

ABSTRACT

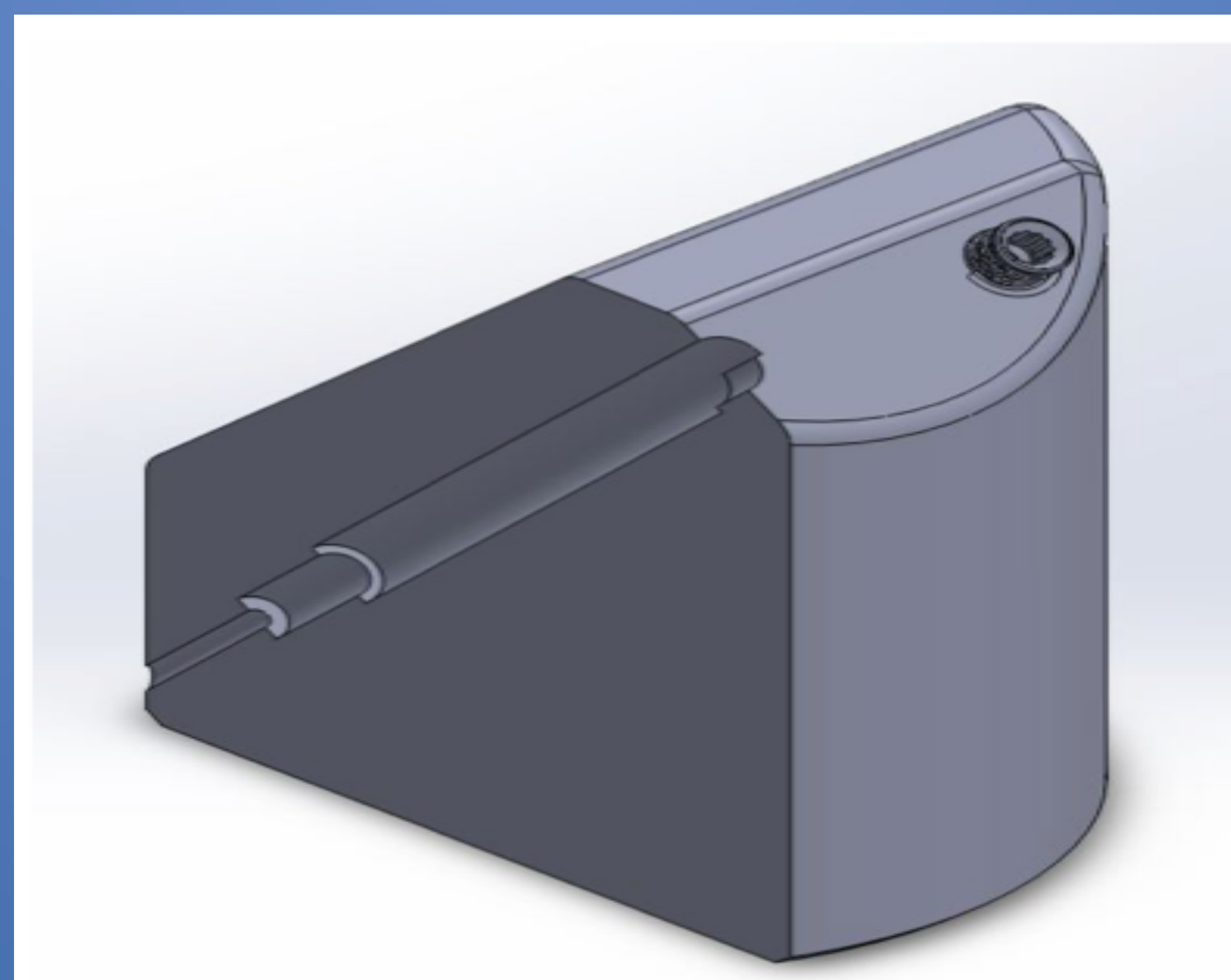
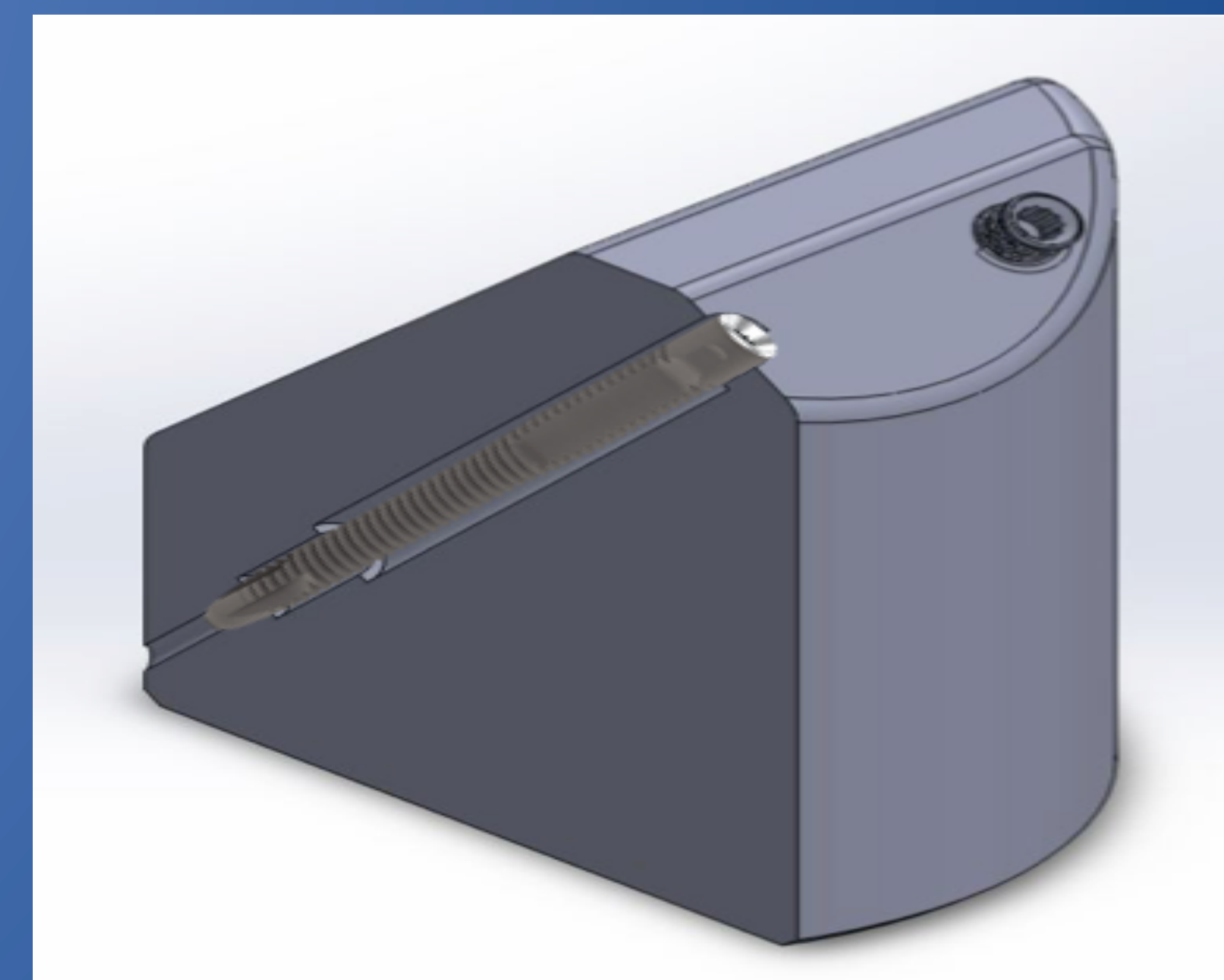
Zygomatic implants using has increased, allowing cases of severe atrophic maxilla to be rehabilitated, promoting aesthetics and masticatory function for patients. Faced with several possible techniques for zygomatic implants, new implant designs have been proposed to improve the long-term performance of the implant-bone-soft tissue assembly. Therefore, the aim of this study was to evaluate the in vitro fracture strength of Z-fix (Titanium Fix, São José dos Campos, Brazil) zygomatic implants.



