cells to redifferentiate