

Geriatric Endodontics, Clinical Changes and Challenges

Mehmet Omer Gorduysus*

Department of Preventive and Restorative Dentistry, University of Sharjah, College of Dental Medicine, Sharjah, UAE

***Corresponding Author:** Mehmet Omer Gorduysus, Department of Preventive and Restorative Dentistry, University of Sharjah, College of Dental Medicine, Sharjah, UAE.

Received: December 29, 2016; **Published:** December 30, 2016

Geriatric Dentistry (gerodontology) is the dental field that studies dental problems, their diagnosis and solutions in the old. As a key member of health deliver team, also in the field of dentistry the geriatric dentistry and geriatric endodontics gaining more importance because of increasing number of the elder population over 65 years, also over 80 years are becoming a new group and target as a second category in geriatrics and beyond that the centenarians. More geriatric patients are seeking endodontic therapy in the clinics. This is good news for the profession but that means we will be faced more calcified canals, more challenging cases, we need more competency, skills, special training, we need more patience, tolerance, empathy and we will be facing more stress in the clinics. Some geriatric patients are with heavy systemic disorders, communication problems, Alzheimer and Parkinson disease, dementia, anxiety, cooperation problems, and handicapped besides the technical problems in the root canals which we might have being involved during our daily practice. The purpose of this short opinion paper aims focusing the technical details in the clinics during the endodontic therapy more than the other general geriatric problems.

In our daily routine as endodontists we are facing more calcified canals and challenges to overcome at the dental chair with the geriatric patients.

Major difference (contrast) in teeth of geriatric patients from the point of endodontics (geriatric patients versus young age) are aging related pulpal tissue calcifications, delayed electrical pulp testing results and delaying pulpal reactions to cold and heat tests, complicating factors administering interligamentary injections (more damaging), rubber-dam isolation techniques because of badly broken-down (or worn) coronal structures in old patients, location and/or locating the canal orifice in calcified teeth (in olders we see very often). Repair of periapical tissues following endo treatment seems late in geriatric patients. We can see many previously done multiple restorations in one tooth by many dentists during the years. Also, the dosage of anesthetics and medicaments which we might prescribed must be considered.

There is no conclusive evidence that systemic or medical conditions directly decrease the pulpal resistance to injury, but may decrease the healing capacity (theoretically atherosclerosis may effect vessels but pulpal atherosclerosis could not be demonstrated). Indirect effects of systemic diseases to pulpal resistance to injury is a reality (i.e. diabetes, rheumatoid arthritis, multiple sclerosis, other autoimmune diseases and immune deficiency problems). Relatively little change in periradicular cellularity, vascularity, or nerve supply by age (healing slower than youngsters but even later, the healing is a reality with a proper treatment). Pulpal and periapical reactions (problems) seem ongoing more chronically in elderly patients.

Endodontics has been successively performed on patients ranging from age 2 years to 96 years. In other saying since first day the teeth appear in the oral cavity till the last day of human life. Endodontics is less traumatic than extraction in older patients. Elder patients (also babies) are not fragile to touch. They just need more care and competency to work with. Pain associated with vital pulps (that which

is caused by heat, cold, sweets or referred pain) seems to be reduced by age and the severity of symptoms diminished because of biological changes. Asymptomatic pulp exposures on the root of a multi-rooted tooth can result in the surface uncommon clinical situation of the presence of both vital and non-vital pulp tissue in the same tooth. Abrasion, attrition, erosion (common teeth wearing) are pulp responses which those are effects of dentinal sclerosis and reparative dentin. Secondary dentine formation occurs throughout life-time and may eventually result in almost complete pulp obliteration. In maxillary anterior teeth, the dentin is formed on the lingual wall of the pulp chamber; in molar teeth the greatest deposition occurs on the floor of the pulp chamber. Apical foramen becomes more constricted, cement-dentinal junction moves farther from the radiographic apex with continued cementum deposition and also dentinal tubules become more occluded, besides that the tubular permeability decrease is a reality.

