



#### CROSSBITE

- Premature tooth wear and risk of chipped teeth
- Abfraction — small notch in tooth at the gumline
- **Periodontal disease, tooth, and bone loss**



#### EXCESSIVE OVERJET

- Chipped or fractured front teeth
- **Trauma to front teeth**



#### EDGE-TO-EDGE BITE

- Risk of teeth chipping and breaking
- Jaw joint pain
- **Shortened or worn down front teeth**



#### OPEN BITE

- Abfraction — small notch in tooth at gumline
- Gum recession, loose teeth and bone loss
- **Excessive, premature wear on back teeth**

## A Potential Health Risk

If left untreated, malocclusion can lead to periodontal disease and premature wear of teeth that can worsen over time and even result in tooth loss. Periodontal disease may also increase the risk for atherosclerotic cardiovascular disease (hardening of the arteries).<sup>6,7</sup>

<sup>1</sup>Prevalence and distribution of selected occlusal characteristics in the US population, 1988-1991. Brunelle, et. Al. Journal of Dental Research (2/96)

<sup>2</sup>Comparison of microbial composition in the subgingival plaque of adult crowded versus noncrowded dental regions. Chun-Hsi Chung, DMD, MS/Robert L. Vanarsdall, DDS/ Elisabetta Ada Cavalcanti, DMD/Jill S. Baldinger, DMD/Chern-Hsiung Lai, DMD, PhD. Int'l Journal of Adult Orthodontics and Orthognathic Surgery (2000)

<sup>3</sup>Effects of crowding in the lower anterior segment - a risk evaluation depending upon the degree of crowding. Staufer K, Landmesser H. Journal of Orofacial Orthopedics. (1/04)

<sup>4</sup>Periodontal disease and tooth loss. Ong G. Int'l Dental Journal (6/98) Periodontal considerations in the use of bonds or bands on molars in adolescents and adults. Boyd RL

Baurind S. Angle Orthod. (1992) Gingival condition associated with orthodontic treatment. Zachrisson S, Zachrisson BU. Angle Orthod (1/72)

<sup>5</sup>Increased Prevalence of Cardiovascular and Auto-Immune Diseases in Periodontitis Patients: A Cross-Sectional Study. Willem Nesse, Pieter U. Dijkstra, Frank Abbas, Fred K.L. Spijkervet, Astrid Stijger, Jan A.H. Tromp, Johan L. van Dijk, Arjan Vissink. Journal of Periodontology (6/2010)

<sup>6</sup>Report of the Independent Panel of Experts of The Scottsdale Project. Casey Hein, Charles Cobb, Anthony Iacopino, et al. Grand Rounds (2007)

<sup>7</sup>Periodontitis: a future risk of acute coronary syndrome? A follow-up study over 3 years. Renvert S, Ohlsson O, Pettersson T, Persson GR. Journal of Periodontology. (7/2010)

# STRAIGHT TALK

## ABOUT CROOKED TEETH

How to Reduce Your Risk of Periodontal Disease



## Why are crooked teeth a problem?

Teeth that are not aligned properly in your mouth create what dentists call “malocclusion.” Left untreated, malocclusion can lead to periodontal disease and create abnormal amounts of stress on teeth and jaws, which leads to premature wear.

## What type of malocclusion do you have?

Here are some potential issues:



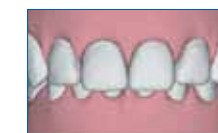
#### CROWDING

- Buildup of plaque and tartar
- Harbors harmful periodontal bacteria
- **Risk of periodontal disease, tooth, and bone loss**



#### SPACING

- Food lodges between teeth
- Risk of sore, tender gums
- **Risk of periodontal disease**



