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OVERCOMING BARRIERS: CHALLENGES IN CONDUCTING ROOT CANAL TREATMENT IN GERIATRIC POPULATIONS- A REVIEW

Dr. Pallavi[1], Dr. Aishwarya Arya[2],
Dr. Sidakpreet Singh Bhalla[3], Dr. Shweta Purohit [4], Dr Ishika Datta [5]

MDS, Senior lecturer -Swami Devi Dayal Hospital & Dental college-Department of conservative dentistry & Endodontics [1],
MDS-Senior lecturer-Awadh dental college and hospital, Jamshedpur Jharkhand-Dept. Of conservative dentistry and Endodontics[2],
BDS CLINICIAN [3], MDS-Senior lecturer-Geetanjali Dental College Udaipur-Dept. Of conservative dentistry and Endodontics [4],
Junior Resident Guru Gobind Singh Hospital, Delhi .[5]

Abstract *:* Root Canal Treatment in geriatric patients poses distinct clinical and practical challenges due to the complex interplay of age-related anatomical, physiological, and systemic factors. This review explores the common difficulties encountered in performing RCTs in older adults, including pulp canal calcification, altered tooth morphology, and increased brittleness of dental structures. Systemic comorbidities, polypharmacy, cognitive decline, and reduced healing capacity further complicate diagnosis, treatment planning, and prognosis. Psychosocial issues such as dental anxiety, impaired mobility, and financial limitations can also impact treatment acceptance and adherence. Additionally, ethical considerations surrounding informed consent in cognitively impaired patients add another layer of complexity. Addressing these challenges requires a comprehensive, multidisciplinary, and patient-centered approach that considers both the oral and general health status of the patient. With appropriate modifications in clinical techniques and a holistic understanding of the elderly population's needs, RCT can remain a viable and effective treatment option to preserve natural dentition and enhance quality of life in geriatric patients.

KEYWORDS- Geriatric patients, Older adults, Endodontic challenges, geriatric care,

INTRODUCTION

The elderly will require more complex dental procedures since keeping a good dentition is becoming more crucial for general health and because people are keeping their teeth. Because teeth will become necessary to maintain prostheses and general health, endodontic therapy will be crucial to this procedure. From the perspective of endodontics, the main differences between the teeth of elderly patients and those of younger patients are: aging-related pulpal tissue calcifications; delayed electrical pulp testing results and delayed pulpal reactions to cold and heat tests; complicating factors when administering interligamentary injections; rubber-dam isolation techniques due to the poorly broken-down coronal structures in elderly patients; and location and/or locating the canal orifice in calcified teeth (which we frequently see in older patients).[1]

In elderly patients, periapical tissue repair after endo therapy appears to occur later. Over the years, numerous dentists have restored a single tooth multiple times. It is necessary to take into account the dosage of any medications and anesthetics that we may prescribe. Although there is no concrete proof that systemic or medical diseases directly reduce pulpal resistance to injury, they may reduce the ability to recover (pulpal atherosclerosis could not be proven, although atherosclerosis may theoretically affect

arteries). Systemic disorders, such as diabetes, rheumatoid arthritis, multiple sclerosis, other autoimmune diseases, and immune deficiency issues, can have indirect impacts on pulpal resistance to injury. Age-related changes in periradicular cellularity, vascularity, or nerve supply (healing more slowly than younger people, but with the right care, healing can occur even later).[2]
Elderly people appear to have more persistent pulpal and periapical responses (issues). When caring for an elderly patient, there are several obstacles to overcome, such as:

1. PATHOLOGIC AND PHYSIOLOGIC CHANGES: One or more systemic diseases may be present in elderly patients. Numerous illnesses, injuries, hospital stays, length of stay, and bad drug reactions are thought to be associated with age. Furthermore, almost every aspect of the body may be impacted by aging. The following succinctly describes how aging affects the main organ systems:
1) Alterations in the aging brain's structure, function, metabolism, and blood flow that can lead to cognitive deficits, most commonly episodic memory alterations, and an elevated risk of acute hallucinations;

