Nat. Volatiles & Essent. Oils, 2021; 8(4): 10862-10871

NVEO
Natural Volatiles &
Essential Oils

A Reviewon Orthodontics For Elderly Patients

[1]Suraiya Badar , [2*]Poonam Agrawal , [3]Dinesh Kumar Bagga , [4]Madhurima Nanda , [5]Kanak Priya , [6]Prashant Kumar Shahi

[1]Postgraduate student, Department of Orthodontics and Dentofacial Orthopaedics, School of Dental Sciences, Sharda University, suraiyabadar.amu@gmail.com

[2, *,] CorrespondingAuthor; Professor, Department of Orthodontics and Dentofacial Orthopaedics, School of Dental Sciences, Sharda University, poonam.agrawal@sharda.ac.in

[3]Professor and Head, Department of Orthodontics and Dentofacial Orthopaedics, School of Dental Sciences, Sharda University, dineshkumar.bagga@sharda.ac.in

[4]Reader, Department of Orthodontics and Dentofacial Orthopaedics, School of Dental Sciences, Sharda University, madhurima.nanda@sharda.ac.in

[5,6]Assistant professor, Department of Orthodontics and Dentofacial Orthopaedics, School of Dental Sciences, Sharda University, kanak.priya@sharda.ac.in,prashant.shahi@sharda.ac.in

Abstract

The National Institute for Elderly Adults defined 'Elderly' as a person with a biological age of 60 years or more. With an increase in life expectancy in the last few decades, owing to better healthcare, sanitation and basic amenities, the elderly patients are now actively seeking healthcare facilities including dental treatment. Orthodontics in elderly patients is usually delved into for one of the two major reasons; adjunctive treatment for rehabilitative purposes or comprehensive treatment for function and aesthetics. Geriatric dentistry incorporates an interdisciplinary approach with focus on achieving functional goals rather than minor corrections via tooth movement. We need to take into consideration the compromised periodontal and systematic disease status in such cases. The expectations from the treatment also varies in elderly cases when compared with adolescent patients. This article is focused on shedding light upon the requisite considerations before planning the treatment of elderly patients.

1. Introduction

Aging is a normal physiological process that is experienced by every living organism and is considered to be imminent ina man's life.[1]A person with a biological age of 60 years or more is considered elderly, according to the National Institute for Elderly Adults.[2]Globalization and a paradigm shift in clinical orthodontics have resulted in a shift in the age distribution and the

demographics of those who benefit from orthodontic treatment. Children and teenagers, as well as adults and sometimes even geriatric patients with malocclusions, benefit from orthodontic therapy.[3,4]

It can be expected that the elderly patients will be highly keen in participating insociety as their life expectancy prolongs considerably and health services get better with advances in medicine and sciences and demonstrate a wish to maintain their teeth in the big scheme of things, both operationally and cosmetically.[2]The amount of senior people seeking orthodontic treatment reflects the population's demographic development. Aesthetics are a big motivator for these people to seek treatment. Other reasons for getting orthodontic treatment include technical difficulties such as speaking, chewing, or temporomandibular disorder (TMD) symptoms.[5]Older patients, appear with symptoms of aging, degeneration, or a dentition that has been heavily rehabilitated.[5]

Orthodontic treatment options for the elderly are frequently multidisciplinary and interdisciplinary, including a variety of professions. Because both orthodontists and patients prefer partial treatment, treatment time is frequently cut in half.[6]Its focus is to enhance occlusion and thus optimize both restorative and prosthetic operations, particularly in the case of early missing teeth, whether by eliminating spaces or straightening teeth that will act as prosthetic endorses.[7]The treatment plan for elderly patients is different from those of adolescents and younger adults. It normally involves limited objectives with goals customized to the patient's concerns and functional needs and is often limited to slight dental movements. Both the status of their dentition and their subjective demand for correction should be considered.