#### DEEP BITE

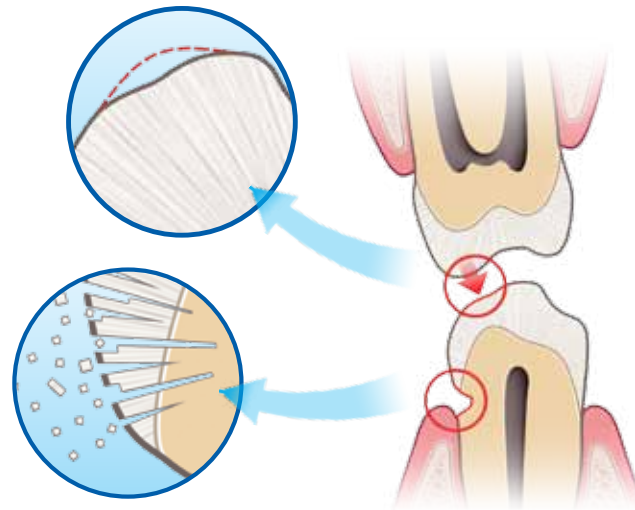
- Over-erupted lower front teeth that can damage the palate
- **Premature wear and chipping of the lower front teeth**

# Malocclusion and Periodontal Disease

Malocclusion affects 74% of American adults.<sup>1</sup> If you have malocclusion, it may affect your periodontal health, because it is difficult to remove plaque when teeth are not aligned. Periodontal disease can begin as gum redness or bleeding while brushing your teeth or using dental floss, and you may notice halitosis, or bad breath. If not treated, gum inflammation can become worse, leading to soft tissue damage, receding gums, the formation of pockets between teeth and gums, bone loss, and eventually tooth loss.

## THE PROGRESSION OF PERIODONTAL DISEASE

When teeth are crowded, plaque with harmful bacteria can attach to the tooth surface down to the bottom of the pocket.<sup>2,3</sup> Plaque can be difficult to remove from crowded areas because it is difficult to brush and floss here. Bacteria can cause gum tissue surrounding the tooth to degrade, and if not treated, result in bone loss.



## WEAR AND TRAUMA

Poorly aligned teeth can also create unnatural stress and pressure on teeth and jaws. Teeth that are subject to excessive pressure can develop chipping and notches at the gum line called abfractions. Premature wear can lead to poor root support, loose teeth and eventually, tooth loss.<sup>3</sup>

