

# The Role of Genetics in Malocclusion: Managing Dental Issues in Developmental Conditions

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## Description

A common dental condition called malocclusion is defined by an unnatural alignment of the top and lower teeth while the jaws are closed. This misalignment can show up as overbites, under-bites, crossbites, and crowded or misaligned teeth, among other symptoms. Malocclusion has effects on one's smile's functionality in addition to its appearance. It may cause problems speaking, biting, and even chewing. Additionally, problems with the mouth including tooth decay, gum disease, and jaw pain may be exacerbated by malocclusion. Fortunately, malocclusion can be efficiently corrected with orthodontic treatments like braces and aligners, improving oral health and general wellbeing.

### Malocclusion Classifications

**Class 1 malocclusion:** Class 1 bite, sometimes referred to as class 1 occlusion, is the overlap of the upper teeth over the lower teeth. It occurs as a result of childhood thumb sucking or chronic bottle use. However, it doesn't significantly damage our bite and can be corrected with minimal malocclusion treatment. Three types of class 1 malocclusion exist in teeth. In type 1, the teeth slant toward the tongue. Type 2 has upper teeth that protrude out in narrow arches and lower teeth that are inclined toward the tongue. The upper teeth are crowded and incline toward the tongue in type 3 malocclusion.

**Class 2 malocclusion:** It is also referred to as a class 2 bite and occlusion because the top teeth protrude over the lower teeth. However, this severe malocclusion will dramatically alter our bite. Early orthodontic treatment is required. Our teeth's alignment may need to be corrected over several visits as part of malocclusion treatment. However, it is treatable permanently. The class 2 malocclusion has two subtypes. In division 1, upper teeth slant toward the lips. The upper central incisors in division 2 incline toward the tongue.

**Class 3 malocclusion:** Class 3 bites are a type of underbite where the lower teeth jut out over the upper teeth. It is also known as class 3 occlusion. When some upper teeth and some lower teeth overlap, it can also be a crossbite. Class 3 malocclusion is further divided into 3 groups based on how the teeth are positioned. Teeth of type 1 produce an unusually formed arch. The lower front teeth are inclined toward the tongue in type 2 malocclusion. Additionally, type 3 has an irregular upper arch and top teeth that are inclined toward the tongue.

### Etiology of Malocclusion

The root cause of malocclusion, or the misalignment of teeth inside the dental arches, is multifaceted. With inherited features

affecting jaw size, tooth shape, and alignment, genetics plays a vital effect. Environmental factors, including thumb-sucking or pacifier use for an extended period of time throughout childhood, can also be an influence. Dental alignment can be affected by habits including tongue thrusting, mouth breathing, and inappropriate chewing. Malocclusion can also result from facial or jaw trauma or injury. Poor dental care, especially insufficient orthodontic care, may make the problem worse. Malocclusion can also be brought on by congenital conditions and developmental problems like cleft lip and palate. For this prevalent dental issue to be effectively diagnosed and treated, it is imperative to comprehend these various components.

### Treatment of Malocclusion

Perfect tooth alignment is quite uncommon. However, the majority of issues are small and don't need to be treated. The most frequent reason for an orthodontist referral is malocclusion. The purpose of the procedure is to realign the teeth. Making teeth simpler to clean and reducing the risk of tooth decay and periodontal illnesses (gingivitis or periodontitis) are all benefits of correcting moderate or severe malocclusion. Reduce stress on the muscles, jaws, and teeth. This reduces the possibility of fracturing a tooth and could diminish TMJ problem symptoms. Some teeth are enclosed in metal bands, and others have metal, ceramic, or plastic bonding affixed to their surfaces. The teeth are forced by wires or springs. In rare cases, clear aligners without wires may be used.

**Removal of one or more teeth:** If crowding is a factor in the issue, this procedure may be required. Some teeth are covered in metal bands, while others have metal, ceramic, or plastic bonding applied to their surfaces. Braces or other equipment may also be present. By means of springs or wires, the teeth are pushed. Clear aligners without wires may occasionally be used.

This operation may be necessary if crowding is a contributing cause in the problem. Disparities in the sizes of the jaw and teeth are the primary cause of malocclusion. The upper incisors may gradually protrude in those who thumb-suck or force their tongue on their front teeth frequently. Without the use of a bridge, implant, or partial denture to stop these movements, neighbouring teeth may shift and opposing teeth may extrude, leading to malocclusion when permanent teeth are lost. Premature tooth loss in children causes the permanent first molars or teeth farther back in the arch to frequently move forward, leaving little room for other permanent teeth to emerge. After facial trauma, malocclusion may signify tooth displacement, alveolar bone fractures, or jaw fractures. Too few teeth can cause malocclusions in conditions such as ectodermal dysplasia, cleft palate, or Down syndrome.