ClearCare Periodontal & Implant Centre

Perio-Prostho Corner Did You Know...

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That more than 30% of implant crowns develop proximal contact loss (PCL) and can occur as early as months after implant crown placement?

Establishing interproximal contacts is one primary objective in daily operative, conventional fixed and implant restorative dental treatment. An ideal PC maintain tooth position and arch stability, support periodontal health by preventing food impaction and facilitating hygienic cleaning.

Proximal contact geometry

Our training taught us ideal locations in both horizontal and vertical direction. Broad and definitive proximal contact for the final implant crowns allows for improved force distribution, can reduce embrasure spaces and reduce the risk of food impaction.

Prevalence

Systematic reviews report that PCL can occur within 3 months of seating an implant prosthesis. The PCL is progressive over functional time and can start as a loss of intensity to complete PCL. Its prevalence has a broad range from 30% to more than 60%. Mesial PCL is two times more common than distal PCL.

Influencing factors

The etiology and influencing variables for PCL is multi-factorial. The continuous and progressive physiological mesial drifting of natural teeth is a likely explanation. Drifting can be exacerbated with high occlusal forces, tooth wear-related dentoalveolar compensation, loss of opposing or adjacent teeth, teeth inclination and occlusal curvature, and interstitial wear between the proximal surfaces. Factors suggested to contribute to distal PCL is occlusion, tooth flaring, craniofacial, and jaw growth.
A 2020 study revealed 6 factors associated with the mesial PCL, including: patient age, implant functional years, frequent use of interdental brushes, splinting or single implant, plunger cusp, and food impaction. Splinted implant crowns show higher mesial PCL than single implant crowns. Mesial PCL is more prevalent in prosthesis older than 5 years and patients older than 50 years.
The early onset of PCL is thought to be related to residual stresses generated by seating of a screw retained implant crown. Unbalanced proximal contact strength may increase adjacent tooth movement with subsequent occlusal interference that may in part contribute to early PCL. Screw-retained implant crowns have a higher prevalence of PCL than cement-retained implant crowns.
The presence of a resin restoration adjacent to the implant crown contact reveals a higher incidence of PCL. The occlusal forces transmitted through proximal contacts can create friction and cause proximal wear on the resin surface.
A compromise in arch integrity with spacing on contralateral side of adjacent tooth shows an increased prevalence of PCL. This implies that a stable dental to resist mesial drift of teeth can be another influencing factor.

Implications

The reported implications of PCL are food impaction, consequences on biological variables (bleeding on probing), mucosal and periodontal health, papillary fill, marginal bone loss, plaque index and caries and patient dissatisfaction.
Significant risk of peri-implant mucositis and peri-implantitis associated with interproximal open contact has been reported. Of note, the PCL itself is not the risk factor, but the food impaction that occurs as a result of PCL is. Studies too report double the caries incidence for PCL on teeth adjacent to an implant prosthesis. The presence of PCL could also be a sign of an unstable occlusion.

Monitoring and Management

A progressive increase of PCL may eventually mandate interventions such as a resin addition or restoration of adjacent teeth, repairing the prosthesis or even replacement of the implant crown. Implant crown retrievability becomes an advantageous design. Interestingly, a 2022 study showed that recurrence of PCL is common and even accelerated after each repair. Nevertheless, a PCL with food impaction should be addressed. The type of repair from either crown or adjacent tooth modification showed no significant differences on recurrence rates.

In Summary

The development of PCL is a natural and long-term change observed in implant prostheses. It occurs at different rates and magnitudes through the years of function. Treatment interventions have major financial implications and become an inconvenience for patients and clinicians. As clinicians, we should inform our patients about its likelihood, and it should form part of our treatment consent. Arch integrity is important for implant therapy. The necessity of maintaining a high level of cleanliness around the implant prosthesis is key. Restored implants should be followed up routinely, and supportive periodontal therapy (SPT) be provided regularly.

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