2) elevated blood pressure accompanied by decreased cardiac output and decreased chronotropic and inotropic reactions to beta receptor stimulation;
3) modifications to the respiratory system's mechanical characteristics that may result in decreased arterial oxyhemoglobin saturation and a diminished reaction to hypoxia;

4) Modifications in hepatic metabolism, delayed stomach emptying, and esophageal motility; 5) Diminished renal function;
6) Diminished peripheral gland hormone output and tissue reactivity to hormones.[1]
15% to 20% of those 65 and older have been found to have mild cognitive impairment (MCI). Alzheimer's disease and other dementias are more likely to occur in people with MCI who have memory issues than in those who do not. Elderly people with senile dementia may experience memory loss, disorientation, difficulty making decisions, comprehension issues, and difficulty learning new skills necessary for proper treatment. Crucially, aging is seen as a cardiovascular disease (CVD) risk factor. Compared to younger persons, the prevalence of CVD is higher in those over 65. Another risk factor for elderly patients is osteoporosis. About 5% of adults in the EU who are 50 years of age or older suffer from osteoporosis and are regularly treated with bisphosphonates.[3]
Furthermore, hearing problems are more common in people over 65. Approximately one in three people between the ages of 65 and 74 have some form of hearing loss, and roughly half of people over 75 have hearing issues that make it difficult to communicate during dental procedures. In a similar vein, as people age, their visual impairments worsen, and over 90% of senior citizens wear glasses. Finally, older patients' psychological well-being is regarded as a critical component, since loneliness or a sense of neglect can lead to depression in some.[4]
2. AGE-RELATED CHANGES IN ORAL SOFT TISSUES: The oral mucosa becomes smoother, thinner, and more edematous as people age. It exhibits stippling and a loss of flexibility. The tongue loses filiform papillae and smoothes out. The oral mucosa exhibits decreased wound healing and is more vulnerable to various pathoses, including Candida infections, as people age. Age has an impact on periodontal support; on the buccal surfaces of older patients, gingival recession of less than 3 mm has been seen on average. According to the United States' National Health and Nutrition Examination Survey, the prevalence of periodontitis rises significantly between the ages of 30 and 80.[5]
While the parotid and minor glands' flow rates do not seem to alter much with age, the submandibular and sublingual salivary glands' flow rates decrease. Xerostomia is not regarded as a typical aging condition. Between 25% and 50% of older persons are thought to have xerostomia. A history of head and neck radiation therapy, disorders of the salivary glands, diabetes, alcoholic cirrhosis, cystic fibrosis, hormonal imbalance, autoimmune diseases (like Sjögren syndrome, rheumatoid arthritis, or systemic lupus erythematosus), AIDS, or Parkinson's disease are some of the biological causes of this.[5]

3. TRENDS IN EDENTULISM: Patients with complete dentures frequently complain about their devices, typically because they are uncomfortable or have trouble eating. Patient happiness and adaptability to using a prosthesis are rarely correlated with the quality of the denture construction. Dentate patients have a maximum bite power that is five to six times higher than that of people who wear full dentures. Edentulous patients have greater rates of dysphagia and have trouble chewing "chewy" and hard meals like meat and vegetables.[6] Those who wear partial dentures also experience this challenge. Diet is directly impacted by these alterations in masticatory comfort and function. Patients who are edentulous are more prone to consume diets that are low in fiber and nutrient-dense foods and high in saturated fat and cholesterol. [2]

According to one study, compared to dentate people, patients with fewer than nine teeth had a higher chance of developing a handicap in old age. The fact that edentulous people die at a higher rate than dentate people is not surprising. likely to consume meals deficient in fiber and foods high in nutrients, and high in cholesterol and saturated fat. According to one study, compared to dentate people, patients with fewer than nine teeth had a higher chance of developing a handicap in old age. The fact that edentulous people die at a higher rate than dentate people is not surprising.[7]

