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Dental hygiene residential care in a 3-year dental hygiene education programme in Japan: towards dysphagia management based on the dental hygiene process of care

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Abstract: This paper reports an evaluation of a residential care practice, which was part of a 'Dysphagia Management' course introduced into a 3-year dental hygiene curriculum in Japan. The clinical practice was performed at a care facility for the elderly people. Dental hygiene interventions, which consisted mainly of professional oral care, were implemented on a client who was bed-bound after suffering from a stroke. As the client had severe tension in muscles around oral cavity, it was difficult for the facility care workers to provide daily oral hygiene care. The goals of the dental hygiene care plan included decreasing tension of oral muscles and reducing periodontal inflammation and halitosis. The dental hygiene interventions were given once a month for 5 months. Evaluation in the fifth month demonstrated relaxation of oral muscles, decrease in plaque accumulation, and improvements in levels of gingival inflammation, indicating the partial achievements of the initial goals. Possibilities for revision of the care plan could call for more active involvement of the facility care workers and client-centered goal setting.This learning experience provided an opportunity for continuing intervention and evaluation of dental hygiene care for the same client. The positive results of our limited interventions further confirmed the importance of professional oral care in organic and functional improvements in oral health for the elderly people.

Key words: dental hygiene education; dental hygiene process; dysphagia management; residential care

Introduction

Health problems within a rapidly ageing population require dental hygienists to provide client care that is not just highly professional but also individualized. Dysphagia is receiving considerable attention among health-care professionals in Japan, and more than 1 million people are estimated to have treatment needs relating to eating and swallowing function (1). Dental hygienists should play a role in dysphagia management, and systematic interventions based on the professional oral care are necessary to assume such a responsibility (2).

As a framework of the 3-year dental hygiene curriculum, 'Dysphagia Management' course was developed (3). A residential care practice was introduced as an active learning strategy of the course. We report the results and evaluation of the dental hygiene interventions in the practice.

Method

Course outline

The 'Dysphagia Management' course was given to third year students in 2005. Previous to this, these students had already taken most subjects in the Oral Health Sciences, and introductory courses in nursing science and nursing care. They had also experienced 9 months of clinical rotation in dental offices, hospitals and various other facilities.

The dysphagia course consisted of lectures, basic and clinical practice. The instructors were selected on the basis of their expertise in dysphagia management from various fields (3).

Clinical practice

The students and instructors (dental hygienists and dentists) visited a facility for the elderly people once a month. The objective for the year was to learn and practise professional oral care that could contribute to the basic dysphagia rehabilitation. Client volunteers were carefully selected, based on their state of health, by the dental hygiene instructors, after consulting with facility nurses and other health-care professionals. An informed consent form was obtained prior to the practice according to the facility and dental hygiene programme guidelines. Under the supervision of instructors, the students assessed the level of eating and swallowing functions, and the oral hygiene condition of clients. After initial visits, process of care worksheets were filled out to formulate dental hygiene diagnoses (4), and plan dental hygiene care. The instructors guided students throughout the process, and dental hygiene interventions were implemented for the clients.

Case review

The subject reported here was a 90-year–old female who was bedridden after suffering from a stroke. She showed minimal response to verbal communication, and presented dysarthria, dysphagia, loss of initiative and left hemiparesis. She had been fed only via gastrostomy tube for the past 8 months. She was on several medications including an antiplatelet agent. She had 11 teeth left, and had been receiving minimal oral care by the facility workers. It was difficult for them to perform meticulous care as the client presented oral muscular tension especially around the lip area.

Dental hygiene process

Dental hygiene assessment was performed according to an assessment tool developed for the dental hygiene program. Clinical parameters for dental, periodontal and oral hygiene conditions, and functions related to eating and swallowing were assessed. For example, the level of supragingival plaque accumulation was assessed by Plaque Index (PlI) (5), and gingival inflammation was assessed by Gingival Index (GI) (6). The level of halitosis was subjectively assessed. After careful assessment, dental hygiene diagnoses were formulated. Dental hygiene interventions were implemented according to the dental hygiene care plan. The goals and expected outcomes were evaluated by the students and instructors.