2. General Considerations

Geriatric dentistry is the diagnosis, careand treatment of difficulties associated with natural aging and age-related disorders in older people as part of an interdisciplinary team alongside other health care specialists. Every member of the clinical team should participate with the greatest of motivations. Even the tiniest facts might sometimes prove to be crucial in determining pharmacological treatments.[7]

Geriatric dentistry is an important aspect of the healthcare system for the elderly and medically compromised persons.These patients are likely to have one or more serious chronic issues that must be addressed before any dental treatment may begin. According to the US Surgeon General's Report, older adults suffer from a “silent epidemic of profound and consequential dental problems.”[7]

Initial Assessment

The earliest assessment starts as soon as the patient walks into the dental clinic. The front desk staffs are the primary source of visual help for the whole dental team. They are all prospective and returning patients' first point of contact.Everything that is out of the ordinary should be raised to the dentist's notice and recorded in the health - care setting for reference purposes.[1]

Clinical Assessment

Physical assessment- Administering old and medically deficient patients in a dental setting presents its own set of obstacles that can push any clinician to their boundaries. Physical effects in senior individuals may also include, but are not restricted to, sensory function, equilibrium, and other behavioral disorders. Having to deal with more frail senior people on a daily basis is not ever easy, but it can be made easier with advanced training.

Before focusing on the patient's dental problems, the dental team should assess the patient's physical traits. Before beginning any dental treatment, a thorough medical history, including medical diagnoses, an up-to-date list of all medications, and previous operations or hospitalizations, is not only essential but also a requiredstandard of care.' It provides the clinician with a fair opportunity to assess the situation.

Oral assessment- A patient's teeth can reveal a lot about their lifestyle, including years of trauma from poor brushing, the use of acidic and chemical agents, and even their dietary habits. [1]

The structure and form of teeth tend to shift over time, and recognizing this trend is the first stage in an aged client's oral examination. Because each patient is unique, oral symptoms cannot be anticipated. There are visible changes in enamel and dentin thickness, the presence of gingival recession, which leads to a higher incidence of root caries, particularly in teeth with crowns or bridges, and even reduced sensitivity to cold and hot. There might be some visible evidence of decreased keratinization, enhanced xerostomia, or periodontitis, which can lead to loose teeth and loss of teeth.

When treating elderly individuals these factors should also be considered.[8]

Lacking development: Because of the lack of growth and differences in energy metabolism between adults and adolescents, younger and older patients may have varied orthodontic reactions and consequences.

Dental Issues to consider: Periodontal tissue deterioration is not limited to a few teeth; instead, it worsens as people get older. Periodontal inflammation can cause periodontal fiberdestruction and alveolar bone loss.As a result, the balancing is disrupted, resulting in tooth drifting, tilting, or rotations.

Considerations for healing: The existence of implants may make the placement of an orthodontic apparatus more challenging. By sandblasting the restoration's surface, brackets can be bonded to gold, amalgam, or porcelain. Teeth can also be temporarily repaired with composites, which allows for easy fitting, or by gently employing a band.

Mechanisms of diagnosis:In the treatment of older individuals, orthodontic pressures should be kept to a minimum, and tooth movements should be carefully monitored. Because of an altered moment-to-force ratio, the loss of alveolar and periodontal support can cause teeth to tip readily, lowering the anchoring value of impacted teeth.

The use of thermo-elastic Nickel Titanium archwires is indicated for applying a moderate strain to periodontally damaged teeth.

Durability and consistency: For senior individuals, permanent retention employing multi-stranded wires or smooth round wires to decrease plaque accumulation while allowing for some physiological tooth movement but also maintaining their position is frequently recommended. Dental appointments with multiple procedures should not be scheduled within a single sitting. The capability of older individuals to handle difficult dental operations deteriorates over time, especially as their health deteriorates. Every other older patient has a unique set of circumstances that must be honored throughout all moments identifying areas of opportunity, training staff, and looking for novel ways to provide efficient and appropriate treatments for the aged are all critical.

