



The Long-Term Impact of Single Implant-Supported Crowns on Adjacent Natural Teeth: A Retrospective Longitudinal Study

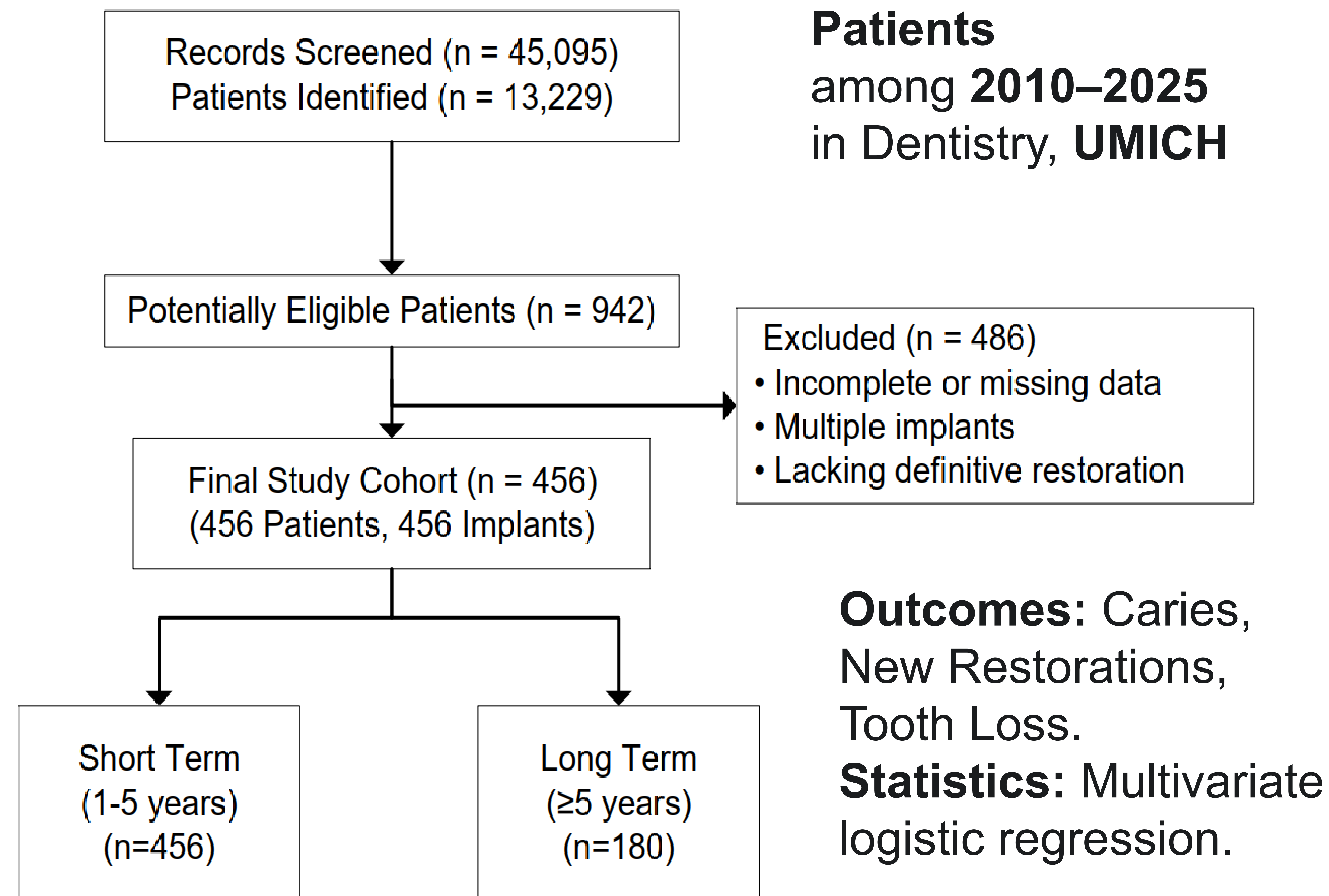
Presenter: Jinlong Shao, Ph.D, University of Michigan & Shandong University



Introduction

- Implants are ankylosed, while natural teeth migrate physically. This biological mismatch leads to proximal contact loss and potential food impaction. "Protective" loading on implants may overload adjacent teeth.
- Limited evidence was found on long-term risk factors (patient & implant-related) for specific complications in adjacent teeth.
- This retrospective longitudinal study aimed to evaluate the long-term impact of single implant-supported crowns on the health status of adjacent natural teeth.