Results

Assessment

The gingiva around the remaining teeth were highly inflamed (highest GI = 3) due to supragingival plaque accumulation and calculus formation. She had halitosis by subjective judgment. It was not possible to assess the level of her motivation for oral hygiene, as verbal communication could not be established. Severe oral muscular tension prevented her from receiving appropriate oral hygiene care by the care workers. Saliva secretion was within normal levels.

Dental hygiene diagnosis and care planning

After interpretation and analysis of the collected data, the following dental hygiene diagnostic statements were formulated

Table 1. **Dental hygiene diagnoses and goals in the care plan**

Dental hygiene diagnosis	Goal
(1) Insufficient oral hygiene care related to oral muscular tension	(1) Facilitation of oral hygiene care
(2) Halitosis and periodontal inflammation related to heavy plaque accumulation and calculus formation	(2) Reduction in levels of halitosis and periodontal inflammation

Table 2. **Dental hygiene care plan**

Goal	Dental hygiene intervention	Expected outcome
#1	(1) Perform desensitization followed by professional oral care (2) Demonstrate proper oral care methods to client's family members and care workers	(1) Decrease in time needed for desensitization process (5 months) (2) Client's family and care workers effectively perform daily oral care
#2	(1) Professional plaque control (2) Supragingival scaling (3) Cleaning of surfaces of tongue and pharynx area	(1) Plaque score (in PII) is reduced to 0 from 3 (4 weeks) (2) Periodontal inflammation (in GI) is reduced to 1 from 3 (2 months) (3) Halitosis level is reduced to '0: none' from '3: detected from 30 cm'

(Table 1): (i) insufficient oral hygiene care related to oral muscular tension and (ii) halitosis and periodontal inflammation related to heavy plaque accumulation and calculus formation. Following this, a dental hygiene care plan was formulated (Table 2).

Implementation

Dental hygiene interventions were implemented according to the care plan. The following is a brief description of the professional oral care that was given.

1. Assessment of systemic and oral conditions

2. Taking vital signs

In addition to basic vital signs such as blood pressure level, the level of SpO_2 was monitored by a pulse oxymeter for possible aspiration during care. Moreover, auscultation of the chest was performed.

3. Safe positioning

4. Cleaning of the facial area

5. Desensitization process

The clinician gently touched the client's hand and then moved on to touch arms, shoulders, neck, and face. Light pressure with the palm was applied around the lips and oral muscles. A finger was then inserted into the vestibule area, gently moving from the molar area to the incisal area with medium pressure (Fig. 1).

Fig. 1. Desensitization procedure to decrease the oral muscle tension.

6. Intra oral photography

7. Professional oral care

A sponge brush was used to gently clean the oral cavity. An oral rinse with mild surface-active agent was used to facilitate the cleaning. Salivary glands and tongue were stimulated to induce saliva secretion. Moreover, a gentle massage was given on the oral muscles and tongue. Then, plaque control was performed by using a soft toothbrush and a single tuft brush. Suctioning was performed throughout the plaque control procedures. Particular attention was given not to induce unnecessary bleeding as the client was on anti-platelet medication. We did not perform extensive periodontal debridement for the same reason.

8. Taking vital signs including SpO_2 level

Recording

Recording of the dental hygiene care was made in a SOAPIE format.

Evaluation

Goal #1

The desensitization procedures successfully decreased oral muscle tension, facilitating the subsequent oral care regimen (Fig. 2). The time needed for desensitization of the oral muscles decreased considerably in first 3 months. However, it increased up to 15 min, then decreased to 11 min by the fifth month (Fig. 3). So the expected outcome for this goal was determined to be partially achieved.

