



## Dose non-axial occlusal forces on implant-supported restorations cause marginal bone loss?

Taylor TD, Wiens J, Carr A. Evidence-based considerations for removable prosthodontic and dental implant occlusion: a literature review.

J Prosthet Dent. 2005 Dec;94(6):555-60.

### *Article Review by: Babak Shokati*

One of the most famous and respected American Prosthodontists, “Tom Taylor” and his coworkers reviewed the dental literature to assess the validity of the belief linking occlusal forces to biological complication in peri-implant tissues. Here is the quintessential segment of the above mentioned article:

Over the past three decades, many authors dedicated their efforts to demonstrate the adverse biological effects of non-axial occlusal forces on the soft and hard tissues supporting implant-supported restorations. The common rationale for such a notion would mostly originate from the observation that non-axial forces create an uneven distribution of tension and compression along the bone. It has been frequently hypothesized that the local concentration of stress on the crestal alveolar bone can result in gradual marginal bone loss.

While it is evident that non-axial loading on mechanical devices assembled with screws (i.e. implant-supported restorations) can greatly increase the rate of mechanical failures due to screw loosening/fatigue, clinical evidence is lacking regarding the adverse effect of non-axial occlusal forces on the osteoclastic activities and bone resorption in the proximity of osseointegrated implants. Apart from the fact that biological reactions of a living organism cannot be presumed as predictable as the behaviour of a solely mechanical device, there is another factor making such simplified mechanical patterns for dental implants rather irrelevant:

*The threaded profile of standard dental implants transfers the occlusal forces with an uneven distribution of forces to the supporting bone (even in axial exertion of occlusal forces). The roughened surface of implants makes the whole scenario even more complex.*

Taylor et al. conclude that:

- 1) There is **no** scientific evidence showing a causal effect between occlusion and bone loss
- 2) The limited evidence available shows: **there is no relation between occlusion and bone loss.**