

# **Aggressive Periodontal Disease**

By Medina Ferozedin  
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Aggressive periodontal disease is a serious dental implication that many patients present with. Aggressive Periodontal disease Is an irreversible bacterial disease that affects the dental gingiva and roots of the teeth and alveolar bone surrounding the tooth. There are several categories of periodontal disease that depends on the clinical presentation of a patient's dental characteristics. The categories are classified by the American Academy of Periodontology as "Staging" and "Grading". There are four stages which are Stages 1-4 and there are three different grades which are Grades A-C. Each stage and grade are based off clinical "severity, complexity and extent of distribution of the disease" This dental disease is caused by numerous factors – mainly being a bacteria caused infection. This bacterium begins to colonize once a patient neglects their dental home care routine. Examples include not brushing twice a day for two complete minutes with a fluoridated, antibacterial toothpaste, and not flossing between the tight contact spaces of teeth. This can cause plaque then calculus buildup which begins supragingivally or above the gumline. Then it progresses underneath the gumline or subgingivally, interfering and microscopically eating away the bone of the tooth root and causing a periodontal issue. These bacteria start to form multiple colonies in minutes if not hours – at a rapid rate which the individual is completely unaware about. Studies show that there are three main bacteria, called the "Red Complex Bacteria" that cause periodontal disease. The names of these gram-negative bacteria are "*Porphyromonas gingivalis*, *Treponema denticola*, and *Tannerella forsythia*". These bacteria play a big role in bone destruction and tissue inflammation. (Mohanty, 2019)

A patient sits in the dental chair, and after the clinician conducts the verbal interview the patient discusses that they brush their teeth once a day with a manual soft bristle toothbrush and does not use mouthwash or floss. Then, the clinician performs an intra-oral exam and all

assessments including gingival assessment, dental charting, periodontal charting or probing, and lastly checking for mobility and furcation. While analyzing the gingiva the clinician finds that the patients' gums are inflamed, spongy and receded more than 2mm in several areas. While dental charting and periodontal charting you also find that the patient is missing numerous teeth- having many crowns and silver amalgams. With probing depths upto 7mm with bleeding and visible plaque and calculus and furcation involvement on tooth #30, #31, along with mobility on the anterior or front mandibular teeth. You then create a treatment plan and decide to take a Full Mouth Series (FMS) and see generalized horizontal bone loss and vertical bone loss with a PAP or peri apical pathology on #12- in the area where the deepest probing depth was. This is an example of what a clinician sees in a patient with Aggressive periodontal disease. The clinical symptoms of Aggressive Periodontal disease include a decrease Interdental Clinical Attachment Levels of more than or equal to 5mm, horizontal bone loss extending to the middle third of the root and beyond (more than 33%), mobility, probing depths more than 6mm, Class II or III furcation involvement, and masticatory dysfunction, occlusal trauma.

The demographic for aggressive periodontal disease varies. It would be more common in individuals who do not follow proper oral home care routines – such as infrequent brushing and flossing. Also, the prevalence of aggressive periodontal disease would be more common in middle aged adults and older patients- especially with systemic conditions such as asthma, diabetes, and kidney disease. This is because the immune system and the bone is not as strong as young or healthy individuals. Asthma causes an increased risk of Aggressive periodontitis due to the impact of the medication such as albuterol which causes dry mouth which then causes less saliva secretion and more bacteria formation. Diabetes has a big correlation with periodontal disease due to the increased sugar levels which is a big factor in carcinogenic bacteria production

in the oral cavity. Kidney disease causes increased calculus formation and calcium imbalance which affects bone of the dentition. Physical limitations increase as age increases. An older patient may not be able to hold a power brush – when a young twenty-year-old individual can. Also, aggressive periodontal disease is more common in males than females, non-biasedly due to the less likelihood of visiting the hygienist for debridement or following oral home care. Importantly smokers do have a very high risk of aggressive periodontitis due to the nicotine weakening the immune system to fight disease. Lastly, those individuals who reside in low-income neighborhoods and have less access to education will unfortunately have a higher risk for periodontitis.

