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# Geriatrics and Periodontics: A Review

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Oral health is an important aspect of general well being and in the elderly population compromised oral care has been considered a major risk factor for various health problems. Hence oral-systemic diseases linkage is a special health concern for this elderly population and high quality of oral health care should be available to all regardless of age or circumstances.

**KEYWORDS:** Oral care, Periodontitis, Geriatrics, Older population, Dental plaque

## INTRODUCTION

The world's population is in transformation with inescapable move in all societies towards an aging population. Due to increased life expectancy there is increase in aging population which further leads to explosion of the aging population that will continue even in the future.<sup>1,2,3</sup> An increase in proportion of older adults in rural areas is 3% larger when compared to urban areas as people in villages use less dental services. In order to improve the quality of life of neglected and socioeconomically deprived population, there is requirement of dental health education with emphasis on preventive measures.

Oral health is an integral part of general health as it's been said that oral cavity is referred to as a gateway of overall health and compromised oral care in the elderly population has been considered a risk factor for various general health problems.<sup>4</sup> Oral health is a lifetime concept and high quality of oral health care should be available to all regardless of age or circumstances. In the elderly population because of physical and neurological changes, oral hygiene is compromised and oral-systemic diseases linkage became a special health concern.

The tissues that invest and support the teeth are called the periodontium. The most important tissue types forming part of the periodontium are: epithelium, connective tissue, cementum and bone. With age, changes may occur in each of these tissues.<sup>5</sup>

As the ligament and bone resorption is irreversible, accumulated tissue damage of periodontitis is reflected in a prevalence and severity that increases with age. In older adults periodontitis depicts

various risk factors, which include microbiological factors, behavioural, medical and social factors. With advancing age various changes have been seen in oral hard and soft tissues as well as in bone, the temporomandibular joint and the oral mucosa. These age changes affecting orofacial structures are of clinical importance as some of these limit the prognosis of treatment.<sup>1,5</sup>

## AGE RELATED CHANGES IN PERIODONTIUM EPITHELIUM

Changes in the oral epithelium relate to a thinning of the epithelium and diminished keratinisation and flattening of the rete peg. With advanced age formation of epithelial cross-ridges are seen in papillae involved. Moreover increased cellular density has been seen in the oral epithelium. The mitotic activity increases with increasing age.<sup>6,7</sup>

**Connective tissue:** Connective tissue shows a gradual transition with age to a denser, coarsely textured tissue in the higher age groups. There is reduction in cellular elements with increase in age. The rate of maturation of the synthesized collagen changes with age. The periodontal ligament of young individuals is well organized and regularly structured. With increasing age, the fiber and cellular contents decrease and the structure of the ligament becomes more and more irregular.<sup>6,8,9</sup>

**Cementum:** With age, the cementum increases in width along with greater cemental apposition in the apical region of the tooth.<sup>10,11,12</sup> Cementum is acellular except at the tooth apices and in the furcation areas of multirrooted teeth. With increasing age, the process of cementum formation

becomes essentially acellular, remodeling of cementum does not normally take place, local resorption at the cementum surface followed by cementum opposition is often observed.<sup>4,10,11</sup>

**Bone:** With increasing age, the periodontal surfaces of the alveolar bone become jagged and less insertion of collagen fibers into the bone. An increase in the number of interstitial lamellae has been found.<sup>13</sup>

**Width of periodontal ligament space with age:** A few number of teeth are left with increased age that leads to increased forces on the remaining teeth. This could explain an increasing width of the periodontal ligament space with age. It has also been noted that the masticatory forces decrease with age.<sup>14,15</sup>

**Aging and the location of the junctional epithelium:** In a healthy periodontium, the apical termination of the junctional epithelium is located at the cemento-enamel junction, just coronal to the connective tissue fiber attachment. But in case of periodontitis, there is break down of dentogingival fibers and the junctional epithelium migrates apically along the root surface.<sup>8,10</sup>

**Physiological versus pathological apical migration of the epithelium:** As age advances, a gradual physiological recession of the gingiva occurs concomitantly with an apical migration of the epithelium. The recession of the gingiva is a result of occlusal migration of the teeth compensating for occlusal wear and a stable location of the gingival margin. The degree of recession increases with age.<sup>16,17</sup>

#### VARIOUS TREATMENT MODALITIES OF PERIODONTAL DISEASE IN OLDER ADULTS<sup>18</sup>

Epidemiological data reveal that the prevalence and severity of chronic periodontal disease increase with age.<sup>6</sup> This observation has primarily been interpreted as an accumulated effect due to lack of adequate periodontal care. However, longitudinal data showing an increased annual rate of destruction of periodontal bone support in individuals older than 70 years as compared with younger age groups. It has been suggested through various studies that systemic factors and/or general health problems in aging individuals may influence disease progression.<sup>18,19</sup>

**Goal behind Periodontal Therapy:** Regardless of age, the overall objective of periodontal therapy is to preserve a functional dentition by preventing the progression of periodontal diseases. Periodontal treatment needs may also depend upon the general goals of dental therapy.<sup>20</sup>

**Approach to therapy:** Independent of the age of the patient, the treatment provided must be beneficial and cause no or minimal harm to the patient. Hence it is very important that the planning of the treatment should be preceded by a careful analysis of factors that may influence the outcome and prognosis of therapy. The re-evaluation performed after cause-related periodontal therapy will determine the need for further treatment. Commonly remaining clinical signs of disease such as periodontal pockets  $\geq 6$  mm and bleeding following pocket probing are used as criteria for additional periodontal therapy, such as surgical pocket therapy.

