Fracture-Directed Steerable Needles

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Technology description

Challenge
Current steerable needle designs rely on beveled needle tips to determine the direction of tissue fracture. Reliance on on interactions between the tissue and needle bevel type inherently brings the inhomogeneity of tissues into question, and makes actualization of a desired bend across a range of tissues difficult. In addition, current 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.
Technology
This novel steerable needle is controlled at the distal tip and does not rely on bevel for determining the direction of fracture. Direction of fracture in the tissue is changeable after insertion. The method of introducing the fracture allows not only control over the direction of fracture but also control over the degree of bending. Radius of curvature is reduced to 2-4cm. This technology facilitates unprecedented directional control after application, allowing steerable needle procedures to be modified and applied in a variety of new ways.

Application area

Less invasive than liposuction and laser ablation; will produce less scar tissue.

Institution

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