Rational Dental Care: Part 2. A Case History

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SOMMAIRE

La planification des traitements et la prise en charge des soins d'une personne âgée fragilisée peuvent être compliquées par une variété de facteurs modificateurs. Pour comprendre les besoins du patient, il faut comprendre l'environnement dans lequel ce dernier fonctionne. Ce deuxième d'une série de 2 articles présente le rapport de cas d'une personne âgée de santé fragile pour illustrer certains des problèmes sociaux, médicaux et communautaires qui interviennent dans la prise en charge des soins des personnes âgées.

Mots clés MeSH : decision making; dental care for aged; dental caries/therapy; patient care planning

Cet article a été révisé par des pairs.

The number and percentage of adults over the age of 65 in Canada has grown dramatically since the middle of the last century as a result of improvements in public health, medical care and methods of birth control. In 1951, people aged 65 and older made up about 8% of the population. By 2001, this proportion had grown to 12.5% and is expected to reach 20% by 2031 at which time 45% of elderly people be older than 85 years.[1] The fastest growth in the aging population is occurring in the 85 years and older group.[2]

The Canadian population is diverse, but heterogeneity is probably greater among those aged 65 and over than for any other age group.[3] Elderly people are a complex combination and expression of their genetic predisposition, lifestyle, socialization and environment. All of these factors influence their health beliefs and, therefore, their health-related behaviour and attitudes. Dentists need to evaluate the cultural, psychological, educational, social, economic, dietary and chronologically specific cohort experiences that may have influenced a patient's life. Determining oral health status must also include an assessment of an individual's life experience with dental care, caries, periodontal disease and iatrogenic disease. The history of a person's behavioural attitudes and expectations regarding their own oral health will be reflected in his or her oral health status. The skills, attitudes and philosophies of the various dentists that an older person has encountered during his or her lifespan will also affect their oral health status.[4–7]

Different older adults have different needs and their functional disabilities influence their ability to accept and receive dental treatment. This paper presents a case history that illustrates some specific oral needs and problems in the clinical oral care of a frail, older adult.

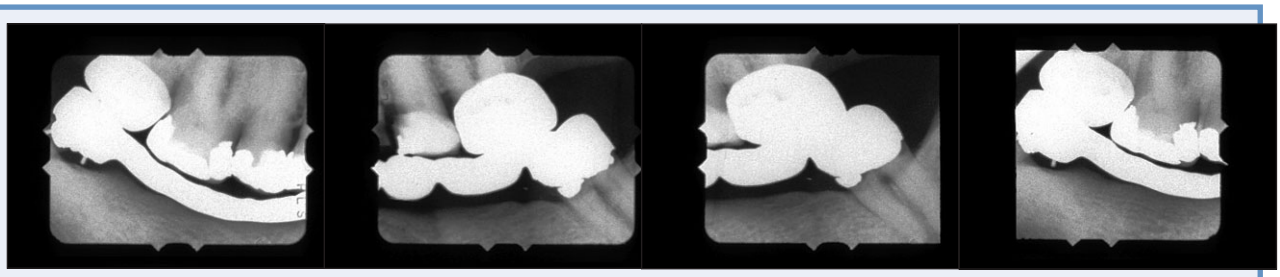

Figure 1: Bitewing radiographs of the patient showing the long-span fixed partial dentures with caries in the abutment teeth.

