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Original Article

Periodontal surgery improves oral health-related quality of life in chronic periodontitis patients in Asian population

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Abstract The effect of periodontal surgery on patients' quality of life was investigated. Sixty patients received regenerative surgery or resective osseous surgery. Oral health-related quality of life and health-related quality of life instruments were used to assess the participants' quality of life before surgery and 4 weeks after surgery. Periodontal surgery can improve patients' quality of life by alleviating the physical pain and psychological discomfort. The scores were lower (more favorable) in the regenerative surgery group, and the functional limitations of the regenerative surgery group improved substantially compared with those of the resective osseous surgery group ($P = 0.0421$). The patients' oral health-related quality of life scores improved significantly after periodontal surgery. Clinicians can take advantage of the positive functional oral health-related quality of life impacts of regenerative surgery.

Conflicts of interest: All authors declare no conflicts of interest.

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Background

Periodontal disease is a major oral health problem that reportedly affects numerous adults worldwide. Destruction of the periodontal supporting tissue causes various clinical signs and symptoms that can substantially affect quality of life (QoL). Several studies have shown that periodontal conditions exert a negative impact on the QoL of patients [1,2]. The periodontal condition of oral cavities affects the ability to eat, speak, and socialize, as well as interpersonal relationships and daily activities; thus, it may affect QoL [1].

Research on periodontal disease has typically focused on the clinicopathological mechanisms of the disease rather than its impact on patients. Traditional measurements fail to explain the impact of the disease on patients. Increasingly more studies have recognized patient perception of health-related QoL (HRQoL) as a critical indicator of dental care outcomes [3,4]. Assessing the perception of patients with periodontitis is particularly crucial because their concerns may differ from those assessed based on traditional clinical endpoints [5]. According to the 2003 World Workshop on Emerging Science in Periodontology, subjective oral health-related QoL (OHRQoL) should be based on realistic endpoints to evaluate periodontal therapy [6].

Close curettage and flap curettage are procedures for eliminating the etiogenic factors of periodontal disease. Previous studies have frequently indicated that surgical intervention is suitable for treating advanced periodontitis after non-surgical therapy [7]. Advanced periodontal disease may be treated using resective osseous surgery (RS) or regenerative surgery (RG). Shallow bony defects can be employed in RS to facilitate the formation of a normal probing depth (PD) and physiological morphology, in which supporting bone and soft tissue are in harmony, providing an easily maintained periodontal environment [8]. However, previous studies have indicated that deep intrabony defects can be employed in RG to recover lost periodontal tissue. Nevertheless, surgical treatment may lead to complications, such as oral bleeding, swelling, and sensitivity [9]. When assessing treatment outcomes, patients and periodontists might have different ideas and opinions on the impact on QoL after surgery. Although previous research has investigated the relationships between patient perceptions and non-surgical periodontal therapy outcomes [10], few studies have examined the impact of periodontal surgery on patient perception.

This study compared the effects of different types of periodontal surgery on patients' QoL by using OHRQoL and HRQoL to assess patients with chronic periodontitis 4 weeks after they had undergone RG or RS.

Materials and methods

Study population

This study investigated the impact of periodontal surgery on the OHRQoL of patients from the Division of Periodontics in Kaohsiung Medical University Hospital, and the Department of Dentistry at Kaohsiung Municipal Ta-Tung Hospital. No formal power analysis was performed. The sample size was designed primarily based on the data from a non-surgical periodontal therapy [11]. For inclusion in this study, patients were required to have $\geq$16 teeth and favorable general health. All participants had chronic periodontitis and were not tobacco users. Patients who had poorly controlled diabetes, were lactating women, required antibiotic prophylaxis before receiving periodontal treatment, or had markedly active caries, or other oral diseases were excluded.

Clinical examination

Each participant underwent comprehensive periodontal examination and oral screening. A comprehensive periodontal examination was conducted to measure PD, clinical attachment level, and bleeding upon probing [12]. At six sites on each tooth (the mesiobuccal, midbuccal, distobuccal, mesiolingual, midlingual, and distolingual aspects), a Williams probe was used to measure the aforementioned clinical parameters. Radiographic examination was assessed using periapical films by applying a long-cone parallel technique.

Procedures

Fig. 1 summarizes the flow of the present study. All patients received initial periodontal therapy, which consisted of oral hygiene instructions, and removal of any cause-related factors. After tissue healing (at least 4 weeks [13]), the patients were reevaluated using an OHRQoL and HRQoL survey (Questionnaire I). Patients completed a second OHRQoL and HRQoL survey (Questionnaire II) 4 weeks [13] after the periodontal surgery. Patients who had a PD deeper than 5 mm and an infrabony component larger than 4 mm were considered RG patients (guided tissue regeneration and flap operation with bone graft were included). Patients who had a PD deeper than 5 mm and suprabony defects were considered RS patients (pocket reduction, and osseous resective surgery were included). The surgical procedures and clinical examination were performed by 2 well-trained periodontists.

Questionnaire

We obtained patient information by using questionnaires comprising demographic analysis items and QoL instruments (Oral Health Impact Profile, OHIP; Oral Impacts on Daily Performances, OIDP; and World Health Organization QoL, WHOQOL-BREF).

Oral health-related quality of life (OHRQoL)

We used a 25-item short version of the OHIP and OIDP instruments to assess OHRQoL, which is a multidimensional construct that reflects comfort when eating, sleeping, and engaging in social interaction; self-esteem; and satisfaction with oral health.

Fourteen items were adopted from the validated Taiwanese short version of OHIP (OHIP-14T) [14], and the remaining 9 items were selected using the expert-based approach [15]. Responses to the OHIP-49 questions were

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