4. TREATMENT REQUIREMENTS: As a result of increased tooth retention, older adults now require more dental care. Nearly 30% of all dental costs are incurred by patients over 60. The growing proportion of senior people who are dentate is reflected in this higher expense. Patients who are currently joining the senior population are the same patients who were exposed to preventative dentistry in their younger years, which has helped them to want to save their teeth. According to a study that tracked American patients over 65 for five years, despite the trend toward tooth retention, almost 40% of them lost at least one tooth during that time. A tooth that might otherwise be pulled in a younger patient may need to be kept in place in an elderly patient.[8]

A young patient, for instance, would not often be considered for endodontic treatment of a third molar. However, it might be the last functional posterior tooth left in an elderly patient, or it might be necessary for the retention of a prosthesis; in either case, its preservation would be crucial. Compared to younger patients, older patients report a much higher level of dental anxiety.[9]. Consequently, the doctor needs to be aware of the patient's emotional requirements. A patient's mental health is greatly affected by tooth loss, and after having teeth extracted, patients may suffer from grief akin to mourning. Elderly patients who have tooth loss may become less confident and feel older. Therefore, maintaining dental health can enhance an older patient's quality of life and emotional health.[10]

5. AGE CHANGES IN THE PULPODENTINAL COMPLEX:

Over time, the pulpodentinal complex experiences progressive degenerative changes brought on by both physiological and pathological factors. It is commonly recognized that as secondary and tertiary dentine are deposited, the pulp space's diameters decrease over time. After root formation is finished and the tooth is in occlusion, secondary dentine is deposited, a process that lasts a lifetime. Fewer odontoblastic processes reach the dentino-enamel junction as secondary dentine is formed. Caries, attrition, cavity preparations, trauma, and other insults to the pulp cause the deposition of tertiary dentine, also known as reactionary or reparative dentine. As people age physiologically, peritubular dentine deposits, obstructing the dentinal tubules.[11]

Occlusal attrition from lifetime function is frequently seen in older patients, and it also plays a role in the deposition of tertiary dentine. In older pulps, the predentine layer is thicker. In addition to having a lower water content than younger teeth, elderly individuals' dentine is more prone to structural fissures. As people age, pulpal calcifications become increasingly common. This is comparable to another histological investigation that found pulpal calcifications in more than 90% of patients over 40 who had non-cariesing teeth. As people age, pulpal neurons degenerate, particularly in the pulp horns and the subodontoblastic layer.[10]

According to a study on feline pulps, older pulps lost more Ad and C fibers. Over the course of a lifetime, cementum is accumulated gradually. The main apical foramen widens and the distance between the foramen and the radiographic apex increases as a result of the increased cementum thickness.[10] As we age, the pulp's vascularity decreases. The vascular lumina narrows and the pulpal arterioles thicken with age. Blood vessels in the coronal pulp gradually disappear, and fewer vessels enter the apical foramen, regardless of the degree of pulpal calcification. As the pulp ages, its cellularity decreases.

Although the total density of immune cells remains unchanged, older pulps have fewer antigen-presenting cells. In a rodent model, aged pulps have demonstrated comparable recovery rates after cavity preparation to younger pulps, despite the absence of cellularity. As people age, their odontoblastic capillaries deteriorate and their density of pulpal fibroblasts and odontoblasts decreases. While younger pulps have higher gene expression for development and proliferation, elder pulps exhibit noticeably higher gene expression for apoptosis.[11]

6. VITALITY TEST: Older patients are more susceptible to painless pulpitis because they have a lower threshold for tooth sensitivity and pain perception. Elderly people are more likely to experience orofacial pain, and women are far more likely than men to experience it. Age-related hormonal changes may be the cause of this. Since up to 5% of endodontic procedures are thought to be performed as a result of misdiagnosed orofacial discomfort, it is important to consider the potential of a non-odontogenic cause while treating the elderly. When diagnosing endodontic disease in the elderly, pulp testing is essential. The gold standard for assessing pulp responsiveness is dry ice (CO2) testing, which activates pulpal nociceptors by causing fluid to circulate within the dentinal tubules.[12]