Table 1 Medications taken by our patient

Disease	Drug name and dose	Potential oral side effects	Management Issues
Chronic congestive heart failure	Digoxin (cardiac glycoside), 0.25 mg daily	Dry mouth Increased gag reflex	Need to monitor vital signs Patient has postural hypotension Patient is sensitive to light and has increased gag reflex Control use of vasoconstrictor
	Acetylsalicylic acid, 81 mg daily	Bleeding gums	Patient is at increased risk of bleeding
	Furosamide (loop diuretic), 40 mg daily	Dry mouth Lichenoid	Need to monitor vital signs Patient has postural hypotension Limit use of saline Avoid alcohol Take caries prevention measures Patient at risk for hypokalemia
Hypokalemia	Potassium chloride, 20 mEq		Patient may have cold extremities, confusion, muscle weakness
Depression	Fluoxetine (selective serotonin re-uptake inhibitor), 10 mg daily	Dry mouth Taste changes	Patient has postural hypotension Take caries prevention measures Avoid use of alcohol Patient is sensitive to light
Diverticulitis	Mesalamine (anti-inflammatory), 500 mg bid (suppository) Ranitidine (H2-receptor antagonist), 150 mg hs		Use semi-supine chair Consult if need to use antibiotics Avoid aspirin if possible Use semi-supine chair Patient may have reflux symptoms, e.g., burning mouth
Seizure	Phenytoin (anti-convulsant), 2 50-mg chewable tablets hs	Gingival over growth Ulceration Taste loss	Frequent recalls necessary Keep appointments short Use stress reduction measures
Anemia	Ferrous sulphate, 325 mg bid	Stain on teeth	Counsel patient to take liquid iron through a straw to reduce staining
CVA	Warfarin (anti-coagulant), 5 mg daily	Gingival bleeding Stomatitis Salivary gland pain	Check international normalized ratio Encourage good oral hygiene to prevent bleeding

Note: bid = twice daily; CVA = cerebrovascular accident; hs = at bedtime.

Case History

Mr. J.H., an 87-year-old widower, who had been moved into a long-term care facility about 12 months earlier as a result of a cerebrovascular accident (CVA), was brought to our office by his son, who thought his father was having trouble eating solid food. The patient had been a postman before he retired about 20 years earlier.

Medical History

Mr. J.H. had suffered an acute CVA resulting in right-sided hemiplegia. He was aphasic and unable to communicate directly with us. His medical records from the nursing home stated that he had cardiomyopathy, chronic congestive heart failure, diverticulitis and a past history of prostate cancer, which had been treated with surgery and radiation 5 years earlier. The patient also suffered from depression. He had a seizure after the CVA. Because of his dysphagia, he was currently being fed via a gastric tube. He was allergic to nitrofurantoin.

Drug History

The list of Mr. J.H.'s medications was sent to us by the nursing home and is shown in **Table 1**. His most recent international normalized ratio (INR) was 2.40.

Oral Examination

The patient had generalized hard and soft deposits on all his remaining teeth.

Upper right							Upper left						
17	16	15	14	13	12	11	21	22		24	25	26	
47	FPD		44	43	42	41	31	32	33	34	FPD		37
Lower right							Lower left						

FPD = fixed partial denture

Overeruption of teeth in the posterior maxilla was evident, especially on the right side.

Teeth 11 and 21 consisted of root fragments only. Caries were present in teeth 12, 24 and 25.

In the mandible, fixed partial dentures (FPDs) spanned teeth 37 to 34 and 44 to 47. There was furcation involvement of all molars, with recurrent caries of the abutments resulting in movement of the FPDs. Caries were present in teeth 31 and 41 (**Fig. 1**). The mouth was dry.

Development of a Rational Treatment Plan

To develop a treatment plan for this patient, we followed a decision tree (**Fig. 2**), which required an evaluation of the modifying factors as well as answers to the following questions.

What are the patient's desires and expectations?

We did not know Mr. J.H.'s wishes as we were unable to communicate with him because of his aphasia. However, his son wanted his father to be able to chew hard foods again and to have the gastric feeding tube removed. The son believed his father was in pain or discomfort and wanted him to be pain free.

