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Nipple reconstruction: a regenerative medicine approach using 3D printed tissue scaffolds

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Nipple-areola complex reconstruction is a common procedure that often accompanies breast reconstruction. Historically, local skin flaps were utilised for nipple reconstruction, with more recent techniques exploring the addition of implanted material. Tissue engineering and regenerative medicine (TE&RM) represents a potential source of stable and biocompatible implantable tissue which may have a positive effect on cosmetic outcomes. Conventional TE&RM techniques involve seeding a scaffold with the patients' own cells and using growth factors to promote survival. The clinical applicability of these techniques is limited by its cost and ability to produce sufficient volumes of viable tissue. This article reviews the evolution of nipple reconstruction techniques and current TE&RM protocols; these two fields are then combined to propose a novel approach of using TE&RM scaffolds to augment conventional nipple reconstruction.

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