

Effectiveness of Oral Care in Implant Denture Restoration in Chronic Periodontitis

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Abstract: *Objective:* To explore the effect of observation of oral care in implant denture restoration of chronic periodontitis. *Methods:* 80 patients with chronic periodontitis implant denture restoration admitted from March 2022 to March 2023 in the hospital were selected. They were randomly divided into an observation group and a control group, with 40 cases in each group. Both groups of patients received routine treatment and care. The patients in the control group used routine oral care methods to carry out oral care, the patients in the observation group carried out oral care on the basis of the control group, observation and analysis of the patients' mastery of oral knowledge, as well as the depth of the probing and the level of clinical attachment. *Results:* The oral knowledge mastery of the observation group was 72.31 ± 6.98 after the nursing intervention, which was significantly higher than the score of 86.12 ± 7.36 of the patients in the control group who used conventional oral care, and the difference was statistically significant at $P < 0.05$; the depth of probing and the clinical attachment level of the observation group were 2.43 ± 0.58 and 4.31 ± 0.86 respectively, which were significantly better than those of the control group. The depth of probing and clinical attachment level scores of the observation group were 2.99 ± 0.54 and 5.36 ± 1.02 respectively, and $P < 0.05$ was considered statistically significant. *Conclusion:* The combination of conventional treatment and oral care can effectively improve the treatment effect of implant denture prosthesis for chronic periodontitis. However, it is necessary to pay attention to the psychological counseling of the patients in the specific clinical application to ensure that the patients can actively cooperate with the clinical treatment.

Keywords: Oral care; Chronic periodontitis; Prosthetic restoration

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1. Introduction

Chronic periodontitis is a relatively common clinical disease in stomatology due to the poor oral hygiene of patients. It is very easy to cause serious oral diseases, such as gingivitis, periodontitis, etc., the patient's masticatory function and aesthetics will be greatly affected, and if it can't be effectively treated in time, it will cause tooth loosening, loss and other adverse consequences^[1]. Periodontitis not only affects the oral health of patients but also has an adverse effect on the general health. Dental implant prosthetics, as a commonly used treatment method, aim to restore the function and aesthetics of the patient's teeth, and the success of dental implant prosthetics is closely related to the health of the periodontal tissues^[2]. The periodontal tissues of patients with peri-

odontitis often have problems such as inflammation and alveolar bone resorption, which may lead to a decrease in the stability of the implant and increase the risk of implant failure. Effective oral care for patients with periodontitis before implant prosthetic restoration in order to control inflammation and promote the health of the periodontal tissues is of great significance in improving the success rate of implant prosthetics and the oral health of the patients [3]. In recent years, with the continuous development of dentistry and implant technology, the role of oral care in implant denture restoration for chronic periodontitis has gradually received attention. Oral care includes oral hygiene education, periodontal treatment, prevention and control of peri-implantitis and other measures, which play a vital role in all stages before, during and after implant denture restoration [4]. Through oral care, the number of bacteria in the oral cavity can be effectively reduced, and the incidence of peri-implantitis can be reduced so as to improve the success rate and service life of implant dentures, which is an important part of clinical treatment to prevent chronic periodontitis effectively. This paper focuses on analyzing and studying the effect of oral care for patients with chronic periodontitis implant denture restoration in order to improve the clinical treatment effect.

2. Information and methods

2.1. General information

Eighty patients with chronic periodontitis implant denture repair admitted to our hospital from March 2022 to March 2023 were selected, aged 28 to 55 years, with an average age of (46.51 ± 3.12) years. The patients had different degrees of tooth loosening, loss and other symptoms, and some patients had alveolar bone resorption phenomenon, accompanied by different degrees of periodontitis. All patients voluntarily participated in this study and signed an informed consent form. They were randomly divided into an observation group and a control group, with 40 cases in each group. There were 20 men and 20 women in the observation group, aged 28–55 years, with an average age of (46.54 ± 3.11) years old; 19 men and 21 women in the control group, aged 28–55 years, with an average age of (46.57 ± 3.15) years.

Inclusion criteria: patients diagnosed with chronic periodontitis and in need of implant prosthetic restorative treatment; patients aged 18 and above, with full civil capacity and able to cooperate in completing the study; after standardized treatment, symptoms of chronic periodontitis had been controlled, and the gingival inflammation index (GI) and the gingival bleeding index (SBI) had been reduced and remained stable; no important organs such as the heart, liver and kidney dysfunction, no serious systemic diseases, such as diabetes mellitus, hypertension, etc.; patients understood the purpose, methods, risks and possible benefits of the study and were willing to sign the informed consent.

