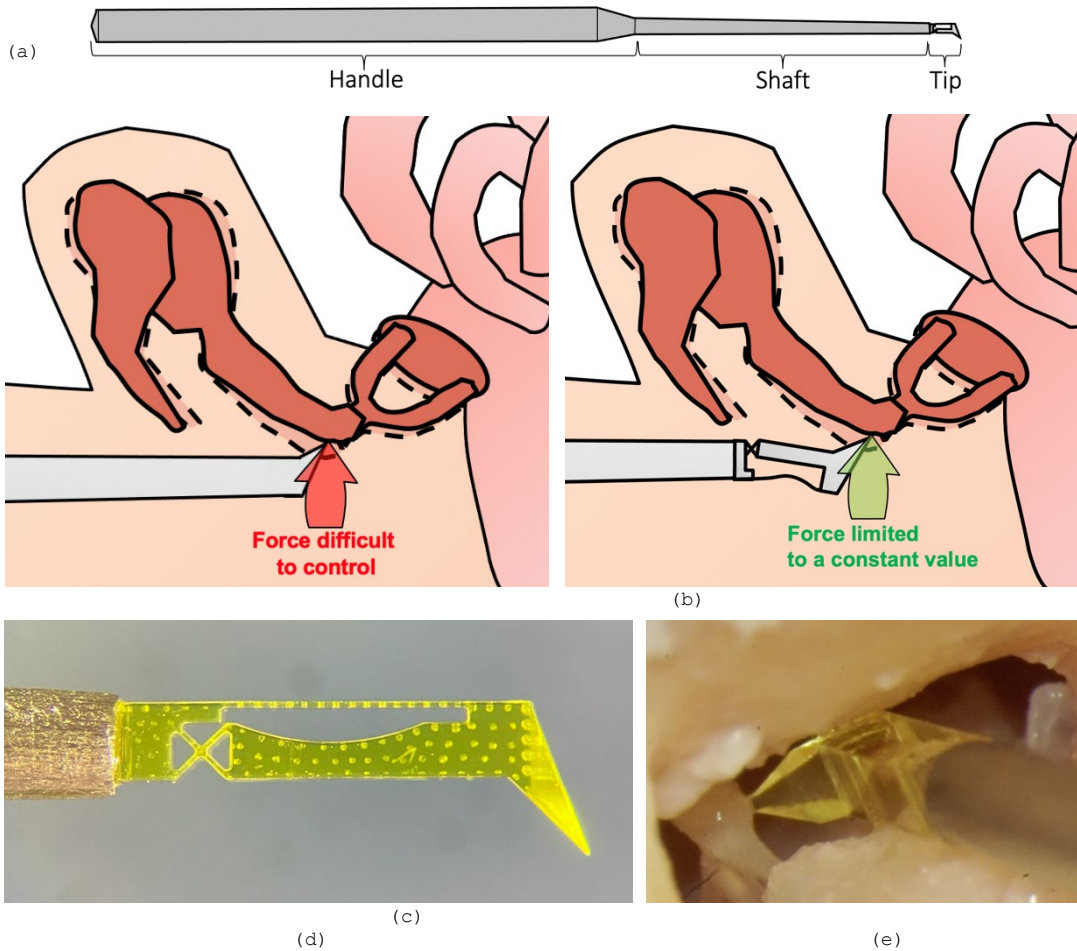


# Clic-Clac: constant-force surgical tool for objective assessment of ossicular chain mobility



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Keywords

Constant-force compliant mechanism, Handheld surgical instrument, Ossicular chain mobility

Intellectual Property

L. Tissot-Daguet, C. Baur, H. Schneegans, A. Bertholds, P. Llosas, Detection mechanism for a medical sensing tool, medical sensing tool, WO2022253808 (A1), applicant: EPFL, 2022.

Publications

[L. Tissot-Daguet, C. Baur, A. Bertholds, P. Llosas, S. Henein, Design and modelling of a compliant constant-force surgical tool for objective assessment of ossicular chain mobility, in: 2021 21st International Conference on Solid-State Sensors, Actuators and Microsystems \(Transducers\), IEEE, 2021, pp. 1299-1302.](#)

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Constant-force surgical tool: (a) schematic view of the new tool, (b) ossicle mobility assessment using a conventional rigid hook, (c) ossicle mobility assessment using the new tool, (d) device tip, (e) microscope picture of in-vivo ossicle mobility assessment using the clic-clac device.

## Description

Surgeons generally assess the mobility of the ossicle chain by manual palpation using rigid elongated hooks inserted through the ear canal. As the applied forces are in the range of a few grams equivalent force, the measurement remains subjective and its reliability highly dependent on the level of experience and skills of the surgeon. The proposed surgical tool is based on a novel passive constant-force compliant mechanism used to apply predefined forces to the structure of interest (e.g., 10 mN for ossicle mobility assessment).

## Advantages

Using this handheld constant-force tool along with an operating microscope for visual feedback of the surgical target displacement, surgeons can objectively quantify its mobility, adherence and/or tissue properties.

## Applications

- Ear surgery (e.g., ossicle mobility assessment)
- Eye surgery (e.g., epiretinal membrane peeling)