**Decision Tree for Periodontal Treatment of Older Adults<sup>18</sup>:** Kindly refer figure 1.

**Surgical periodontal therapy:** The main objective of surgical periodontal therapy is to preserve the periodontium in long term manner by easing the plaque removal and plaque control. An additional aim may be the regeneration of periodontal support. Age is not a contraindication to periodontal surgery, and the healing obtained following therapy is not different in older adults as compared with younger individuals.

**Supportive periodontal therapy:** Supportive periodontal therapy is a significant component in the treatment of the periodontitis patient. Kerry 1995<sup>20</sup> described three therapeutic objectives of supportive periodontal treatment:

1. To prevent the progression and recurrence of periodontal disease among patients who have previously been treated for periodontitis;
2. To reduce the incidence of tooth loss;
3. To increase the probability of recognizing and treating other diseases or conditions found within the oral cavity.

**Prognosis:** It is generally believed that in patients with the same amount of periodontal disease, the rule holds: the older the patient, the better the prognosis in terms of no recurrence of the

disease.<sup>21,22</sup> This belief is based mainly on the reasoning that the resistance to periodontal breakdown must be higher in older individuals, since the process of periodontal destruction takes much less time in younger individuals. In spite of age changes in the periodontal tissues and retarded wound healing, periodontal treatment including surgical elimination of pathologically deepened pockets has a favourable prognosis in old patients since they do not represent individuals who are highly susceptible to periodontal disease. In this respect, it is important to know the level of maintenance of oral hygiene in order to avoid recurrence of periodontal breakdown.<sup>23,24</sup>

## CONCLUSION

Today's day's biggest challenge is dental care needs of these older subjects to our society and its care providers. A compromised general condition is very common among elderly population that may negatively affect the patient's ability to maintain oral health. Moreover in case of response to periodontal treatment; the older adults differ from younger individuals. To manage the health care needs of the elderly, coordination between medical and dental care providers will become necessary to design a careful program for supportive therapy.

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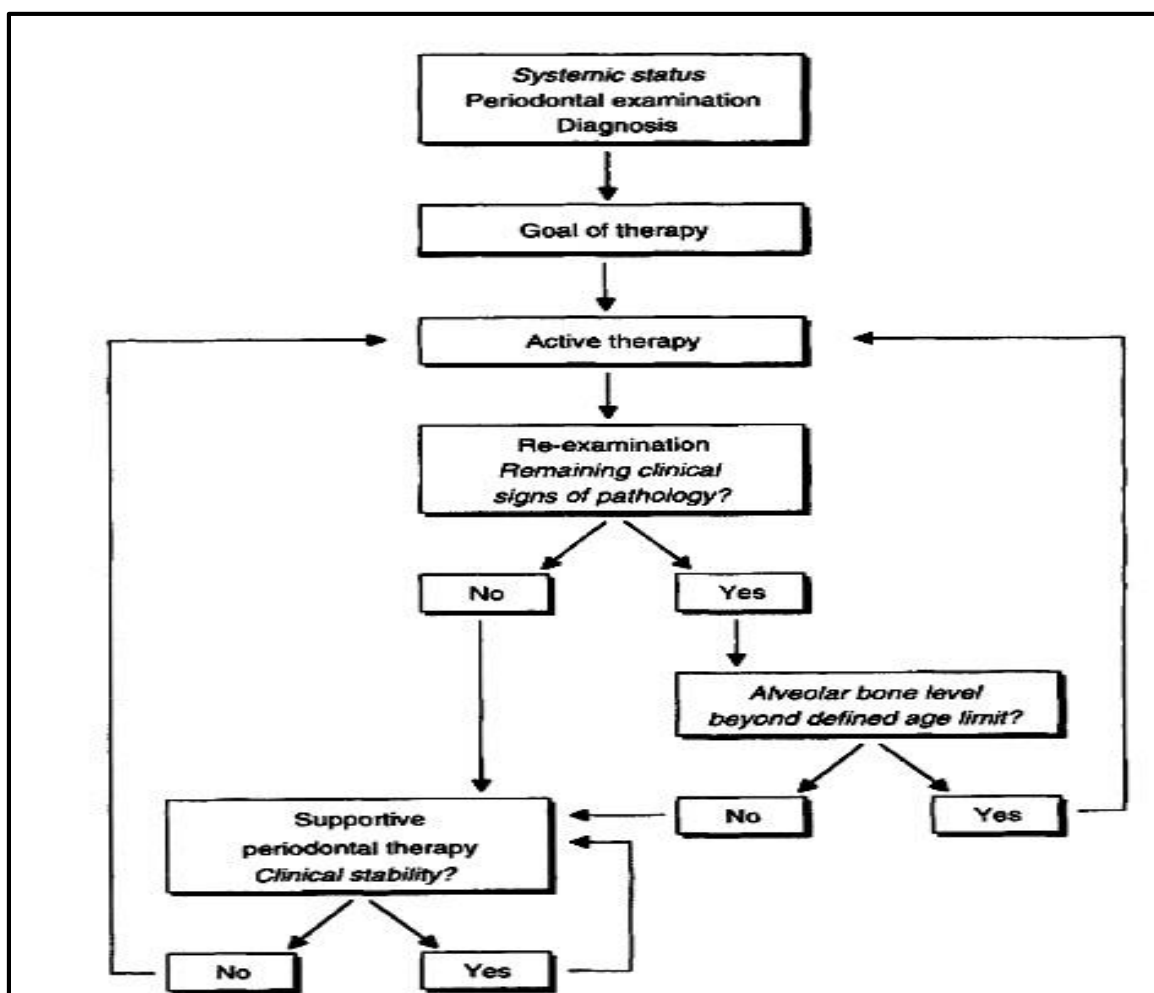
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**Figure 1.** Decision Tree for Periodontal Treatment of Older Adults.<sup>18</sup>