

Letter to the editor. RE: Piezoelectric surgery versus conventional drilling for implant site preparation: A meta-analysis

Dear Editor,

We read with great interest the meta-analysis by Amghar-Maach and coworkers [1], recently published on your journal. This paper aimed to investigate the implant stability achieved with piezoelectric surgery compared to conventional drilling for implant site preparation during early healing period. Three similar meta-analyses by Atieh et al. [2], Sendyk et al. [3] and Garcia-Moreno et al. [4] have been published in 2018, ending up with different outcomes. Although the present study has been conducted with sound scientific methodology following PRISMA statement [5], some pitfalls, leading to results misinterpretation, are present.

First minor observation is that, in the present meta-analysis, all included studies [6-10] were classified as randomized clinical trials: conversely, at a deeper analysis, the study by Di Alberti et al. [6] appears to be a case-control study. Moreover, all the included publications were reported to be studies with split-mouth design: in our opinion only one split-mouth trial was present [10], with the others presenting a cross-over design [11].

Second and most important consideration: an evident discrepancy is present between implant stability values of individual studies (Table 1) and meta-analysis forest plots (Fig. 3,4,5). Implant stability quotient (ISQ) values in individual studies [7,8,9] are always higher in test group (piezoelectric) than in control group (drilling) at each time point, except at implant positioning in two studies [7,9]. Forest plots of the present meta-analysis totally inverted all the ISQ values, showing significant superiority of drilling group. These outcomes are clearly in contrast with the aforementioned recent meta-analyses [2,3,4], based on the same studies included by Amghar-Maach and coworkers.

Therefore, the discussion section of the present study appears to be misleading for the reader, since it is stated as conclusion that “Piezoelectric surgery has shown no superiority to conventional drilling for implant stability during the healing period. In fact, higher implant stability values for conventional drilling were found at 2 and 3 months”.

Piezoelectric implant site preparation has been reported as a suitable alternative to conventional drilling systems [12,13]. Even if possible superiority of one of the two techniques is still a matter of debate, a growing body of evidence suggests enhanced bone healing response after piezoelectric surgery, with reduced production of pro-inflammatory cytokines and faster release of bone morphogenetic proteins [10,14,15]. In particular, early increase of ISQ values in piezoelectric sites could be related to lower surgical trauma, with a shorter inflammatory phase and little bone resorption, when compared with drilled sites.

In conclusion, results of meta-analysis by Amghar-Maach and coworkers [1] appear incorrect and bring to misleading conclusions, which are neither sound nor supported by literature. We believe this important information should be noted and, if possible, corrected in the abovementioned journal article.

Declaration of Competing Interest

None

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