Steerable needle-based design for adipose apoptosis treatment

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Technology description

Abstract

Current steerable needle designs rely on beveled needle tips to determine the direction of tissue fracture. These type of steerable needle designs rely on interactions between the tissue and needle bevel type, which inherently brings the inhomogeneity of tissues into question, and makes actualization of a desired bend across a range of tissues difficult. As well, current steerable needle designs only allow a 12-20cm radius of curvature of the needle. This uncertainty of bending and low actualization of curvature is hindering potential medical needle applications.

In the present technology we present a steerable needle that is controlled at the distal tip and does not rely on a bevel for determining the direction of fracture. This technology utilizes a technique that creates a direction of fracture in the tissue, changeable after already being inserted, that a super-elastic needle follows. The method of introducing the fracture allows not only control over the direction of fracture but also control over the degree of bending which redefines the understanding of needle applications. This technology has the potential to reduce the radius of curvature to 2-4cm, while also facilitating unprecedented directional control after application, allowing steerable needle procedures to be applied in a variety of ways unheard of before.

Advantages

This technique would be less invasive than liposuction and laser ablation and as a result with produce less scar tissue.

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