Occlusal force pattern in dentitions with mandibular implant-supported fixed cantilever prostheses occluded with complete dentures.

Falk H, Laurell L, Lundgren D.

Naturally occurring axially directed closing and chewing forces were measured in ten patients with mandibular fixture-supported cross-arch prostheses occluding with maxillary complete dentures. The design of the mandibular constructions was characterized by bilateral posterior two-unit cantilevers. The forces were measured using eight miniature strain gauge transducers mounted in the maxillary denture and evenly distributed over the tooth arch. Forces were thus measured at four occlusal contact points over the fixture segment and over each of the four posterior cantilever units simultaneously, giving a detailed picture of the force distribution. The total forces developed during maximal closing in habitual occlusion and chewing were of the same magnitude as previously reported for patients with tooth-supported cross-arch fixed partial dentures occluding with natural teeth using the same method. Contradictory to previous findings, in dentitions with comparable tooth-supported cantilever constructions occluding with natural teeth, local closing and chewing forces increased bilaterally in the distal direction. On average, 70% of the forces were borne by the cantilevers and 30% by the fixture-supported segment of the prostheses.