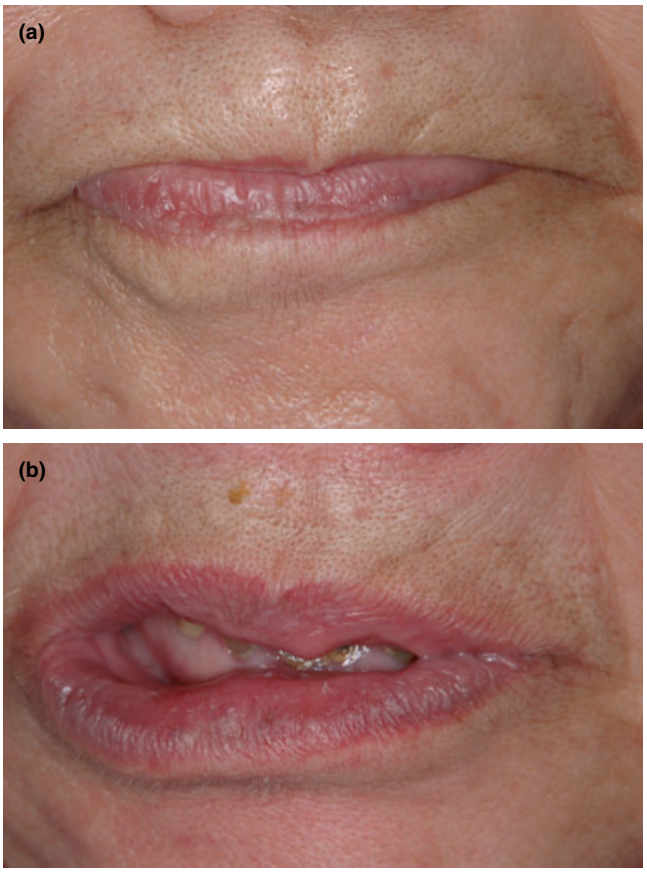

Fig. 2. (a) Before the desensitization. Note the tension in the oral muscles. (b) After the desensitization. The oral muscles especially around lips were relaxed, and ready for the oral care.

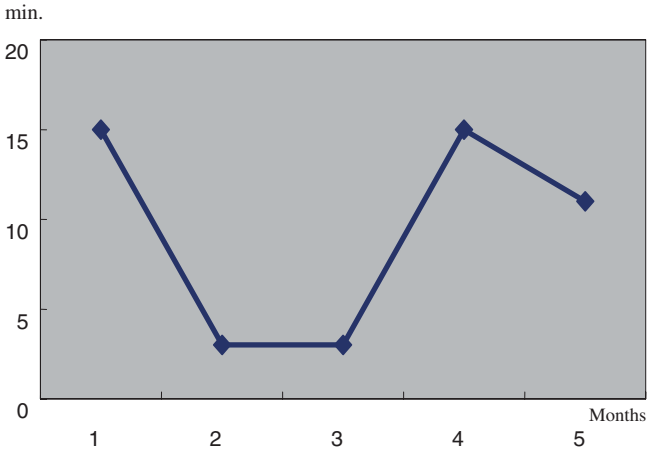

Fig. 3. Time needed for the desensitization process at each intervention.

Goal #2

The changes in levels of plaque and gingival inflammation were evaluated by the changes in the highest score of each parameter. PlI was decreased to 1 from 3. GI was reduced to 1 from 3 (Fig. 4). However, the level of halitosis showed no marked change over time. So the expected outcome for Goal #2 was determined to be partially achieved.