All implants received angled abutments (Microunit 30°, TitaniumFix) and a cap (metal bet) to test, following ISO14801.

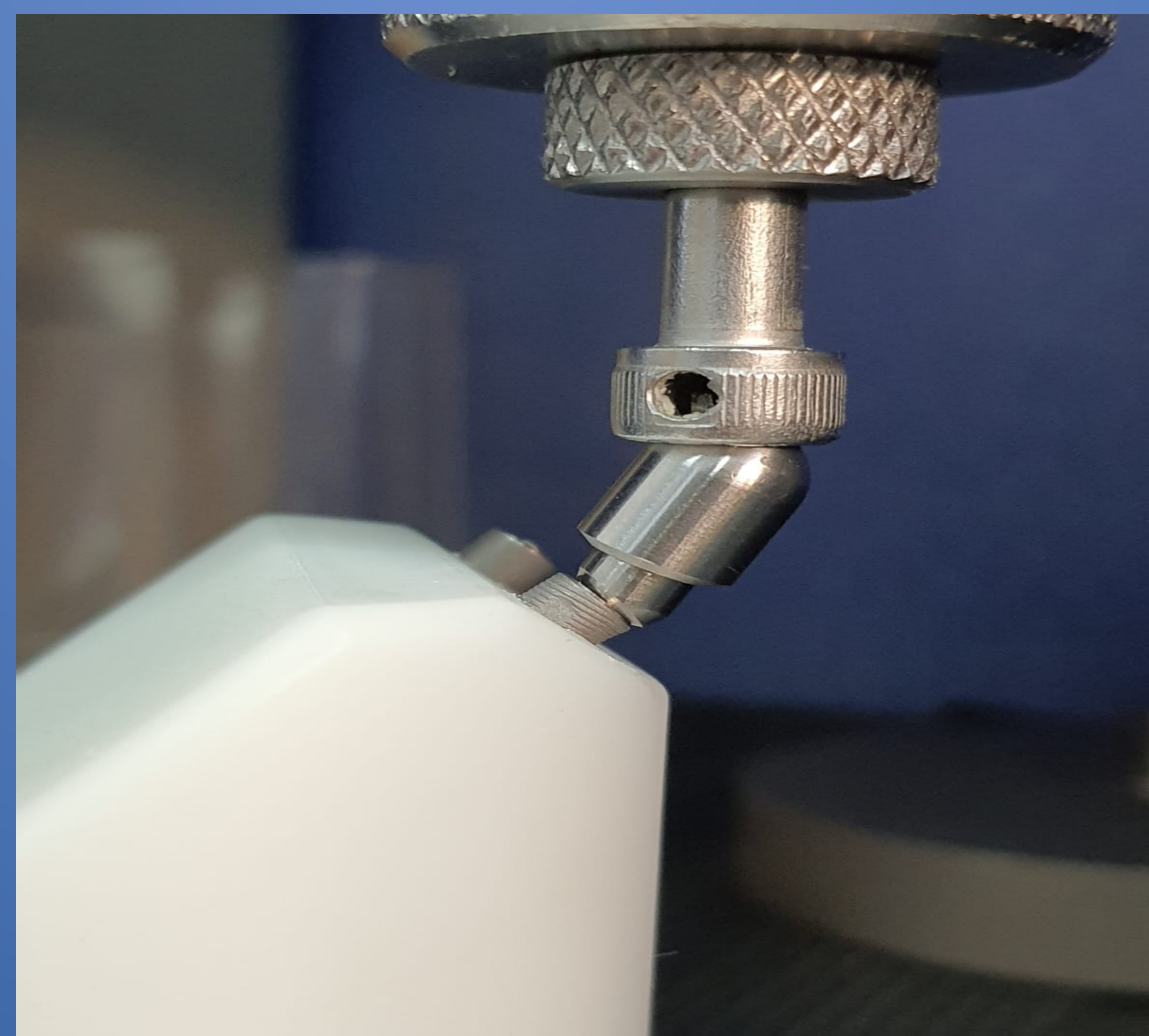
For the fracture strength test, the implants were installed in resin blocks simulating a clinically frequent condition in which only the apical 10 mm are osseointegrated, and in the cervical portion there is a support of 5 mm in half the diameter of the implant.

The test was made in a universal testing machine (EMIC), with a load cell of 1000 kgf and a speed of 1mm/min, until fracture occurred. All fractures occurred in the cervical portion of the abutment screw, which would facilitate its removal in the event of an oral fracture.



The fracture strength was higher for conventional design, while flat and Profile designs showed similar behavior.

Implant	Mean Fracture Strength
Conventional	1654.96 N
Flat	1088.82 N
Profile (experimental)	1230.01 N



This assay was limited by the ISO 14801 conditions since it is not applicable for predicting *in vivo* performance of the dental implant and the tests were made over single implants, when a better control would be assessed over multiple implants.

Hence, the conditions were adapted to simulate the worst case scenario, which showed results that indicated higher fracture strength for conventional design, while flat and smooth designs showed similar behavior.

It is possible to conclude that although the conventional design has shown greater fracture strength, all zygomatic implant designs have mechanical behavior above physiological masticatory loads and can be indicated for use.

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