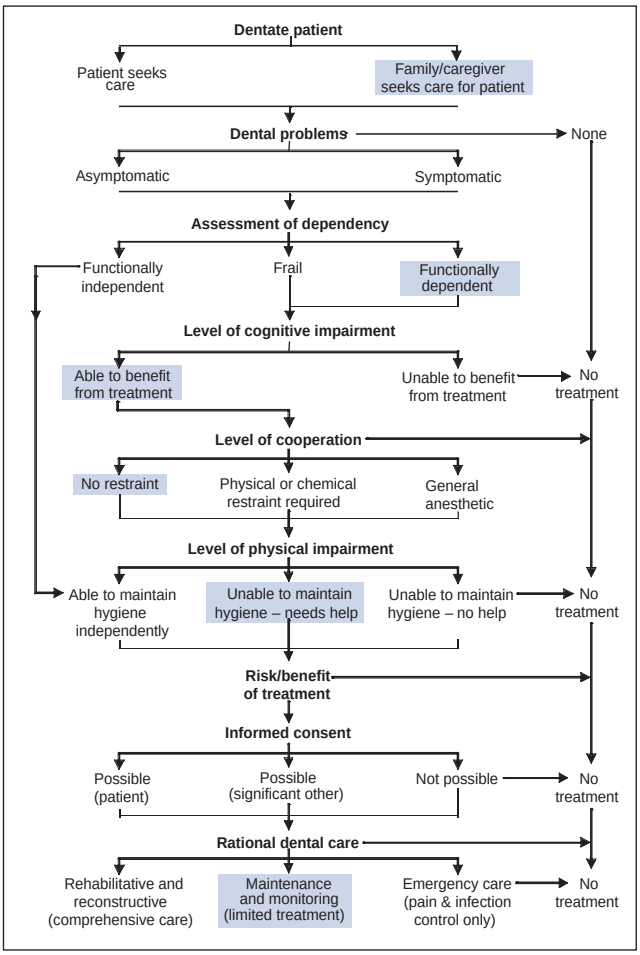

Figure 2: Decision tree for a dentate person.

What are the patient's dental needs?

The FPDs had to be removed to evaluate the viability of the abutment teeth. Teeth 12, 11, 21 and 22 had to be extracted as they were not restorable. Caries had to be treated. The patient needed help with daily oral hygiene. To ensure enough chewing pairs of teeth, a removable partial denture might be necessary for the mandible. Some of the maxillary anterior teeth would have to be extracted and the importance of their replacement would have to be assessed.

What is the impact of his dental problems on his quality of life?

We had no measure of the severity of Mr. J.H.'s dental problems. The son believed that his father was in pain and that dental treatment would alleviate this and allow his father to eat. The son did not believe that esthetics was an issue for his father and replacement of the maxillary anterior teeth was not important.

What is the impact of his medical problems on his treatment?

Mr. J.H. was living in a nursing home and was dependent on others for all activities of daily living. To evaluate his

medical problems, we had to talk to his physician.

Cardiomyopathy: The patient's blood pressure was stable at 110/60; however, it and other vital signs had to be monitored at each appointment. Because of his cardiomyopathy, we had to limit the use of epinephrine to 0.036 mg or 2 carpules of local anesthetic with deliberate aspiration.[8–10] As there is a diurnal variation in the stickiness of platelets, the patient should not be seen between 6 and 9 a.m. to avoid a cardiovascular event.[11,12]

Chronic congestive heart failure: Mr. J.H. became short of breath easily when experiencing mild stress, such as that associated with being helped to stand and moved to a dental chair; therefore, stress reduction procedures were necessary during treatment. We had to have oxygen available during treatment and monitor his vital signs.

Acute CVA with right hemiplegia: Despite his aphasia, Mr. J.H. could follow instructions and, therefore, was able to benefit from dental treatment. We needed to take the same preventive measures as for his cardiomyopathy.

Depression: We consulted the nursing home to ensure that Mr. J.H. was receiving his medications.

Dysphagia: Improving the patient's chewing ability might help his nutrition and allow his physicians to remove his gastric tube; this was discussed with his physician who approved dental treatment.

What would the impact of his medications be on his treatment?

The effects of Mr. J.H.'s daily medications on his oral condition and dental management are shown in **Table 1**.

Would he be able to maintain oral hygiene?

This is a key factor in decision-making, as plaque control is essential to the maintenance of any teeth.[13] Compliance with this preventive behaviour depends on the patient's caregiver having:

- adequate knowledge of the reasons for cleaning the patient's teeth and understanding that his dry mouth puts him at high risk for caries and periodontal disease
- adequate motivation to clean his teeth (we know from experience that this is difficult)
- adequate neuromuscular skills to manipulate a toothbrush (the patient's right-sided hemiplegia meant he needed help with daily oral care).

As Mr. J.H. had a very dry mouth, we wanted him to receive a home care regimen for persons with high risk of caries. We suggested that he try an artificial saliva and use a high concentration fluoride toothpaste (Prevident 5000, Colgate, New York, N.Y.). We would have liked to use a chlorhexidine rinse as well, but at that time all commercially available products had an alcohol base. (Sunstar-Butler has now developed an alcohol-free rinse.) An effective way to deliver chlorhexidine rinse for a person who is unable to swish or rinse is by spray bottle. We wrote orders for the nursing home to clean Mr. J.H.'s teeth twice a day, using Prevident 5000 in the morning and spraying his mouth with chlorhexidine in the evening just before bed. We put Mr. J.H. on 3-month recall.

