



What Affects Postoperative Sinusitis and Implant Failure after Dental Implant: A Meta-analysis



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Background

The dental implant is an innovative instrument that enables the edentulous patient to chew. Many factors have a bearing on the success of dental implantation. There are also many complications after dental implantation. In this meta-analysis, we investigated which factors increase the risk of postoperative sinusitis and implant failure after dental implant for the first time.

Methods

Data Source

Included data were searched through the PubMed, EMBASE, and Cochrane library databases. We followed the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines, and 2 authors (J.S.K., S.H.K.) independently extracted data by multiple observers.

Review Methods

We used a random-effects model considering the variation between and within the included studies.

Key Results

Twenty-seven studies were included in our final meta-analysis. The proportion of postoperative sinusitis, perforation of the sinus membrane, and implant failure was 0.05 (95% confidence interval [CI], 0.04-0.07), 0.17 (95% CI, 0.13- 0.22), and 0.05 (95% CI, 0.04-0.07), respectively, using the single proportion test. The only factors that affected postoperative sinusitis were preoperative sinusitis and intraoperative perforation of the Schneiderian membrane (P <.01 and P <.01, respectively). The only factors that affected dental implant failure were smoking and residual bone height of the maxilla (P<.05 and P<.01, respectively).

Conclusion

Two factors affect postoperative sinusitis after implant surgery: preoperative sinusitis and Schneiderian membrane rupture. It should also be noted that the factors affecting implant failure are residual bone height and smoking. These findings will have a significant impact on the counseling and treatment policy of patients who receive dental implants.

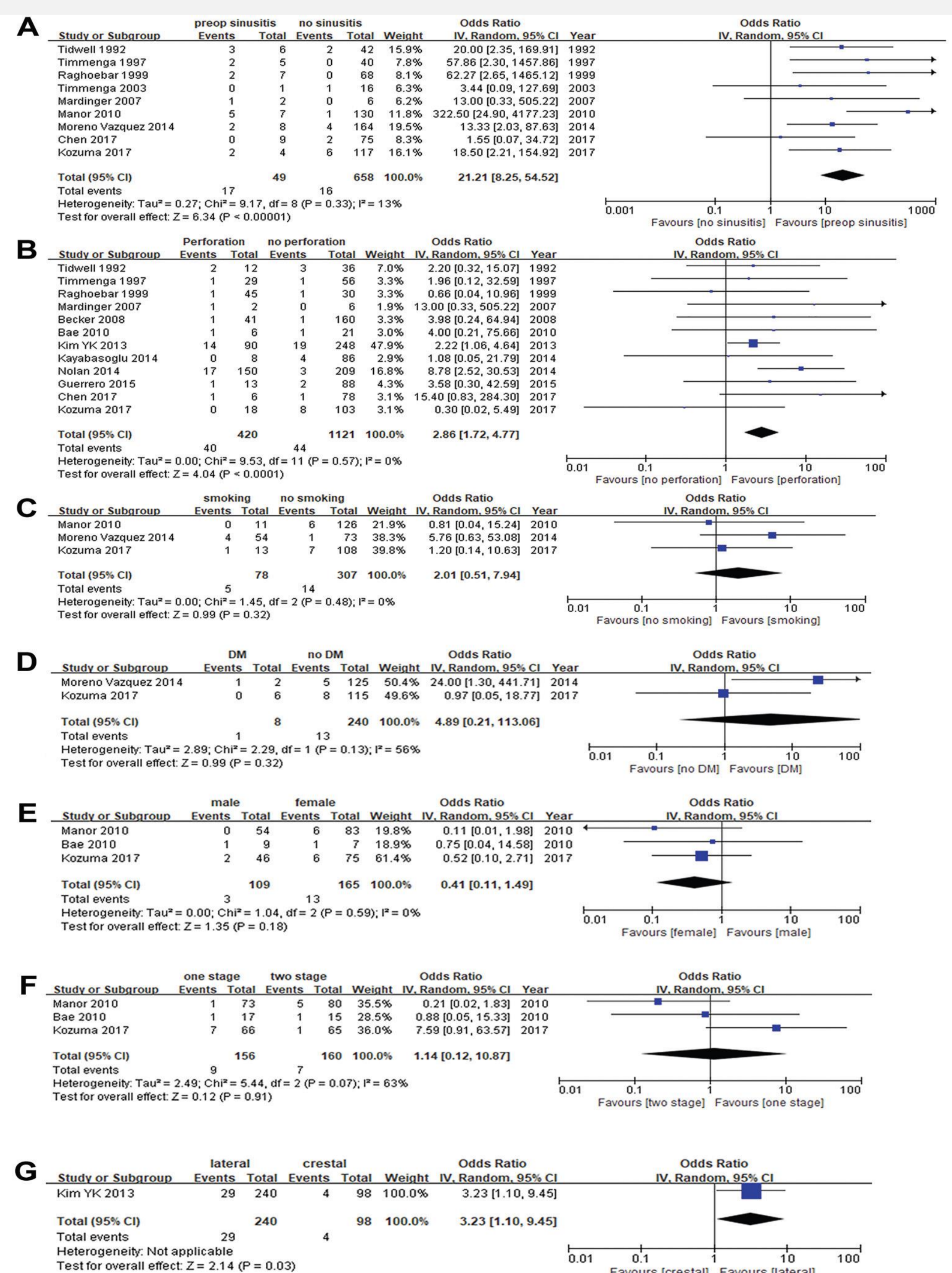


Figure 1. Forest plots showing the relationship between postoperative sinusitis and each of the following primary outcomes: (A) preoperative sinusitis, (B) perforation of the Schneiderian membrane, (C) smoker, (D) diabetes mellitus, (E) sex, (F) 1-stage dental implant surgery, and (G) recurrence of sinusitis according to surgery vs medical treatment only.

