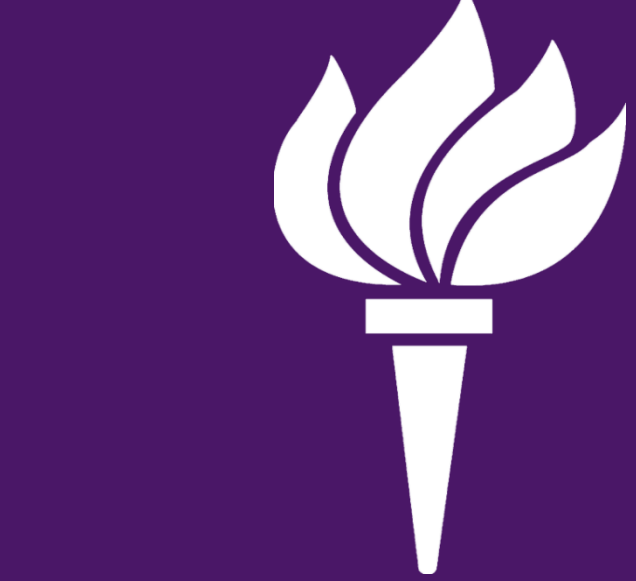




Risk factors contributing to interproximal contact loss between an implant crown and a natural tooth

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Introduction

The first report of interproximal contact loss (ICL) between an implant crown and adjacent natural tooth was by Gibbard and Zarb in 2002.¹ ICL is considered a prevalent complication for a tooth abutting an implant restoration.²⁻⁷ Complications as a result of ICL include increased food impaction, adjacent tooth caries, and mucositis.²⁰ Numerous potential causes for ICL have been presented with no consensus.²⁻⁷ Furthermore, the definition of ICL and methodology of evaluating ICL is unclear in the current literature. It has been proposed that research is needed to evaluate the many possible confounding variables.⁸

Purpose

Interproximal contact loss (ICL) is considered a prevalent complication for a tooth abutting an implant restoration. While numerous potential causes for ICL have been presented there is no consensus. A review of the current literature with a focus on possible risk factors was performed.

Methods

A PubMed search using keywords “implant OR dental implants OR implant supported prosthesis AND proximal contact loss OR ICL OR loss of interproximal contact OR open contact OR interproximal open contact OR adjacent natural teeth” resulted in 81 citations, 9 of which were relevant to the focus question. Additional references were culled from the reference lists in the identified articles. Systematic Reviews, case series, and case reports were reviewed with a focus on causation, association, or correlation.

Results

Eight Systematic Reviews and 14 Case Series were reviewed. The prevalence of ICL has been reported to be as low as 16% and as high as 66%. ICL was more common on the mesial side of implants and when a tooth abuts a splinted implant restoration. The absence of a uniform definition to accurately describe an interproximal (IP) contact and an open IP contact is demonstrated in the literature. A lack of standardized measurement strategies that relate to a needed consensus definition further exacerbates the broad range of reported results regarding ICL.

The lack of controls for almost all the ICL literature makes it difficult to draw conclusions and comparisons to unrestored, natural tooth IP contacts and the prevalence of ICL in this patient population. As a result, the available studies are inadequate to support a causal theory and identify the potential risk factors associated with ICL.

Risk Factors. Differences highlighted in yellow (more) and Turquoise (less).

Article	Arch	Ant/Post	Mesial Distal	SR vs Cement	Material IC	RCT	Material TC	IC splinted	Adjacent teeth splinted	Opposing arch	PH	BL
Bento SR	Md	No	M	NS	NS	NS	NS	NS	NS	NS	NS	No
Fathi UR	Md	NS	M	NS	NS	NS	NS	NS	NS	NS	NS	NS
Ghasemi SR	No	No	No	No	NS	No	NS	No	NS	No	No	Yes
Greenstein SR	NS	NS	No	No	NS	NS	NS	NS	NS	No	NS	NS
Manicone SR	No	No	M	NS	NS	No	NS	No	NS	NS	NS	NS
Oh SR	No	No	M	No	NS	No	NS	No	No	No	NS	NS
Sheba SR	No	NS	M	No	NS	NS	NS	NS	NS	NS	NS	NS
Varthis SR	Mx	Post	M	No	No	NS	NS	NS	NS	No	NS	NS
Alqahtani PS	NS	NS	M	NS	NS	No	NS	NS	No	No	No	No
Bompolaki RS	No	Post	M	NS	NS	No	NS	NS	NS	NS	NS	NS
Byun COIR RS	No	No	M	NS	NS	No	NS	Yes	No	NS	NS	NS
Chen PS	No	No	M	No	No	NS	NS	NS	NS	NS	NS	Yes
French RS	Md	Post	M	NS	NS	NS	NS	No	NS	NS	NS	No
Gasser RS	No	No	M	NS	NS	NS	NS	Yes	NS	No	No	No
Koori RS	Md	No	M	No	No	No	NS	No	Yes	No	NS	NS
Manicone CS	Md	Post	M	No	NS	No	NS	No	Yes	No	No	Yes
Mehanna PS	No	NS	No	Cement	No	NS	No	Yes	NS	No	NS	NS
Pang PS	Mx	NS	M	NS	No	No	NS	No	NS	No	No	Yes
Ren PS	NS	NS	M	No	No	NS	NS	NS	NS	NS	NS	NS
Saber RS	No	Ant	M	No	No	NS	NS	NS	NS	No	NS	No
Varthis RS	No	No	M	NS	NS	NS	NS	NS	NS	NS	NS	NS
Wei RS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS

Key: SR – systematic review, UR – Umbrella Review, PS – prospective study, RS – retrospective study, IC- Implant crown, TC - tooth crown, RCT - root canal therapy, PH - Parafunctional habits, BL- bone loss

Conclusion

There is a large range of reported prevalence for Interproximal Contact Loss. ICL is more common when a natural tooth abuts a splinted implant restoration. ICL is more common on the mesial, as opposed to the distal, of an implant retained restoration. Consensus in the definition and measurement strategies for ICL needs to be established to provide standardized terminology and methodology. Potential risk factors such as occlusion, restorative material, and tooth contact area need to be investigated.

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