Why do Dentists Need to Know about the Ageing Process in Relation to the Provision of Oral Health Care?

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Aims & Objectives

The aim of this poster is to illustrate Xerostomia's contribution to the prevalence of root caries in the elderly.

Introduction

Fig.2 Narrowed root canals in an aged tooth (5)

Continual advancements in oral medicine coupled with improved oral health care routines, means a greater number of the elderly are retaining their teeth. Dentists must subsequently identify the risks associated with aging, and ensure they provide care suited to these needs. With almost 50% of those aged 75 and above experiencing root caries, (1) it is crucial for dentists to recognise its multifactorial aetiology and aim to reduce its occurrence. Although gingival recession, exposed roots and Xerostomia collectively contribute to the development of carious roots, Xerostomia's particular prevalence amongst the elderly (9) makes it a key factor to consider in the provision of oral health.

Aetiology of Xerostomia in geriatric cases:

Definition of Xerostomia:

- The subjective sensation of a dry mouth. (3)
- Hyposalivation, a decreased salivary flow, (4) frequently accompanies Xerostomia.

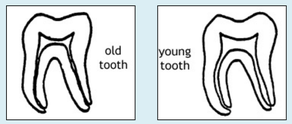
Chief cause = adverse effects of multiple prescription drugs (13):

- 75% of those aged 65+ consume one or more prescription drugs
- 80% of the most frequently prescribed medications are xerogenic
  - Eg. antihistamines & tricyclic antidepressants which display anticholinergic effects & cause hyposalivation. (12)

Other = symptom of type 1 and 2 diabetes mellitus

- Dries the mouth due to dehydration & polyuria. (4)
- In the USA, 25% of those aged 65+ have type 2 diabetes (2); Xerostomia is prevalent in almost 15% of diabetic patients. (4)

Fig.1 Showing the narrowing of root canals with age (5)



Experimental Evidence

1. Study on the Prevalence of Xerostomia & Hyposalivation in subjects with Type 2 Diabetes Mellitus (type 2 DM) (7):

Method:

- 154 subjects **with** type 2 DM; 50 subjects **without** type 2 DM
- Intra-oral examination used to determine the extent of dryness in the oral mucosa
- Modified Schirmer Test used to measure hyposalivation
  - Hyposalivation: if blue colour of test strip moved < 25 mm in 3 minutes
- Modified dip-slide test used to study the bacterial prolife of subjects with hyposalivation

Results:

Subjects:	With xerostomia (%)	With hyposalivation (%)
With type 2 DM	62	46
Without type 2 DM	36	28

Types of bacteria in the saliva of subjects with hyposalivation	Prevalence of bacteria in subjects with hyposalivation (%)
Lactobacillus	90.4
S.mutans	96.6

2. Study Comparing the Bacteria Profile of Dentine, Carious roots & Non-carious roots in subjects aged 82 years+ (8):

Method:

- Plaque gathered from 21 subjects: 11 with root caries, 10 without root caries
- DNA obtained, 16S rRNA amplified by PCR, cloned & sequenced
- 245 prominent species identified out of 3,544 clones

Results:

	Number of lesions in which bacteria is present		
	Non-carious roots	Carious roots	Carious dentine
Lactobacillus	0	6	7
S. mutans	1	3	5

Comparison of results:

- Study 1 - Subjects with hyposalivation showed significantly high numbers of **Lactobacillus & S.mutans.**
- Study 2 – **Lactobacillus & S.mutans** prevalent in **carious roots**. Lactobacillus is present in carious dentine but absent in non-carious roots, illustrating it is involved in the *development* of root caries, rather than its initiation. (8)
- **Lactobacillus & S.mutans prevalent in subjects with hyposalivation *and* root caries**
- **Increased cariogenic pathogens + decreased intraoral buffering (6) = Xerostomia's role in the development of root caries**

Difficulty Preventing/Treating root caries in geriatric cases (11):

1. Location of root caries

- Occurs gingival to tooth's proximal surface or subgingivally
- Difficult to access & isolate so recurrence rates are high

2. Preventing xerostomia

- Mineral loss occurs at x2 rate in roots compared to enamel
- Hyposalivation increases demineralisation and therefore the risk of root caries

3. Careful execution of root canal treatments

- Distance between the cemento-dentinal junction & root surface increases with age, due to continual cementum deposition at the tip
- Narrower canals increase risk of separation & binding during root canal preparation

Conclusion

In conclusion, with root caries being the greatest cause of tooth loss in geriatric patients (1), and 40% of those aged 55+(10) experiencing Xerostomia, dentists must know about the aging process to allow for the successful prevention and treatment of root caries in the elderly. I believe I have provided reliable evidence to illustrate this, as the majority of my sources are journal articles, which are less likely to be biased since they are intended to inform. However, source 10 and 13 date back to 2006, so the information may be less relevant. In addition, it would have been beneficial to utilise a *wider* range of credible sources, to provide a more in-depth knowledge on the topic of interest.

References:

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