What is the patient's ability to withstand the stress of treatment?

The patient was in fragile health and his unstable medical condition limited treatment. His cardiomyopathy was progressive as was his congestive heart failure. It was not clear whether his depression was sufficiently treated or whether he had an interest in cooperating during treatment. If we were going to extract teeth or do deep scaling, we needed to consult his physician and ensure that his INR did not go above 2.5. We would be able to treat him in short late-morning appointments while monitoring his vital signs. The fact that his son brought him to appointments was a key to success as was the son's liaison with the nursing home to improve his daily oral hygiene.

Are there any financial barriers?

The son paid for his father's care and the planned treatment was not very expensive.

What is the probability of success?

Communication with the father was a problem because of his aphasia. The son's expectations were unrealistic because of his father's fragile health and unstable medical condition.

Mr. J.H.'s inability to walk or lift himself was a problem; however, his son helped us move him from the wheelchair to the dental chair.

The Final Rational Treatment Plan

A treatment plan was developed after resolving the issues raised by the decision tree.

Emergency or Palliative Care

1. Cut FPDs distal to teeth 34 and 43.
2. Check INR with the help of his physician; maintaining it below 2.5, extract teeth 12, 11, 21, 34, 37, 44 and 47.

Disease Control

1. Clean and scale the teeth.
2. Restore teeth 24 (mesial aspect), 25 (facial aspect), 31 (facial), 41 (facial).

Reconstruction

1. Ensure maintenance of teeth 33 to 43, which are "key teeth" as Mr. J.H. could not adapt to a mandibular complete denture.
2. Construct an interim resin mandibular removable partial denture (RPD) to determine patient benefit and to keep costs down.
3. After discussion, the son chose not to have a maxillary RPD constructed as neither he nor his father was concerned about esthetics.

Maintenance and Monitoring

The treatment was completed after 2 months, and Mr. J.H. was able to chew some soft foods (**Fig. 3**). He had trouble wearing the mandibular denture because he could not place it in his mouth by himself and the staff at the home did not help him adequately. Also, the nursing staff did not do an adequate job of maintaining his daily oral hygiene. After 9 months, he had new caries on teeth 13, 25 and 34. He had occlusion only on teeth 14 and 13 with 43, and 22 with 33 and 32, and he was still being fed by gastric tube (**Fig. 4**).

Figure 3: The restored dentition of Mr. J.H. with the interim removal partial denture.

Figure 4: The dentition of Mr. J.H. showing his limited occlusion.

The patient died in his sleep 3 months after this last appointment or 14 months after we first saw him.

Discussion

Clinical decision-making in dentistry tends to be based on qualitative, subjective estimates that the benefits of a specific treatment outweigh the possible alternatives. In dentistry, a clinician traditionally collects useful pieces of evidence and synthesizes them into a sequential subjective treatment plan, which is usually based on his or her clinical experience.[14] Decisions are usually based on the patient's age-associated psychological, social, biologic and pathologic profile. Grembowski and others[15] have indicated that clinical decision-making should be a social process that includes the dentist, patient and sometimes others.

What was unique about Mr. J.H. was that he was very frail and unable to communicate directly, but had a son who wanted him to have treatment so that he could enjoy eating again. After consultation with his physician, it was agreed that we should try to do more than palliative care. It was clear that Mr. J.H. could not tolerate extensive restorative procedures and it was often necessary to shorten appointments and define achievable goals for each appointment.

Conclusions

This case history illustrates that it is possible to improve quality of life by improving the oral health of a frail, at-risk patient. To achieve this, one must understand the influence of social and medical problems on the oral cavity and dental treatment. It was imperative that we use a step-wise approach to treatment of Mr. J.H. and that no irreversible step was taken before adequate assessment of its potential for success. It was important to maintain key teeth, especially the 6 anterior teeth in the mandibular arch. The fundamental concept of successful treatment requires that the dentist understand how the patient functions in his or her environment and how dentistry fits into the patient's overall needs.

Rational dental care is a framework of decision-making that allows a clinician to develop a plan for the most appropriate care in the best interests of the patient after weighing all the underlying or modifying factors.

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