Methods



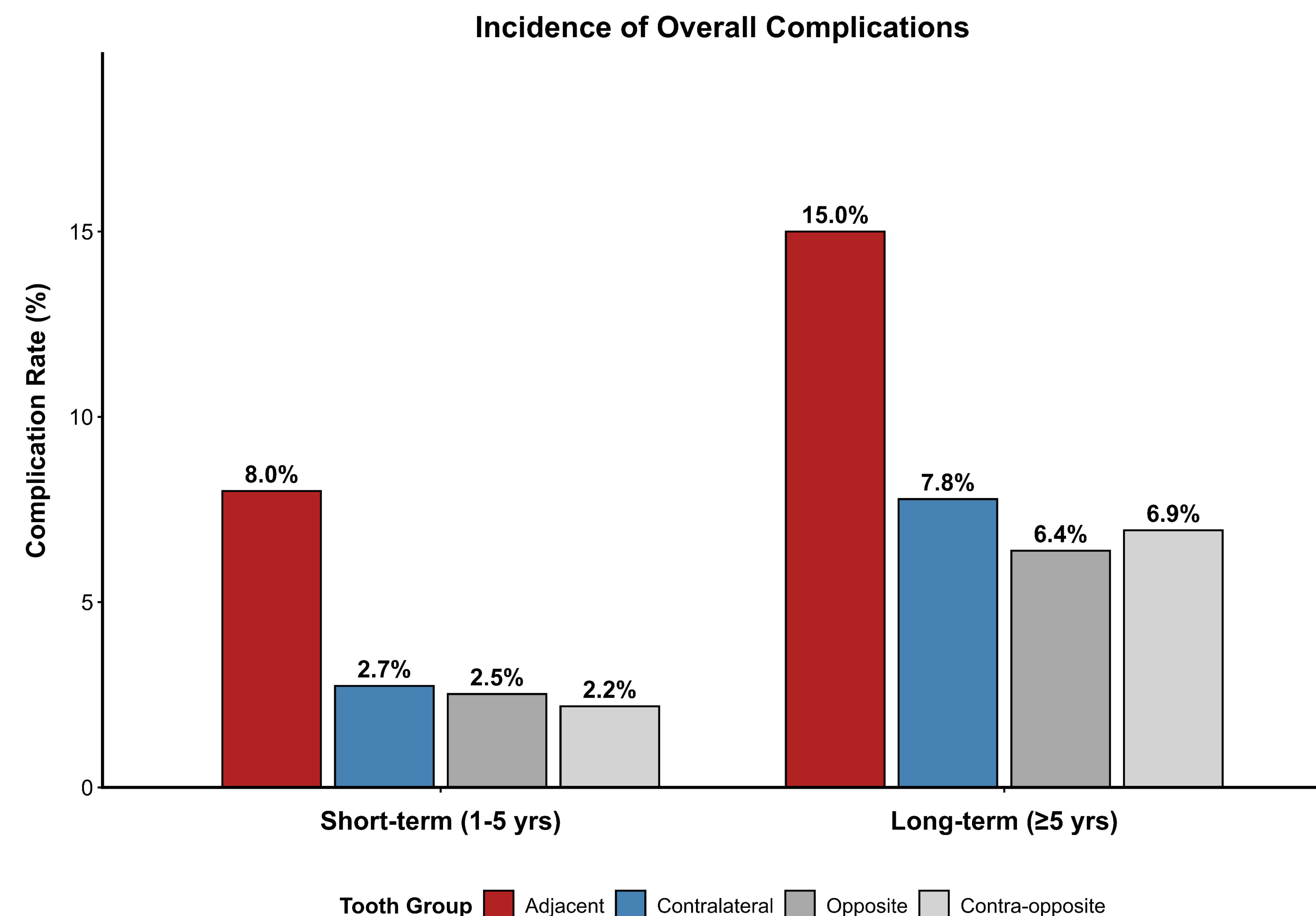


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- The study followed 456 implants (mean 3.88 years), 180 of which were followed long-term (mean 8.90 years).
- Complication rates for adjacent teeth were 8.0% (short-term) and 15.0% (long-term), a frequency two- to three-fold higher than controls.



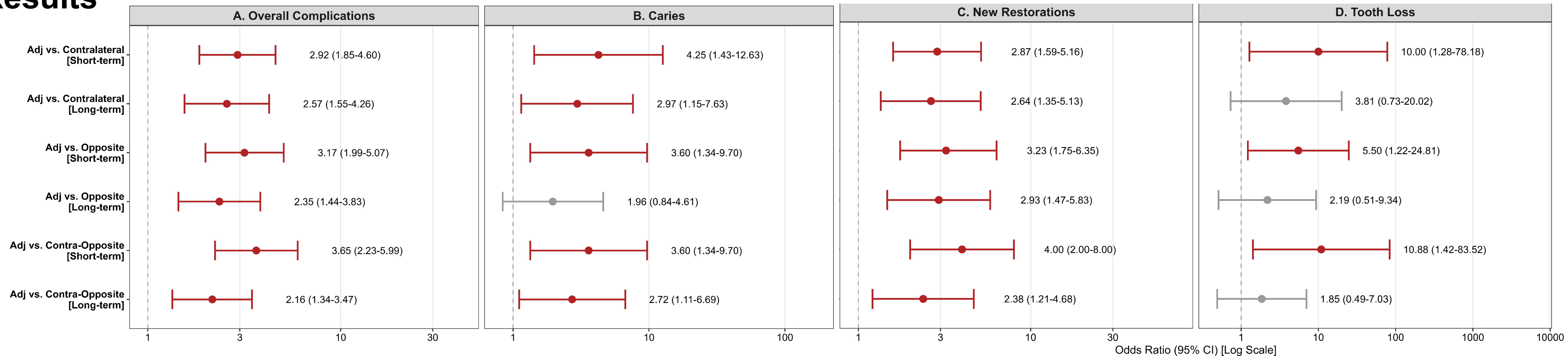


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Results



- The odds ratio (OR) of complications for adjacent teeth were significantly elevated in both short-term (OR 2.92–3.65) and long-term (OR 2.16–2.57) analyses.
- Tooth loss risk was exceptionally high short-term (OR 5.50–10.88) but became non-significant long-term.