However, because calcified canals are more likely to occur in older adults, CO2 is less helpful. While some authors have documented pulpal response to refrigerant sprays that contain a blend of propane, butane, and isobutane (Endofrost, Roeko, Langenau, Germany), Farac et al.[7] found that older patients' pulp testing with this refrigerant spray resulted in delayed responses and lessened pain intensity.

There are currently no studies in the literature that particularly evaluate the effects of CO2 in the elderly, despite the fact that CO2 has been shown to be more accurate than Endofrost at evaluating pulpal response in vivo. Electric pulp testing will be required if the pulp space is highly calcified, as heat testing may not be effective. [6]

Since young and old pulps have the same electrical stimulation threshold, calcification of the pulp shouldn't affect the pulp's ability to respond accurately to electric pulp testing. During root canal therapy, calcified canals pose a practical obstacle to the clinician. Finding and instrumenting the canals requires extreme caution due to the high danger of perforation. When it comes to endodontics in the elderly, one author asked, "What is a pulp chamber?" Endodontic access becomes less about finding the pulp chamber and more about finding the canal orifices.[8]

Iatrogenic errors can be prevented by using precise preoperative radiographs to check for pulpal calcifications and by having a solid understanding of canal architecture. Identification and instrumentation of calcified canals will be facilitated by the use of smaller files and magnification. An 80-year-old patient with significant calcification in tooth 24 is seeking endodontic therapy. A lifetime of function and restorative dental care is depicted in the clinical photos and radiographs. Preoperative radiograph, postoperative radiograph, occlusal view, and intraoral view Because a lifetime of restorative operations may cause visible landmarks to disappear, the operating microscope helps identify interior features that will lead to canal location. Finding landmarks within calcified pulps that aid in canal finding may be made easier with the help of transillumination.[9]

Instrumentation using a crown down method will lessen instrument stress and fractures in these canals.

The following clinical recommendations can help in the treatment of older endodontic patients:

i)Brief meetings

ii) Comfortable pillows for the neck and back

iv) Bite blocks and mouth props

iv) Using transillumination and magnification to detect calcified channels

v) Using rotating NiTi equipment to shorten treatment duration Patients who are older typically exhibit greater cooperation and compliance. Significant physical restrictions, however, could make it more difficult to provide dental care. Many older individuals have systemic diseases that can affect their course of treatment.[11]

Osteoarthritis affects more than half of Australians over the age of. Long procedures might be difficult to endure if you have joint and back discomfort. Dysphagia, altered blood pressure regulation, and joint deterioration might make it difficult for elderly individuals to fully recline. When compared to manual instrumentation, the use of rotary nickeltitanium (NiTi) devices can drastically reduce treatment time, enabling shorter appointment periods. Elderly people who experience a mix of fatigue, poor physical activity, weight loss, and sluggish walking pace are considered feeble. After surgery, postoperative problems are far more common in frail individuals. Additionally, during endodontic operations, these patients may need more patience and management concerns. Their ability to get in and out of the dentist chair will be reduced.[12]

The patient will feel more comfortable if a pillow is used to support their neck. Although endodontic treatment can be time-consuming, particularly for challenging teeth, shorter visit periods are also probably more tolerated. To give the patient the most comfort possible, appointment periods might be divided into phases. The patient must be given time to recover before leaving the treatment room, and care must be made at the end of the visit to prevent orthostatic hypotension. Because 30% of senior citizens need assistance getting to dental visits, the patient's travel plans must also be taken into account. Elderly patients who have significant treatment tolerance issues should be referred to an endodontist.