With aggressive periodontal disease, there is no such biopsy needed. However, there are several radiographic features indicating periodontal disease and must be noted and taken into consideration for diagnosis. According to the Journal of Clinical Medicine, “The diagnosis of periodontitis is based mainly on clinical examination. Still, radiographic assessment is a critical component that confirms the presence of interproximal clinical findings of periodontal bone levels to estimate the prognosis of periodontally involved teeth, the treatment plan and the evaluation of the recurrence or progression of periodontitis” (Machado, 2020). First, there will be radiographically evident bone loss. Either horizontal bone loss, or vertical bone loss. The alveolar bone surrounding the tooth structure will not be tight and snug around the Cementoenamel-junction or CEJ- for short. It will be apical to the CEJ, and there will be a great loss of lamina dura histologically. In aggressive periodontal disease, the percentage of bone loss will be around thirty-three to fifty percent, and in some cases even greater. Looking at the x-rays, it will appear as a black and dark area between the roots and apices of the teeth, or a white-ish area that is gradually becoming radiolucent. In more severe cases of periodontitis, the

radiographs will show tooth has almost no support at all due to the missing alveolar bone and it will look like it will fall out any time soon.

Sometimes it may be confused with gingivitis- a gum disease. Gingivitis is reversible while Periodontal disease is irreversible. Next, gingivitis only includes the localized or generalized inflammation of the gingiva-or gums. There is no bone loss involved in gingivitis. Next, gingivitis cannot be diagnosed with radiographs, as periodontal disease can be. Gingivitis may lead to periodontitis, but they are not the same condition. Gingivitis can be treated with patient education, patient oral home care routines and scaling and root planning by a hygienist. Periodontal disease may remain constant with these things, but it cannot go back to a “healthy state”. Patient with gingivitis may be mistakenly diagnosed with periodontal disease due to gingival recession and probing depths of five millimeters- which only indicates a pseudo pocket – or “false” periodontal pocket. One similarity between the two diseases is that “The likelihood of developing gingivitis and periodontitis is also increased by various factors, including: smoking, metabolic diseases such as diabetes, and hormonal changes during pregnancy.” (IQWiG -Institute for Quality and Efficiency in Health Care, 2020)

Aggressive periodontal; disease can be treated but not cured back to a normal state. Typically, clinicians implement the “gold standard” which is non- surgical periodontal therapy or NSPT for short. “Conventional therapy for aggressive periodontitis consists of patient education, oral hygiene improvement, scaling and root planning, periodontal flap surgery, and frequent recall maintenance.” (Churasia, 2019)

This includes eliminating bacteria, calcified biofilm and inflammation and stabilize the attachment level. Clinicians may use Arestin, which is a powder minocycline that belongs to the

tetracycline family. This is an antibiotic that works for reducing bacteria in deep pockets and reducing pocket depths by up to 1-2mm. If that does not help suppress or arrest the bone loss, then the clinician would refer the patient to a periodontist. The best method of treatment for a stage 3 or stage 4 case would be surgical procedures such as periodontal surgery or tooth extraction with implants. One periodontal surgery that would be helpful is Guided tissue regeneration with Bone replacement graft. This surgery consists of transferring alveolar bone structure from the palate or other sources to the areas with bone loss, following the surgical gingival placement of the receded gingiva back to its normal spot, which is contouring snugly around the enamel crown, following. the types of bone grafts include the autograft, allograft, xenograft and alloplast. Autografts use bone from the individuals own bone, while allograft uses alveolar bone from a donor. Xenograft uses bone taken from animals such as pig and bovine. Lastly, Alloplast uses bone created from synthetic material. Additionally, the extraction of one or several teeth, following implant- crown or pontic crown-bridge placement is acceptable treatment as well.

If left untreated, aggressive periodontal disease can lead to a patient losing their teeth !! there will be continuous bone loss leading to all those valuable teeth falling out. If treated, the patient will be able to save their teeth and continue to use them. With treatment the bone loss will be arrested and stop from progressing further. It will lead to improved health of the gums and stability of the tooth with its bone structure. Aggressive periodontal disease is important to the dental hygienist because they view the clinical and radiographic evidence. It is important to the clinician due to the fact that they play a crucial role in patient education. Dental hygienists are responsible for educating patients about the causes and prevention of periodontal disease. They emphasize the importance of proper oral hygiene practices, including regular brushing,

flossing, and professional cleanings. By promoting preventive measures, dental hygienists aim to reduce the incidence and progression of periodontal disease among their patients.

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