

# Microneedles can increase the effectiveness of topical anesthesia used in dentistry

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Harvinder Gill, professor in the Department of Chemical Engineering at Texas Tech University. Credit: Karina Toledo / Agência FAPESP

Researchers from Brazil and Texas have started human testing of a new strategy to increase the effectiveness of topical anesthesia used in dentistry to reduce patient discomfort during oral injections. It involves a small device containing 57 microneedles, which, when placed on the gums, cheek or other location of the mouth, makes tiny holes through which anesthetic substances like lidocaine can penetrate into deep regions of the oral mucosa.

The fear of injection is one of the main reasons that patients develop [dental phobia](#) and avoid dental treatments, which negatively impacts [oral health](#). Harvinder Gill, a professor in the Department of Chemical Engineering at Texas Tech University (TTU), says, "That situation causes anxiety for patients and dentists alike, and could compromise the treatment outcome." Gill says that because conventional methods have little penetration and are not very effective, they cannot completely assure protection for the patient. "A deep injection is needed to numb the area to be treated or to block a nerve. And this injection is usually painful."

The new method had already been tested on 10 patients in a preliminary test, and according to Gill, it was well tolerated. "Among our objectives is measuring the pain caused by the 700 micrometer-length microneedles, as well as determining the effectiveness of this system in expanding the action of the topical anesthesia," said the researcher. One of the project's main goals is evaluating the feasibility of this new strategy for releasing drugs into the [oral mucosa](#).

Provided by FAPESP

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