i) **Patient characteristics:** mobility is restricted by spinal disorders, prolonged appointments are intolerable, mouth opening is restricted, and the patient's health is seriously compromised.

ii) Factors related to teeth: calcified root canal systems, broken teeth, heavily restored teeth, cast restorations for access, challenging isolation, Retraction of the back teeth Although endodontic treatment is feasible for patients in assisted living homes, it might be challenging since the patient might not be able to move their head to get treatment, particularly in the posterior region, and they might not have access to radiographic evaluation. [8]

7. **Systemic factors:** One or more systemic conditions are likely to occur in elderly people. Degenerative diseases frequently result in a loss of fine motor control. Bradykinesia and tremors are symptoms of Parkinson's disease, and patients may find it challenging to stay steady while receiving medication. To guarantee comfortable jaw opening during lengthy procedures, mouth props are advised; however, this should not be restricted to the elderly. Alternative methods, including supporting the film holders with a rubber dam, should be taken into consideration for patients who are unable to firmly stabilize mid-treatment radiographs.[9]

   A larger surface area for the patient to grasp while using a Snap-A-Ray instead of artery forceps may make it simpler to maintain them during mid-treatment films, particularly in the anterior region. Thirty percent of people over 65 have xerostomia.

   Caries and dysphagia are more common in people who have xerostomia and hyposalivation. [10] Salivary dysfunction is a result of age-related changes, but it is more frequently linked to systemic diseases or pharmaceutical use. Hyposalivation is a side effect of many drugs. Prescription drugs are used by a considerable percentage of senior patients, and nursing home residents utilize xerostomia-inducing drugs at a substantially higher rate than independent old patients.[9]

The incidence of bisphosphonate-related osteonecrosis of the jaw (BRONJ) after tooth extractions was shown to vary between 0 and 4.3% after oral and 0 and 27.5% after intravenous bisphosphonate use, according to a comprehensive review. Although BRONJ has a low overall incidence, its effects are disastrous. In order to prevent potential consequences, it may be advantageous for patients using bisphosphonate drugs to keep their affected teeth and only contemplate extractions if absolutely required.

Endodontic therapy and root capping are options that can eradicate infection and prevent extraction-related issues when teeth are significantly weakened structurally. [8.] 8. Cardiac devices: Devices that control cardiac rhythm and rate include implanted cardioverter defibrillators (ICDs) and pacemakers.[13]

Electromagnetic interference can affect both. Over time, more and more individuals are getting pacemakers and other electrical cardiac devices implanted. To measure canal length, electronic apex locators (EALs) use an electric current.

Numerous case studies detailing the effective use of electronic apex locators in patients with implanted cardiac devices without causing harm to the patient have been published.
In their in vitro evaluation of five EALs, Garofalo et al. discovered that pacemaker function was impacted by just one apex locator (Bingo1020, Dent Corp, White Plains, NY, USA). According to a study on ICD use, EALs had no effect on the devices' in vitro functionality.
Although there doesn't seem to be any evidence that EALs have a major impact on pacemaker function, manufacturers now advise against using EALs in patients who have cardiac devices installed. Other approaches to determining working length should be taken into consideration for these individuals because, in the event of a complication, this could have medicolegal ramifications.

9. Older patients' perceptions of nonsurgical root canal therapy: Elderly individuals place a great value on teeth that have been preserved through nonsurgical root canal therapy. Elderly patients have different priorities than younger patients. Since the purpose of treatment for senior patients is more closely led by short-term goals and asymptomatic function than by aesthetics and long-term stability, this difference may have an impact on the treatment approach.[14]

Elderly patients may reject dental implants out of fear or concern, yet they have favorable opinions of nonsurgical root canal therapy. Elderly individuals value nonsurgical root canal therapy for a number of reasons, including reduced pain and swelling, better chewing and digestion, increased self-esteem and aesthetic appeal, and improved maintenance of natural teeth for speech, dignity, and support of existing prostheses. The lengthy dental visit, the length of time the mouth must stay open, the dry mouth brought on by the lengthy visit, and the inconvenience of rubber dam isolation are some of the reasons why some elderly patients have unfavorable opinions about nonsurgical root canal therapy. Accurate information, strong technical proficiency, and experience in compassionate patient management are necessary while providing dental care for senior citizens. [9]