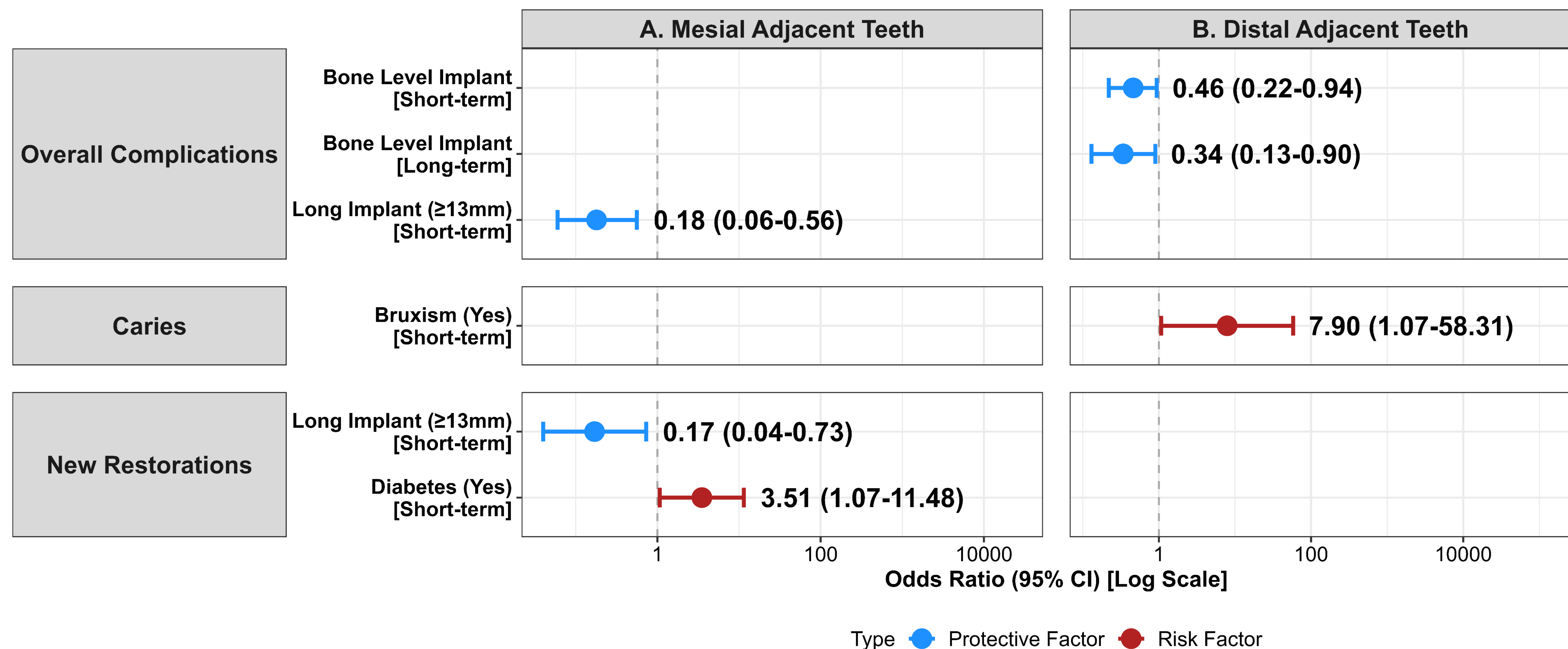


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Results



- Protective factors included long implants (≥13 mm) for mesial restorations (OR 0.17) and bone-level implants for distal complications (OR 0.34–0.46)
- Detrimental factors included diabetes for mesial restorations (OR 3.51) and bruxism for short-term distal caries (OR 7.90).



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Conclusions

- Within the limitations of this retrospective study, our findings demonstrate that **single implant-supported restorations** are associated with a **significantly increased risk of adverse outcomes of adjacent natural teeth**.
- The **overall complication rates** for these teeth were **8.0%** in the **short-term** and **15.0%** in the **long-term** follow-ups, representing a **two- to three-fold higher** risk compared to contralateral controls.
- The **risk profile: caries (mesial teeth) and tooth loss (distal teeth)** are **most pronounced** within **the first five years** post-loading. However, the elevated risk for **caries and new restorations persisted** as a significant clinical concern over the **long term**.
- While **systemic factors such as diabetes and bruxism warrant clinical attention**, certain implant characteristics such as **the use of long implants (≥ 13 mm) and bone-level implant designs** may provide **protective benefits**.