Exclusion criteria: patients with acute periodontitis or other oral infections in the acute inflammatory period; patients with poor oral hygiene habits, unable to effectively implement oral cleaning and care measures; patients with serious cardiovascular disease, liver and kidney diseases, blood system diseases, etc., which may affect the effect of implant prosthetic restoration and the implementation of oral care; patients with abnormalities of the oral anatomical structure, such as jawbone dysplasia, severe osteoporosis, etc., which may affect the implant prosthetic restoration effect and the implementation of oral care; patients with abnormalities of oral anatomy, such as jawbone dysplasia and severe osteoporosis, etc., which may affect the implant prosthetic restoration effect. Patients with abnormal oral anatomy, such as jawbone hypoplasia, severe osteoporosis, etc., which may affect the implant placement and stability; patients with previous oral surgery failure or implant prosthetic restoration treatment failure; pregnant and lactating women are generally excluded from the study due to hormone level changes and the specificity of their physical condition; patients who are unable to understand and co-operate with the requirements of the study due to mental or cognitive disorders.

2.2. Methods

Both groups of patients received conventional treatment and care. Patients in the control group used conventional oral care methods for oral care, such as brushing, flossing, mouthwash and so on. The patients in the observation group were given oral care on the basis of the control group, i.e., rinsing with mouthwash for 5 min (10 mL) 2 hours before oral care, once a day; then brushing the tooth surface with a soft-bristled toothbrush (including the gingival area, the occlusal surface and the root surface of the teeth); and finally rinsing the cleaned toothbrush with water and then air-drying it.

2.3. Observation indicators

Observe and analyze the patients' oral knowledge mastery, as well as the probing depth and clinical attachment level.

2.4. Statistical methods

The count data is expressed as a percentage and χ^2 test, the measurement data is expressed as mean \pm standard deviation (SD) and *t*-test, and $P < 0.05$ is regarded as the difference is statistically significant.

3. Results

3.1. Comparison of the degree of oral knowledge mastery between the two groups of patients

The oral knowledge mastery of the observation group was 72.31 ± 6.98 after the nursing intervention, which was significantly higher than the score of 86.12 ± 7.36 of the patients in the control group who used conventional oral care, and the difference was statistically significant at $P < 0.05$, as shown in **Table 1**.

Table 1. Comparison of oral knowledge mastery between the two groups of patients (mean \pm SD)

Group	Before nursing intervention	After nursing intervention	t	p
Observation group ($n = 40$)	52.36 ± 6.58	72.31 ± 6.98	13.153	0.000
Control group ($n = 40$)	54.33 ± 6.69	86.12 ± 7.36	20.215	0.000
<i>t</i>	1.328	8.611		
<i>p</i>	0.188	0.000		

3.2. Comparison of probing depth and clinical attachment level between the two groups of patients

The probing depth and clinical attachment level scores of the observation group were 2.43 ± 0.58 and 4.31 ± 0.86 respectively, which were significantly better than those of the control group, which were 2.99 ± 0.54 and 5.36 ± 1.02 respectively, and the difference was statistically significant at $P < 0.05$, as shown in **Table 2**.

Table 2. Comparison of probing depth and clinical attachment level between the two groups of patients (mean \pm SD)

Groups	Probing depth	Clinical attachment level
Observation group ($n = 40$)	2.43 ± 0.58	4.31 ± 0.86
Control group ($n = 40$)	2.99 ± 0.54	5.36 ± 1.02
T	4.469	4.978
P	0.000	0.000

4. Discussion

Chronic periodontitis is a common oral disease that is mainly caused by plaque, tartar, food residues and other factors that stimulate the gums and periodontal tissues for a long time, which can cause inflammation of the periodontal tissues. Clinically, chronic periodontitis is mainly manifested as gingivitis, alveolar bone resorption, tooth loosening and other symptoms, the patient's chewing function is greatly affected, and in severe cases, it will cause tooth loss. At present, there are many clinical oral care methods for patients with chronic periodontitis, mainly including scaling, medication, local medication and so on. Among them, medication is one of the more commonly used oral care methods, which can effectively promote the recovery of periodontal tissues. However, in patients with chronic periodontitis, the degree of damage to the periodontal tissues is relatively light, and the effect of simple medication is not ideal. Therefore, in clinical practice, patients are usually treated with local irrigation therapy, which can stimulate the recovery of periodontal tissues through the stimulating effect of the irrigation solution. However, the process of local irrigation therapy will cause a certain degree of damage to the periodontal tissue and is not conducive to the improvement of patients' oral hygiene^[5]. Therefore, in clinical practice, local medication is usually chosen to carry out oral care for patients with chronic periodontitis.