3. Oral Cavity In Elderly Subjects

The passage of time is shown as a deteriorating phenomenon that threatens the effectiveness of living creatures, however, it is not consistent in all species and systems.

The oral cavity also undergoes declining modifications in response to physiological adaptive variations influenced by the individual’s genetic background and environment.[9]

Natural dentition loss, both partial and whole, is frequently caused by resorption processes that involve the alveolar crest and delicate covering tissues.[10]

Tipping and drifting of mandibular incisors, weak interproximal connections, inadequate gingival contour, diminished inter radicular bone, and supra-eruption of opposing teeth are all repercussions of subsequent tooth loss.

The slow and continual process of remodeling results in morphological changes in the edentulous regions that last throughout life and are much more common in completely edentulous instances.[9]

The removal of the teeth causes changes in facial morphology and surrounding tissues.

Jaw atrophy is identified with a narrowing of the commissures and a widening of the nasolabial inclination. Advanced phases are accompanied by a loss of vermillion show in the lips, andinvert

their shape and appear introflexed, thinned related to the clockwise movement of the mandibular, and a decrease in periorbital height. Due to the obvious alteration of the tonicity of the flexor and supportive muscles with a diminution of the buccal rima, the lips invert their shape and appear introflexed, thinned. When the nose approaches the chin, it might appear larger and projecting.The modiolus, which is lateral to the commissure, is where the peri-oral facial muscles decussate.[9]

The knowledge base required to manage the oral problems of such a patient does not dependon the development of new technical skills but the following should be prioritized:[11]

• An awareness of how people age naturally.

• Pathological aging is better understood if you know what you're looking for.

• An awareness of medical issues as well as the moral implications of systemic disorders.

• Pharmacology and drug-induced dental disease knowledge.

• Communication with the patient, his or her family, and other health care personnel requires interpersonal skills.

• For older people with sensory impairments, knowing certain communication skills is essential.

• Having prior clinical decision-making experience for such a patient.

4. Indications and Contraindications

The reasons for elderly patients seeking orthodontic treatment are different from those of young adult patients.[9]They have a variety of dental issues that require orthodontic therapy as part of a comprehensive medication regimen. They seek to maintain what they have, not necessarily to achieve asideal orthodontic results as possible.[11] For them, orthodontic treatment is needed to meet specific goals that would take control of dental disease,and restoration of missing teetheasier and more effective.

The majority seek treatment to improve their appearance, while others seek treatment to address temporomandibular pain or dysfunction, as well as psychological issues.

The absence of dental support causes the face's vertical dimension to shrink over time.It is possible to re-establish optimal neuromuscular activities and functional harmony between all stomatognathic elements (masticatory muscles, temporomandibular joints – TMJ, dental component) by restoring the vertical dimension.[12]

The number of teeth lost and the position of the lips altered can have a significant impact on dental and general health, as well as the general quality of life.The capacity to communicate, masticate, and socialize may be harmed by tooth loss. Edentulism can have a profound effect on mental, physical, oral, and overall health.[13]

All of the aforementioned changes might lead to a loss of self-esteem as a result of an unappealing appearance, prompting an aged patient to seek orthodontic evaluation and treatment.

In adults and the elderly, orthodontic treatment is typically confined to mild orthodontic movements such as axial repositioning of teeth that have drifted due to extractions or bone loss, correction of single tooth crossbites, and closure of tiny diastema.[14]

When rehabilitative or periodontal treatment is ineffective in repairing the damage caused by pathologic occlusion, orthodontic treatment becomes a crucial component of the total treatment strategy.

Because the tissue reaction to dental motions is good in the elderly, there are no contraindications to the orthodontic treatment provided the patient's overall health parameters allow it.Although adults respond to orthodontic force more slowly than children, tooth movement occurs in the same way at all ages.When dental malocclusion inhibits functional rehabilitation, restorative treatment cannot be regarded as a substitute for orthodontic treatment.