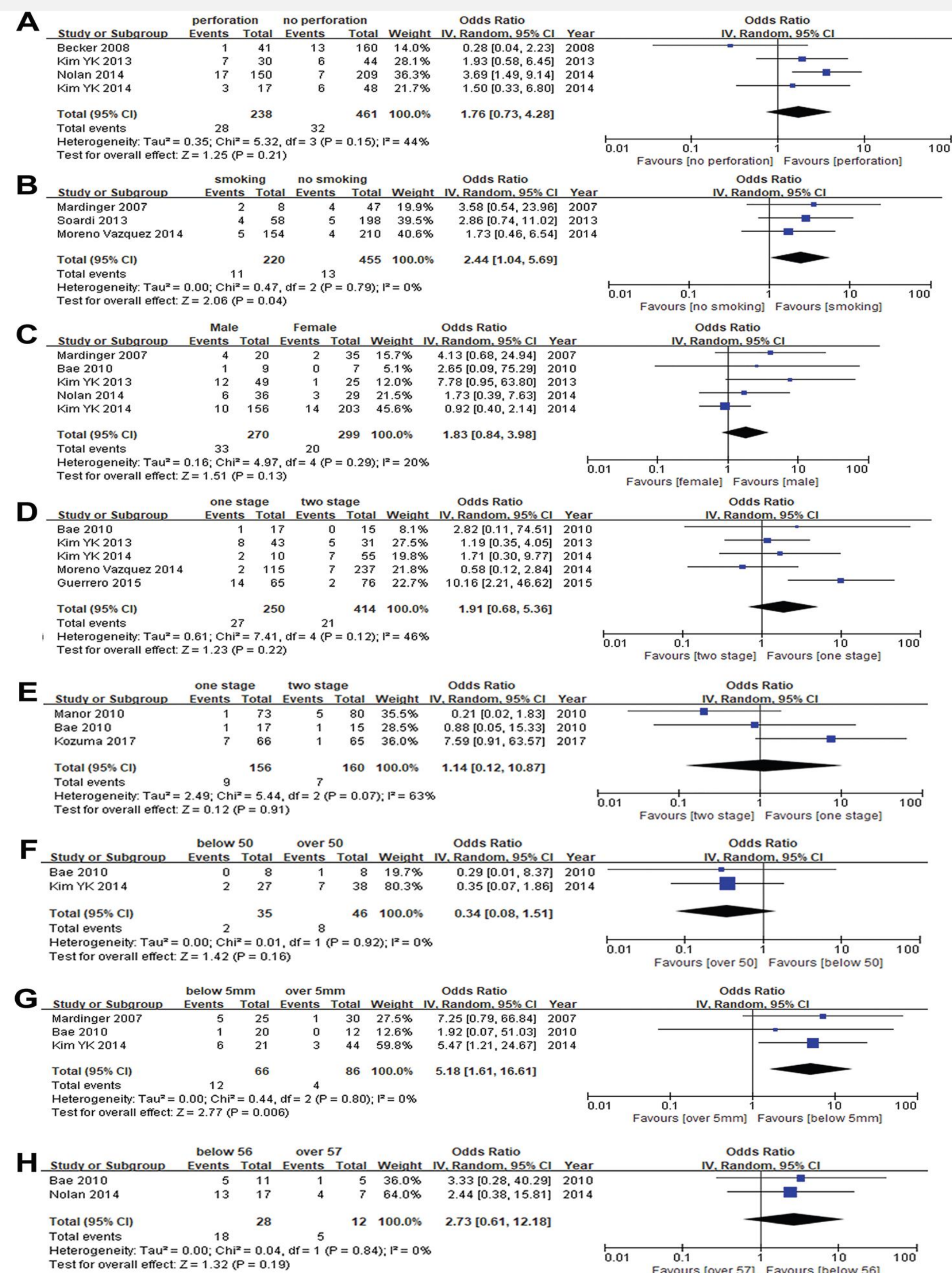


Figure 2. Forest plots showing the relationship between dental implant and each of the following primary outcomes: (A) perforation of the Schneiderian membrane, (B) smoker, (C) sex, (D) 1-stage dental implant surgery, (E) surgical approach for dental implantation, (F) age, (G) residual bone height of maxilla, and (H) relationship between age and perforation of Schneiderian membrane.

Disclosure of Conflict of Interest

Name(s) of the author(s): Jong Seung Kim, Sam Hyun Kwon
The authors declare no potential conflicts of interest.

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