

# Chewing efficiency and gastric emptying rate in immediate loading rehabilitated patients – preliminary report

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**Aim:** The goal of this study was to evaluate if patients with a compromised dentition, rehabilitated with a full-arch implant-supported immediate loading prosthesis, present an improvement of chewing ability and gastric emptying rate.

**Methods:** This is a preliminary report. Four patients (3 men, 1 woman - mean age 58 year) referred to the Department of Implant Prosthesis of the University of Genoa presenting a compromised dentition and were enrolled in this study.

The dental arch to be treated had no more than 6 remaining teeth, patients were not affected by gastric disorders, had a proper body index, and did not assume any prokinetic or anticholinergic drugs.

Before enrollment, patients underwent a urea breath test (AB analitica srl) to evaluate the presence of *Helicobacter pylori* (Hp). In fact, Hp could be a confounding agent in the execution of the gastric emptying breath test.

Hp affected patients were treated with the association of Esomeprazole, Clarithromycin, Amoxicillin and probiotic for ten days. After 3 weeks a new breath test was done to evaluate the bacterium eradication.

Before and 2 months after surgery, chewing ability and gastric emptying rate of patients were evaluated.

Chewing ability was evaluated according to the Holthoff-Slagter protocol. Patients were invited to chew 8 Optosil cubes (Heraeus Kulzer). Test food was collected after 40 chewing strokes and dried. The obtained particles were sieved on a stack of 5 sieves, with apertures of 4.75, 4, 2, 1, 0.5 and a bottom plate. The amount of test food on each sieve and on the bottom plate was weighed.

Trituration performance was expressed as the amount of particles below 4.75 mm recovered after subjects chewed.

Gastric emptying was measured by means of the <sup>13</sup>C-octanoic acid breath test. 100 mg of Octanoic acid were added in a test meal of 250 kcal. This consisted of one egg cooked with butter (10 g), ham (21 g), 2 slices of bread and 250 ml of water. The <sup>13</sup>CO<sub>2</sub> samples (collected every 15 min for 4 hours) were measured by means of an isotope radio mass spectrometer. The time required for half of the gastric contents to transit through the pylorus (T<sub>1/2</sub>) was evaluated.

**Results:** After the full-arch immediate loading rehabilitation, the improvement of trituration ability was of 242% (median value) and T<sub>1/2</sub> improved of 51%.

**Conclusion:** The results of this preliminary study indicate that full-arch implant-supported immediate loading prostheses improved patients' masticatory efficiency and gastric emptying rate.



Fig. 1



Fig. 2

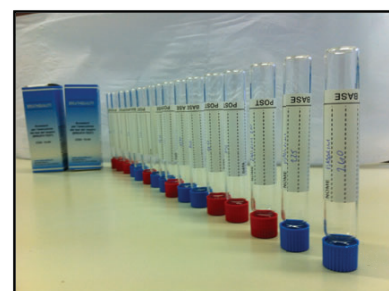


Fig. 3



Fig. 4

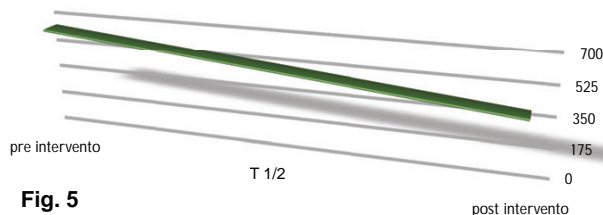


Fig. 5

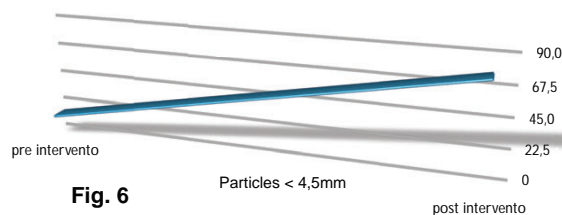


Fig. 6

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- Perri F, Pastore MR, Annese V. <sup>13</sup>C-octanoic acid breath test for measuring gastric emptying of solids. *Eur Rev Med Pharmacol Sci.* 2005 Sep-Oct;9(5 Suppl1):3-8.

## LEGENDS:

- Fig. 1-2 Pre-post surgery  
 Fig. 3 Breath test supplies  
 Fig. 4 Test food  
 Fig. 5 Gastric emptying rates  
 Fig. 6 trituration performance rates