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The Bulletin of Tokyo Dental College		PRINT	`ISSN : 0040-8891

Vol. 51 (2010), No. 3:151-163

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Clinical Study of Temporary Anchorage Devices for Orthodontic Treatment

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(Received March 26, 2010) (Accepted May 12, 2010)

Abstract: The aim of this retrospective study was to determine factors that might cause complications in use of temporary anchorage devices (TADs) for orthodontic anchorage. We investigated 904 TADs in 455 patients. Clinical diagnoses requiring orthodontic treatment were malocclusion, jaw deformity, various syndromes, cleft lip and palate and impacted teeth. All patients underwent surgery at Tokyo Dental College Chiba Hospital between November 2000 and June 2009. Three kinds of titanium screw of different diameter and length were used: self-drilling mini-screws (Dual Top Autoscrew® and OSAS®), pre-drilling micro-screws (K1 system®) and palatal screws (PIAS®). Miniplates fixed with 2 or 3 screws (SAS system[®]) were also used for skeletal anchorage. Patients were aged between 8 and 68 years (25.7±9.8 years). A total of 460 screw-type and 444 plate-type TADs were used. These comprised the following: mini-plates, 444; selfdrilling mini-screws, 225; pre-drilling micro-screws, 83; and palatal screws, 152. Each type of implant had a high success rate of over about 90%. Failure rates were as follows: microscrews, 7%; mini-screws, 6%; palatal implants, 11%; and mini-plates, 6%. Inflammation rate occurring in soft tissue surrounding TADs was follows: plate-type, 7.6%; mini-screws, 1.3%; micro-screws, 0%; and palatal implants, 2.5%. Inflammation frequencies depended on degree of mucosal penetration. Granulation rate in soft tissue surrounding TADs occurred as follows: micro-screws, 5.7%; self-drilling mini-screws, 0%; palatal screws, 0.6%; plate-type, 0.9%. Both plate- and screwtype orthodontic implants showed excellent clinical performance.

Key words: Anchorage, TADs, Micro-implant, Mini-implant, SAS

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To cite this article:

Takashi Takaki, Naoki Tamura, Masae Yamamoto, Nobuo Takano, Takahiko Shibahara, Toshihiko Yasumura, Yasushi Nishii and Kenji Sueishi: "Clinical Study of Temporary Anchorage Devices for Orthodontic Treatment". The Bulletin of Tokyo Dental College, Vol. **51**: 151-163 (2010) .

doi:10.2209/tdcpublication.51.151

JOI JST.JSTAGE/tdcpublication/51.151

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