In this study, the oral knowledge mastery of the observation group after nursing intervention scored 72.31 ± 6.98 , which was significantly higher than the score of 86.12 ± 7.36 of the control group of patients using conventional oral care, and $P < 0.05$ is a statistically significant difference, and the depth of probing and the level of clinical attachment scores of the observation group were 2.43 ± 0.58 , and 4.31 ± 0.86 respectively, which were significantly better than the control group. The probing depth and clinical attachment level scores of the control group were 2.99 ± 0.54 and 5.36 ± 1.02 , respectively, and $P < 0.05$ is considered a statistically significant difference. Chronic periodontitis is a common oral disease clinically manifested as severe inflammation around the teeth. The patients show symptoms such as swelling and bleeding of the gingiva, and they need to pay special attention to oral cleanliness in daily life. In the process of treatment, the patients cooperate with the doctor for oral care. At present, clinical treatment is mainly divided into two methods: conventional treatment and oral care. However, due to the high requirements of oral care, the patient's teeth cannot be effectively cleaned during conventional treatment, and plaque cannot be completely removed, which will lead to further aggravation of inflammation of the gum tissue around the teeth. Routine treatment, on the other hand, is unable to thoroughly clean the patient's mouth and prevent the occurrence of chronic periodontitis effectively.

The oral care method used in this study is a combination of oral cleaning and oral care, firstly using conventional oral care to clean the patient's teeth and using iodine glycerin to sterilize the patient's gingiva. Then, thoroughly clean the patient's teeth and sterilize the patient's gingival tissues using a combination of oral cleaning and oral care. After comparative analysis, it was found that the iodine glycerin used in the conventional treatment method would easily bring some bacteria into the oral cavity during the disinfection process, which would cause infection to the patient's gingival tissues, whereas the combination of oral cleansing and oral care could effectively avoid such a situation. After the implementation of local rinsing therapy for patients with chronic periodontitis and oral care, it was found that the therapeutic effect of patients in the observation group was significantly better than that of patients in the control group. Therefore, the importance of oral care for patients with chronic periodontitis should be strengthened in clinical practice to improve the effectiveness of oral care.

In recent years, there have been a number of studies on the observation of the effect of oral care in implant denture restoration for chronic periodontitis, and these studies have mainly explored in depth the methods, effects and influencing factors of oral care. Li S *et al.* (2019) showed that, oral care in chronic periodontitis im-

plant denture restoration has a good effect through effective oral care, can significantly reduce the incidence of peri-implantitis, improve the stability of the implant and the success rate, oral care can also help to improve the patient's oral health status and quality of life^[6]. Cai X *et al.* (2018) showed that the influencing factors of oral care effect mainly include patients' age, oral hygiene habits, periodontitis severity, etc., and patients who are older, have poorer oral hygiene habits and have higher periodontitis severity may have poorer oral care effect^[7]. Therefore, these factors need to be fully considered when developing an oral care programme. Chen M *et al.* (2017) found that effective oral care can control inflammation, promote periodontal tissue health, and prevent peri-implantitis, thereby improving the success rate of implant dentures and patient satisfaction^[8]. Zhou Q *et al.* (2021) found that effective oral care can reduce the number of bacteria in the oral cavity, reduce the level of inflammation in periodontal tissues, and provide a good environment for implant dentures^[9]. Ding Y *et al.* (2017) found that oral care can promote the healing and regeneration of periodontal tissues and improve the stability and success of implants^[10]. Hong H (2023) found that oral care can reduce the number of bacteria and inflammatory responses around the implant and reduce the incidence of peri-implantitis^[11]. Through the analysis, it was found that the results of this study performed consistently with the results of existing studies.

In summary, the combination of conventional treatment and oral care can effectively improve the effect of implant denture prosthetic treatment for chronic periodontitis. However, in the specific clinical application, attention should also be paid to the psychological counseling of patients to ensure that they can actively cooperate with clinical treatment. Future research can further explore the specific methods and best practices of oral care to promote its wide application in clinical practice.

Disclosure statement

The author declares no conflict of interest.

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