

# OrthoShield™ Safe-T-Tie™ Ligatures

## Clinical Data Sheet

The result of poor oral hygiene, the development of plaque and periodontal diseases has been well established. Currently numerous studies demonstrate the compounding complication of inadequate oral hygiene in orthodontics (Panel 1).

Factors such as orthodontic brackets and fixed appliances have shown to affect the accumulation of microbes resulting in plaque volume and gingivitis. Orthodontic patients with 3 or more appointments with a “poor” oral hygiene rating have shown to have their orthodontic treatment time extended on average by 2.2 months (Panel 1, Skidmore KJ, et al.).

Despite dental professional guidance and available aids, oral hygiene remains a challenge. *OrthoShield Safe-T-Tie* Ligatures help address the problem via their safe and effective microbial characteristic of naturally occurring silver.



## OrthoShield Safe-T-Tie Ligatures Case Study

A blind study was performed by Dr. Maurice Corbett\* to assess the effectiveness of *OrthoShield Safe-T-Tie* Ligatures. Participating in the study is a 14-year old male. The patient was not given any additional hygiene instructions. The images show improvements to the oral hygiene 30 and 90 days post-placement (Figure 1-3).

In day 1, the patient has noticeable swelling and redness of gums (Figure 1). At this time the regular *Safe-T-Tie* Ligatures were replaced with *OrthoShield Safe-T-Tie* Ligatures.

Thirty days post placement, there are visible improvements to the gingival tissue (Figure 2). The redness and swelling are noticeably less. At this point, the first set of *OrthoShield Safe-T-Tie* Ligatures are removed and the second set are placed.

Ninety days into treatment with *OrthoShield Safe-T-Tie* Ligatures, there are no visible signs of redness and swelling (Figure 3). The patient is on his third set of *OrthoShield Safe-T-Tie* Ligatures. (The patient will receive a new set of *OrthoShield Safe-T-Tie* Ligatures every 30 days throughout the duration of the orthodontic treatment.)

Figure 1 - Start of Treatment

February 06, 2007

Notice the swollen, soft, red gums, a sign of gingivitis.



Figure 2 - 30 Days Into Treatment

March 06, 2007

The redness and swelling has been drastically reduced.



Figure 3 - 90 Days into Treatment

May 14, 2007

Gums are back to healthy pink color.



\* Images are courtesy of Maurice C. Corbett D.D.S., F.A.A.P., N.B.O.  
Private practice in orthodontics, La Mirada, California

The photographs have not been re-touched, and all are true and accurate photo documentation of a real patient.

## Panel 1 - Interrelationship between Oral Hygiene and Orthodontic Treatment

### “Factors Influencing Treatment Time in Orthodontic Patients”

Skidmore KJ, Brook KJ, Thomson WM, Harding WJ. *Am J Orthod Dentofacial Orthop.* (2006) 129:230-238

#### Article Synopsis:

Overall orthodontic treatment time for a patient is a function of many variables. In this study, the authors review variables such as sex, age, a variety of clinical conditions, as well as patient compliance factors from the records of 366 patients. Different statistical analyses were used to examine the effects of the variables on the treatment time. While the authors reported on the effects for several variables, they noted that if a patient had 3 or more appointments with a “poor” oral hygiene rating, the treatment time was extended on average by 2.2 months.

### “Archwire Ligation Techniques, Microbial Colonization, and Periodontal Status in Orthodontically Treated Patients”

Tükkahraman H, Sayin MO, Bozkurt FY, Yetkin Z, Kaya S, Önal S. *Angle Orthod.* (2005) 75:227-232.

#### Article Synopsis:

The authors of this article report that the use of fixed or removable appliances in orthodontic treatment act as an impediment to oral hygiene which results in plaque formation. The aim of the study was to assess changes in the microbial flora and the periodontal status after orthodontic bonding procedures. Microbial and periodontal records were taken: before bonding, one week later, and five weeks post-bonding. The authors conclusions were:

- Fixed orthodontic appliances significantly increase the colonization of *S. mutans* and *Lactobacilli*.
- Plaque volume and gingivitis increased with treatment, but bleeding and pocket depths remained the same through the study.
- No significant difference in microorganisms between steel or elastic ligatures.

### “Recolonization of Mutans Streptococci on Teeth with Orthodontic Appliances After Antimicrobial Therapy”

Attin R, Thon C, Schlagenhaut U, Werner C, Weigand A, Hannig C, Attin T. *Eur J Orthod.* (2005) 27:489-493

#### Article Synopsis:

In the present study, the authors recruited 10 healthy patients who exhibited high bacterial mutans *Streptococci saliva* counts to assess recolonization of the bacteria after the use of a chlorhexidine varnish prior to bonding of brackets or bands. The statistical analysis demonstrated a significantly higher rate of recolonization of mutans *Streptococci* on teeth with orthodontic appliances. Orthodontic appliances create environments suitable for proliferation of mutans *Streptococci* even after the use of chlorhexidine varnish.\*

\*Staining of teeth caused by the use of chlorhexidine has been widely reported in the literature.

### “Changes in the Subgingival Microbiota and Periodontal Parameters Before and 3 Months After Bracket Placement”

Naranjo AA, Triviño ML, Jaramillo A, Betancourt M, Botero J. *Am J Orthod Dentofacial Orthop.* (2006) 275:e17-e22.

#### Article Synopsis:

Harmful periodontopathic bacteria are protected and nourished by dental plaque. Factors such as orthodontic brackets can affect the microbial colonization. To test the effect of bracket placement, microbial samples were taken before and after bracketing of 30 patients. Thirty additional patients who did not receive orthodontic treatment served as controls. The results from the study were:

- Scores for bleeding on probing, plaque index and gingival index increased after bracket placement.
- *P. gingivalis*, *P. intermedia/P. nigrescens*, *T. forsythia* and *Fusobacterium* species were elevated in the group with bracket placement vs. controls.
- Bracket placement influenced the accumulation of plaque and the colonization of important periodontopathic and superinfecting bacteria, resulting in more inflammation and bleeding on probing.

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