In the existence of ongoing medical problems such as cardiovascular, cerebrovascular, neurologic, pulmonary, dysmetabolic, hormonal illnesses, and osteoporosis, the start of medication must be deferred until clinical improvement or sustained pharmaceutical replacement has been achieved.

Orthodontists should consult with primary care physicians about changing medications and educating and encouraging patients to make decisions that will enhance their oral health.

5. Diagnosis and Treatment Planning in Elderly Individuals

Aging is a multifaceted and global occurrence that is linked to physical changes and it may also have a negative impacton one's mental state.

Due to an increase in chronic ailments and physical/mental limitations, older persons are more prone to oral disorders or diseases. Dental care is essential for elderly persons to keep their natural teeth and improve their quality of life.[15]

The care of elderly individuals necessitates meticulous diagnosis and multidisciplinary treatment strategy.

Elderly patients may also exhibit potential for pathological changes and systemic diseases. Those illnesses, which arise as a result of common adult hormonal, vitamin, or systemic diseases, demand greater caution and extensive diagnostic evaluation helping in better management of more complicated and unique requirements of the elderly population, improving the quality of care and treatment prognosis.[16]

Case histories, clinical examinations, study casts, radiographs, and pictures are all required diagnostic assistance.[17]Along with panoramic radiograph and cephalogram, I.O.P.A, occlusal and TMJ

films should be obtained routinely, muscle examination, diet evaluation should be done, splint therapy and conference with allied practitioners should be considered.

Profit and Ackerman's problem-oriented diagnostic method is strongly advised to ensure that no area of the patient's requirement is overlooked.

Diagnostic Steps

1. Accurately collect database information
2. Examine the database
3. Develop problem list
4. Prepare a tentative treatment plan
5. Interact with those who are a part of the situation and obtain the consent of the patient.
6. Make a definitive treatment strategy.

Treatment Goals

• Andrews' six criteria for proper occlusion remain the gold standard for evaluating treatment outcomes.

• An attempt to obtain ideal tooth placements that are only possible in dentitions with a Class I skeletal relationship should be regarded as overtreatment in the presence of a prior condition that may impede the achievement of overall idealized aims.

• Problem-oriented synthesis of dental needs of each case.

Treatment objectives

1. Aesthetics of the dentofacial region
2. Stomatognathic function is a term that refers to the function of the teeth
3.Consistency
4. Class I occlusion, both static and dynamic

6. Treatment Planning

The treatment plan for an elderly patient will be different from those of adolescents and youngadults. Both the status of their dentitions and their subjective demands for correction must betaken into consideration. Frequently, a compromise with reduced treatment time or treatmentlimited to one arch may be the goal.[4]Orthodontics will, in the vast majority of circumstances, represent merely part of a patient's dental treatment needs when addressing an elderly patient.

The approach to the treatment may be multidisciplinary or interdisciplinary. Extrusion of teeth, molar uprighting, space redistribution, and incisor alignment, among other operations, necessitate a multidisciplinary approach incorporating tooth movement to permit additional dental procedures necessary to control illness and restore function and aesthetics. Although adjunctive therapy's goals are generally limited, orthodontic equipment may only be necessary for a section of the tooth arch, and treatment time may be relatively short.

The workup of the problem list based on the findings of afunctional, extra-oral, and intra-oral clinical examination is the first phase of any treatment.

After the problem list has been completed, all of the dentists engaged in the instance must agree on the treatment aim.[16]

Treatment sequence

Once the treatment planhas been accepted by the patient, the same should be conveyed to the relevant team.

Orthodontic treatment is preceded by several types of dental care, depending on the degree of dentition degeneration and the patient's age.

Interaction with patients during therapy

Patients must maintain excellent oral hygiene during the orthodontic treatment phase.Because the location of fixed prostheses makes the regular brushing routine insufficient, a new routine must be taught. This might also necessitate recurrent training.