Lateral and accessory canals can be calcified (maybe this is good for us) thus decreasing their clinical significance. Because of missing and tilted teeth TMJ functions are limited and loss of vertical dimension, limited mouth opening, muscular fatigue, less space for accessing the instruments are clinical challenges during the root canal treatments. Cracks and cuspal foundation cracks and craze lines of former multiple restorations, and previous dental procedures can be seen and may become problem during the clinical applications and may cause big fractures in the tooth structure and this may be ended up with serious restorability problems. Periodontal disease may be the principal problem for dentate senior and increased incidence of perio-endo cases, sinus tracts because of perio problems or chronic pulp infections, deep periodontal pockets, chronic food accumulations, halitosis, root and dentinal sensitivity and all those require periodontal therapy. The reduced neural and vascular component of aged pulps, the overall reduced pulp volume and the change in character of the ground substance in the pulp and structural and histological changes in the pulp create an environment that pulp may responds with difficulty to both stimuli and irritants than the youngsters. Therefore, cold and electrical pulp test is mostly deceptive in elderly patients and not very reliable. The response to stimuli may be weaker than in the more highly innervated younger ones. Extensive restorations, pulp recession and excessive calcifications are limitations in both performing and interpreting results of electrical and thermal pulp tests. If they use cardiac pacemakers do not use electric pulp test and other electrosurgical units. A test cavity and selective anesthesia test is not valuable and necessary in elderly patients. Discoloration of single tooth may indicate pulp death but this is a less likely cause of discoloration in the old. This is a result of aging in elderly patients and generally this is normal. Radiographically pulp stones, dystrophic calcifications, reparative dentine, deep proximal caries or root caries can be seen. Also, pulp recession and diminished depth of pulp chamber and lessen MD length and narrowed canals can be seen radiographically. Receding pulp horns, deep and extensive restorations, tilted teeth, mid-root disappearance of a detectable canal may indicate bifurcation rather than calcification, the incidence of some odontogenic and nonodontogenic cysts and tumors characteristically increases with age besides the risk of osteosclerosis and condensing osteitis might be the other radiographic findings in geriatric patients during the endodontic therapy. Tight and calcified canals are almost the rule in older patients in radiographs. Resorptions associated with chronic apical periodontitis significantly alter the shape of apex and the anatomy of the foramen through inflammatory osteoclastic activity, usually hypercementosis at the apex and sometimes silent and old root fractures can be detected radiographically. As treatment plan, single visit appointment procedures offer obvious advantages to elderly patients. Length of dental appointment is important and if possible shorter appointments are better. Practitioners ability to perform the treatment is important. Competency and experience is crucial. Endodontic surgery is not the first option or an alternative as for a young patient (be reluctant for endo-surgery). Retreatment alternatives must be given the priority.

The patients limited life expectancy should not appreciably alter treatment plans and surely is no excuse for extractions or poor root canal treatment. It is important that each geriatric patient be well informed of risks and alternatives. Medically compromised patients must be consulted with the physician. The ideal time of day must be asked to patient for scheduling depending patients' daily personal, eating, and resting habits should be considered as well as any medication schedule. Morning appointments are preferable for most older patients because of timing of the medications and generally elder patients are more fresh during the morning hours also they wake up earlier. Chair positioning and comfort may be of greater importance for the elderly than younger. Against a jaw fatigue and TMJ problems bite-blocks are useful.

Teeth with necrotic pulp should be treated without anesthesia (optional). That may allow the patients response to instrumentation through apical foramen to determine file length or need for adjustment and reduce risk of over instrumentation and inoculation of canal contents into the periapical tissue, if patient has no cardiac pacemaker electronic apex locator is best for the elderly patients. The reduced width of PDL makes needle placement for supplementary intraligamentary injections more difficult and avoid intraosseous anesthesia as much as possible. If antibiotic is necessary to prescribe minimum doses are better for the beginning. The effects of access preparation on existing restoration and the possible need for the actual removal of the restoration should be discussed with the patient before the procedure and always remove the artificial crown prior to access preparation. Avoid making small holes for accessing into the canals from the artificial crowns, this may lead perforations, bleeding, difficulty of decay removal and many other technical problems, overall may jeopardize success. If the tooth is tilted the initial access must be done with high speed and can be performed without rubber-dam to maintain correct axial direction and avoid perforations and later RD should be applied. If there is a thick restoration or recessed pulp the length of the bur may not be adequate, use long shank burs or if necessary do proper occlusal reduction. To locate the orifices sometimes magnification is necessary (operating microscope gives the best result, or magnifying glasses, 2.5X to 3.5X better for start). Especially in geriatric patients magnification is essential. Be careful against furca perforations while looking for the canal orifices. Use fiberoptic light for more illumination and use smaller size k-files for canal negotiation (#8 or 10). Using lubricants and chelating agents (i.e. RC-prep, EDTA, etc.) for easy insertion to the canal and for canal preparation is necessary always.

If you feel you are hopeless to locate the canal and if you feel fatiguing and frustrating as the operator, and also your patient re-schedule the patient and give yourself and to the patient one more chance. In such a case second appointment will be more productive.

Is geriatric endodontic a hope or a challenge? In conclusion, geriatric endodontics will gain a more significant role in complete dental care because of the “aging society”. Dental services including root canal procedures, for the elderly population of the future are anticipated to be of two general types (I) services for the relatively healthy elderly who are functionally independent and (II) services for elderly patients with complex conditions and problems who are functionally dependent the second group will require care from practitioners who have specialized and advanced training in geriatric dentistry. This age group being targeted in dental education programs and advanced training through improved curriculum, research, and publication on aging.

Volume 7 Issue 1 December 2016

© All rights reserved by Mehmet Omer Gorduysus.