Due to technical challenges caused by a calcified and confined pulp chamber, root canal therapy is regarded as a very tough procedure for senior individuals. Although root canal therapy is contraindicated in some medical situations, the strategic significance of the tooth plays a critical role in deciding whether to save it with root canal therapy or extract it. Patients who need radiation therapy to the head and neck area and those who have poor compliance (such as those with Parkinson's disease, tremors, or dementia) are a couple of these disorders.

10. Limited lifespan: The patient's reduced life expectancy shouldn't significantly change treatment plans, and it's definitely not a justification for substandard root canal therapy or extractions. Every elderly patient should be fully aware of the hazards and available options.[10]

a) When managing root canal therapy for senior citizens, the following suggestions should be taken into account.[6] Prior to any procedure, patients must communicate with their treating physicians and provide their informed permission. All elderly patients should be aware of the hazards and available options.
b) Strict review of senior patients' medical histories and prescriptions, in conjunction with their doctors. Elderly patients' physical and mental health should be taken into consideration while scheduling treatment appointments.
c) Older patients' emotional needs must to be taken into account. Dentists should try their hardest to satisfy their patients.
d) When necessary, prescribe preventative antibiotics.
e)Because of calcification or root canals, the results of pulp vitality tests (heat, cold, and electrical pulp test) in senior individuals may not be reliable.
f) Intraligamentary anesthetic is a challenging step because elderly individuals' periodontal ligaments narrow. Although epinephrine may cause a brief rise in heart rate, intraosseous anesthetic can be thought of as a feasible substitute.
g) Elderly patients with medical issues can safely utilize 3% mepivacaine.
h) Patients' eyes should be protected from the bright lights of the clinicians.

i) thorough evaluation of preoperative radiographs is necessary, as is thorough preparation of the access cavity and exploration of canal orifices. To provide proper access to the cavity, the tooth structure may occasionally be scarified.
J) When negotiating calcified canal orifices, ultrasonic endodontic tips are especially important. It is extremely difficult to prepare a sufficient access cavity when the pulp chamber is severely calcified, and this might result in a significant loss of tooth structure. a novel method of treating teeth with pulp canal calcifications by creating a template for a guided access cavity preparation and root canal localization utilizing an intraoral scan and CBCT data.
k) Another helpful tool for treating older individuals undergoing root canal therapy is the use of transillumination and magnification to detect calcified canals.
l) The ideal option for root canal therapy is single-tooth isolation. However, multitooth rubber dam isolation might be necessary for teeth that have degraded significantly.
m) Elderly patients who are dependent on others for transportation or who need physical assistance to visit the dentist clinic can benefit from single-visit root canal therapy in a number of ways.
n) Because cementum deposition never stops, cementum thickness will increase. The distance between the radiographic apex and the apical foramen will grow as a result of this morphological alteration. All of these modifications will make X-Ray's working length determination less reliable.
o) One practical alternative for obturation that has a high success rate is the use of a single cone with bioceramic sealers.
p) The success rate for full coverage restorations on molars in senior citizens is high. A post's taper should be especially carefully considered when it is used to restore teeth that have had endodontic treatment since too much taper can result in vertical root fracture. When completing root canal therapy across the entire crown, a post is not required; the choice to keep utilizing this crown is up to the individual.
q) Regardless of a patient's age, non-surgical root canal retreatment is an effective method of treating unhealed endodontic lesions.
r) In general, age has little bearing on endodontic surgery considerations or indications; medical factors may necessitate consultation but do not preclude surgical therapy when extraction is the better option. Following surgery, postoperative problems are far more common in elderly, weak individuals.