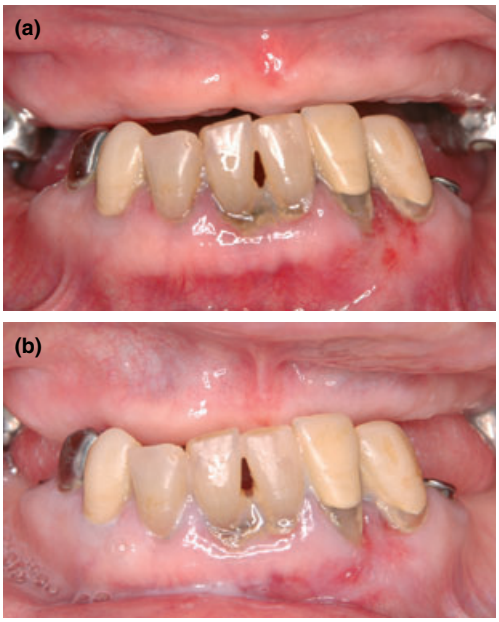

Fig. 4. Evaluation of the periodontal conditions. Note the extensive gingival inflammation at the time of the initial assessment phase (a). The level of gingival inflammation decreased by the fifth intervention (b).

Discussion

Oral muscular tension is often observed in people who have suffered from stroke, in people who cannot eat as a result of disease or physical impairment, and in those with low ADL, as they were not receiving oral stimuli for some period (7). Although oral care is important for patients with tube feeding (8), oral muscular tension often prevents them from receiving the appropriate oral care. In our clinical practice, an intervention to resolve or control oral muscular tension was necessary to perform professional oral care and facilitate routine oral care by the facility care workers. The desensitization procedure (7) reduced the oral muscular tension of this client and made it possible to perform professional oral care. However, it did not completely remove tension around the lip area, and it remained difficult to provide extensive care. Although we gave instructions on how to perform the desensitization to care workers, this did not significantly improve their routine care. This suggested the following: (i) the changes in plaque level observed could be attributed mainly to our dental hygiene care and (ii) we will need to work more closely with the care workers in the future. In this clinical practice, we implemented

dental hygiene interventions once a month. Ueda *et al.* (9) reported the long-term effects of monthly oral care in elderly persons, and it was shown that monthly oral care resulted in a 50% improvement in oral hygiene conditions as assessed by the prevalence of *Candida* species. Undoubtedly, professional oral care should be provided as often as possible. The frequency of dental hygiene interventions, however, should be evaluated further in terms of efficiency.

In the present case, it was not possible to assess the oral health-related quality of life (10), as the client could not express her feelings. However, dental hygiene actions must focus on the improvement in quality of life. Every effort should be made to understand clients' needs and feelings. In this regard, more active involvement of facility care workers and the client's family members would be indicated. Information should be shared, and mutual goals based on the dental hygiene care plan should be discussed for the client-centered care.

The dental hygiene care reported here was part of the clinical practice for the dysphagia management course. As the population of elderly people increases in Japan, the prevalence of dysphagia is also expected to increase. Dysphagia refers to difficulty in eating as a result of disruption in the swallowing process. It can be a serious threat to one's health because of the risk of aspiration pneumonia, malnutrition, dehydration, weight loss and airway obstruction (2). Possible causes include ageing, stroke, head and neck injuries, etc. Relatively healthy elderly people are also at risk for dysphagia because of the reduction in oral, pharyngeal and oesophageal functions with ageing (11). Problems associated with the oral preparation stage are the most prevalent in dysphagia, and dentists and dental hygienists are responsible for the professional care within the oral cavity. With proper professional oral care, dental hygienists can minimize the risk of bacterial pneumonia in clients with dysphagia (2, 12–14). Other interventions, including oral muscle training and enhancement of eating and swallowing function (15), are also in keeping with the profession of dental hygiene. Furthermore, the importance of multi-professional collaboration in management of dysphagia is widely recognized (16, 17). As a role for dental hygienists in a multidisciplinary healthcare team is important (18), sufficient knowledge and skills in dysphagia management should also provide a basis for establishing dental hygiene's contribution to this field.

Although interventions concerning dysphagia management were limited in the present case, incorporation of the process of care would eventually allow dental hygienists to advance interventions from basic oral care to evidence-based dental hygiene dysphagia management.

Conclusions

Within the limitation of the present clinical practice, we confirmed the importance of professional oral care in organic and functional improvements in oral health for the elderly people. Learning from the present case made us aware of important problems associated with clients. Dental hygienists should play a greater role in a multi-disciplinary approach to dysphagia management.

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