## Straight Teeth are Healthier Teeth

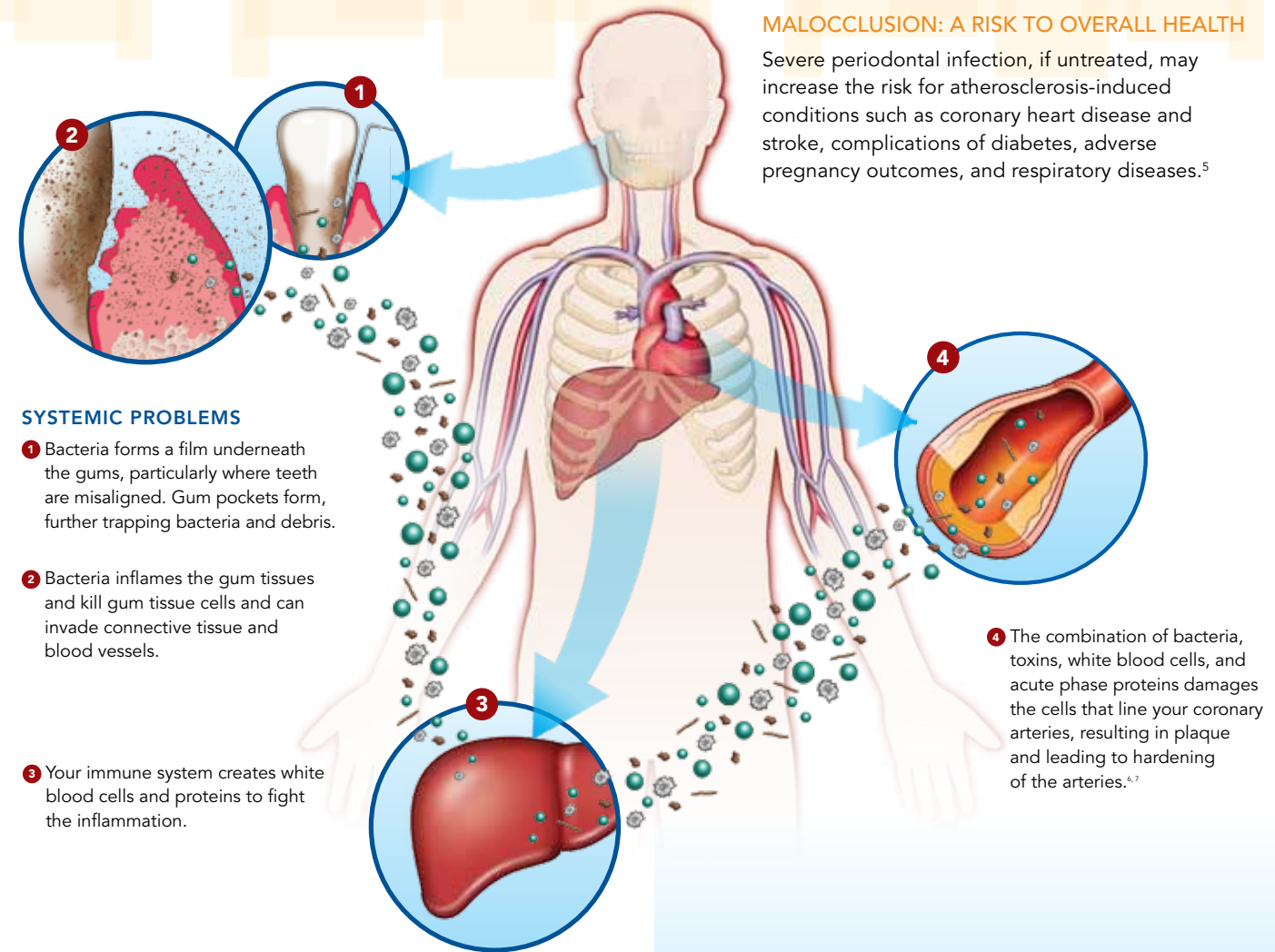
Straight, properly aligned teeth can help you avoid the negative effects of periodontal disease.

### HEALTHIER GUMS

Properly aligned teeth are easier to brush and floss than crowded or crooked teeth. Properly positioned teeth can help gums "fit" more tightly around them, which may lead to better periodontal health.<sup>4</sup>

### IMPROVED HYGIENE

With good oral hygiene, the chances of having plaque retention, tooth decay, and periodontal disease can be reduced.



## MALOCCLUSION: A RISK TO OVERALL HEALTH

Severe periodontal infection, if untreated, may increase the risk for atherosclerosis-induced conditions such as coronary heart disease and stroke, complications of diabetes, adverse pregnancy outcomes, and respiratory diseases.<sup>5</sup>

## SYSTEMIC PROBLEMS

- 1 Bacteria forms a film underneath the gums, particularly where teeth are misaligned. Gum pockets form, further trapping bacteria and debris.
- 2 Bacteria inflames the gum tissues and kill gum tissue cells and can invade connective tissue and blood vessels.
- 3 Your immune system creates white blood cells and proteins to fight the inflammation.

- 4 The combination of bacteria, toxins, white blood cells, and acute phase proteins damages the cells that line your coronary arteries, resulting in plaque and leading to hardening of the arteries.<sup>6,7</sup>

## A Straightforward Solution

**Straightening your teeth can make a significant difference to having a healthy mouth** and keeping your teeth for life. Ask your doctor about straightening your teeth using Invisalign®, a set of clear aligners that are custom-made to gradually straighten your teeth. Start on the road to a healthy mouth today.

**Inquire about Invisalign treatment.**