OTHER BARRIERS TO RECEIPT OF CARE

1. Cost: In several studies, older adults with functional disabilities or those who attend with a functionally challenged partner have identified cost as a barrier to receiving treatment. According to reports, the majority of these old people lived on meager pensions. Studies have shown variation among groups; according to some researchers, only 1.5–3% of community participants cited cost as a barrier. However, according to Hoad-Reddick et al., 29% of older adults living alone in the community cited cost as a barrier, while 10% of those living in the community (but with support) or in residential homes did the same.[15]

Physical incapacity or impairment, transport issues, ignorance of dental services, or a lack of dental services in a particular location can all be obstacles to accessing dental care.

2. Fear: Most people are apprehensive about going to the dentist, according to Todd and Ladder, and some have found that fear is a significant obstacle to older people receiving care. Furthermore, according to Locker et al., the rate of service utilization decreases with increasing worry.

It is challenging to measure the causes of this kind of fear, and a qualitative study of adults aged 16 to 59 showed that some had an indefinable generalized fear of things, while others had specific fears, such as a fear of the drill or needles, or a fear of a repeat of a traumatic dental visit or a dentist's reprimand. According to Locker et al., compared to their dentate peers, a considerably higher percentage of edentulous patients cited fear as a barrier. This could have been the result of significantly increased exposure to exodontias and its associated consequences, or it could indicate a phobia of dentistry that prevented regular (restorative) dental treatment.

3. Carer-related barriers: Dental care awareness needs to be prevalent among our senior population's professions if holistic care of older patients is to be performed. Whether they are registered nurses, doctors, or well-meaning family members, the dental profession has the responsibility of delivering dental education for vocations. Is endodontics for the elderly a challenge or a hope? In conclusion, as society ages, geriatric endodontics will become increasingly important in comprehensive dental treatment. Future dental care, including root canal therapy, is expected to fall into one of two broad categories for the senior population.[16]

Services for older patients with complex conditions and issues who are functionally dependent and (I) services for the generally healthy elderly who are functionally independent will need to be provided by professionals with advanced training and specialized knowledge in geriatric dentistry. Through enhanced curriculum, aging-related research, and publications, this age group is being targeted in dental education programs and advanced training.[17]

CONCLUSION

Root Canal Treatment in geriatric patients presents a unique set of clinical and logistical challenges that require careful consideration by dental practitioners. Aging is often accompanied by systemic health issues, polypharmacy, cognitive decline, and compromised immunity, all of which can impact the planning, execution, and prognosis of endodontic procedures. Anatomical changes in the aging dentition—such as pulp canal calcification, reduced pulp volume, and complex root morphology—further complicate diagnosis and treatment. Additionally, age-related xerostomia, periodontal disease, and tooth fragility can increase the risk of complications during and after RCT.

Beyond physiological factors, psychological and social aspects also play a critical role. Older adults may have anxiety about dental procedures, limited mobility, or transportation difficulties that hinder access to care. Cognitive impairments such as dementia can affect communication, informed consent, and cooperation during treatment. Moreover, financial constraints or lack of insurance coverage may influence treatment decisions, sometimes leading to the preference for extractions over endodontic therapy, even when tooth preservation is clinically viable.

Effective management of these patients demands a multidisciplinary, patient-centered approach that accounts for both dental and general health status. Thorough preoperative assessment, modified treatment protocols, use of advanced imaging and magnification tools, and careful post-treatment monitoring are essential to improving outcomes. Collaboration with medical professionals and caregivers can enhance treatment planning, particularly for patients with complex health profiles.

In conclusion, while RCT in geriatric patients is often more challenging than in younger populations, it remains a valuable and feasible option for maintaining oral function and quality of life. Dentists must remain vigilant and adaptable, employing evidence-based strategies to overcome anatomical, systemic, and psychosocial barriers. With proper planning and patient-centered care, successful endodontic treatment in older adults is not only possible but increasingly necessary in our aging population.

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