Treatment after orthodontics

Periodontal surgery may be required after the orthodontic treatment phase before prosthodontic rehabilitation may begin.

Patient satisfaction is important

The level of information offered has an impact on the patient's pleasure.

It relies on how successfully the disparity between treatment needs and treatment requests was resolved before starting therapy.

7. Conclusion

With the senior population's fluctuating demography, it’s not easy to ignore this group of fastest-growing population. Unlike younger, healthy adults, older adults may appear with circumstances

that pose a challenge to physicians and demand deeper attention at each session. The problems present in older groups other than malposed teeth and jaws are edentulous spaces, abraded teeth, periodontal bone abnormalities, gingival level discrepancies, hopeless teeth, and a multitude of other restorative and periodontal issues.The acquired malocclusions are more complex because of medical factors, periodontal compromise, and functional complications. It includes the entire dental staff to work together to ensure that the senior patient has a positive experience from the time they walk in the door to the time they leave. Both the status of their dentition and their subjective demand for correction must be taken into consideration.

8. References

1. Grover SS. Geriatric Dentistry: From Entry to Exit and Beyond. Crest® Oral-B® at dentalcare.com Continuing Education Course. 2016; 1-16.
2. Girón FH, Fernández ST. Orthodontic treatment in an elderly patient. Revista Mexicana de Ortodoncia. 2014;2(3):196-203.
3. Urtane I, Pugaca J, Liepa A, Rogovska I. The severity of malocclusion and need for orthodontic treatment in correspondence with the age. Stomatologija, Baltic Dental and Maxillofacial Journal 2006; 8: 35-38.
4. Zachrisson BU. Orthodontic treatment in a group of elderly adults. World J Orthod 2000; 1: 55-70.
5. Melson B, Masioli MA, Potential adult orthodontic patients: Who are they? Chapter 1 in Adult Orthodontics. Blackwell Publishing Ltd 2012.
6. Faber J. Elderly people, quality of life, and orthodontics. Journal of the World Federation of Orthodontists 2016; 5: 1.
7. Ettinger RL, Beck JD. Geriatric dental curriculum and the needs of the elderly. Spec Care Dentist. 1984;4(5):207-13.
8. Almuzian M, Gardner A. Adult Orthodontics Part 1: Special Considerations in Treatment. Ortho Update 2014; 7: 89–92.
9. Maspero C, Farronatoc D, Giannini L, Farronato G. Orthodontic treatment in elderlypatients. Progress in Orthodontics. 2010; 11: 62–75.
10. Sutton DN, Lewis BR, Patel M, Cawood JI. Changes in facial form relative toprogressive atrophy of the edentulous jaws. Int J Oral Maxillofac Surg.2004;33(7):676–82.
11. Ettinger RL. Treatment planning concepts for the ageing patient. Australian DentalJournal 2015; 60:(1): 71–85.
12. Profit WR, Fields HW, Sarver DM. (2013) Contemporary Orthodontics. MosbyElsevier, Fifth Edition. Chapter 18. 635-685.

13. Marcus PA, Joshi A, Jones JA, Morgano SM. Complete edentulism and denture use forelders in New England. J Prosthet Dent 1996;76(3):260–6.
14. Nanda R. (2005) Biomechanics and esthetic strategies in clinical Orthodontics. Elseviersaunders. Chapter 18. 348-372.
15. Malhi R, Patthi B, Singla A. (2016) Oral Care for Elderly- Diagnosis and Treatment.Lap lambert academic publishing. Chapter 8. 43-55.
16. Alexander RG, Sinclair PM, Goates LJ. Differential diagnosis and treatment planningfor the adult nonsurgical orthodontic patient. Am J Orthod Dentofacial Orthop.1986;89: 95–112.
17. Melson B. (2012) Adult Orthodontics. Blackwell Publishing Ltd. Chapter 2. 12-34