

Parallelism of Dental Implants

After placement of multiple dental implants, a radiograph is usually taken to demonstrate the implants' relative positions. The implants can be relatively parallel or not parallel. There may be a certain esthetic satisfaction in parallel placement. There may be prosthetic fabrication issues if the implants are extremely off from parallel. Nonetheless, from a biomedical engineering perspective, nonparallel placement may better resist occlusal loads.¹

True parallel placement may be impossible when implants are placed in the curved edentulous arch, especially when there is a facial concavity. The importance of parallel placement may be overrated since there are techniques to correct difficulties in prosthetic fabrication.^{2,3}

Nonparallel placement of multiple implants may increase the stability of a prosthesis when the implants are splinted in the prosthesis. Under load, this placement distributes stresses through more of the containing bone than parallel implants. In-line implants may induce screw loosening under functional load, especially when there is a cantilever.¹

The engineering school of thought asserts that tripodal placement may be best to resist occlusal loading.^{1,4} When there is a load, any stress on a nonparallel implant will be offset by another nonparallel implant that is directed more axially in the vector path of the load.

Nonetheless, parallelism may be important in removable overdentures for ease in fabrication and to prevent wear issues of the retainers.⁵

Parallelism may not be depictable on some panoramic radiographs. Plane film radiographs may not accurately depict the actual position of in situ implants.⁶⁻⁸

Parallelism may be desirable for ease of prosthetic fabrication, but parallelism is not mandatory for a successful treatment outcome. Thus, if a dental implant surgeon is criticized for nonparallel implant placement, the response should be that of an adherent of the engineering school of thought.

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