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Clinical Response to Locally-Delivered Bioerodible Tetracycline Gel in Periodontal Maintenance

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Previously, we established (Needleman, *J Periodontol* 1998) that a 35% bioerodible tetracycline gel exhibited antimicrobial and clinical activity in otherwise untreated periodontal patients. Because of the nature of the patient population and treatment regimen, the relevance of these and other study models to contemporary clinical practice is unclear. A new clinical study was conducted to evaluate the effects of local tetracycline treatment in a novel model involving periodontal maintenance patients. The clinical trial was a randomized, examiner-blind, hybrid split mouth 3 month study of the effectiveness of a 35% tetracycline hydrochloride gel used in conjunction with routine maintenance. A total of 51 subjects with at least 4 teeth (2 per side) with probing pocket depths of 6-10 mm that bled on probing were randomized to either whole mouth active therapy (maintenance + tetracycline gel) or split mouth control therapies (maintenance + vehicle gel or maintenance alone). Clinical measures (probing depth, bleeding on probing and attachment loss) were collected with both automated and manual probes. Three months after treatment, the tetracycline + maintenance group demonstrated a 0.55 mm mean pocket depth reduction and 0.56 mm mean attachment level gain relative to maintenance alone ($p < 0.02$). In addition, a directional reduction in bleeding was observed ($p = 0.080$). Findings were generally similar at deeper sites, except that the tetracycline + maintenance group was significantly superior to both vehicle + maintenance and maintenance only ($p < 0.05$). All products were generally well-tolerated. **This study demonstrates the effectiveness of a bioerodible 35% tetracycline hydrochloride gel in periodontal maintenance, and establishes an efficient short term clinical trials model for testing.**