Effectiveness of Nursing Coordination in Infected Root Canal Retreatment Postprint

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Abstract

Objective: To investigate the application effect of nursing cooperation in the retreatment of infected root canals. Methods: Sixty patients with infected root canals of posterior teeth requiring retreatment, admitted between January 2019 and January 2020, were selected as study subjects. Using the digital random table method, they were divided into a control group and an observation group, with 30 cases in each group. The control group received conventional nursing care, while the observation group received refined nursing cooperation based on the control group. The operation time for retreatment of infected molar root canals was observed in both groups. Results: The operation time for retreatment of infected molar root canals in the observation group was significantly lower than that in the control group ($P<0.05$). Conclusion: Comprehensive nursing cooperation for patients undergoing infected root canal retreatment helps shorten the operation time, reduces infection risk, alleviates fatigue for both doctors and patients during treatment, and improves patient comfort.

Full Text

Application Effect of Nursing Cooperation in Root Canal Retreatment of Infected Root Canals

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Abstract

Objective To evaluate the application effect of nursing cooperation in root canal retreatment of infected root canals.

Methods A total of [NUMBER] patients with infected root canals of posterior teeth requiring retreatment were randomly divided into a control group and an observation group, each containing [NUMBER] cases. The control group received routine nursing care, while the observation group received refined nursing cooperation based on the control group protocols. The operation time for molar infected root canal retreatment was observed and compared between the two groups.
Results The operation time in the observation group was significantly shorter than that in the control group, with a statistically significant difference ($P <$ [VALUE]).
Conclusion Comprehensive nursing cooperation during infected root canal retreatment helps shorten operation time, reduce infection risk, alleviate fatigue for both clinicians and patients, and improve patient comfort.

KEY WORDS: root canal therapy; infection; molar; oral cavity; nursing cooperation

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Introduction

In recent years, nickel-titanium rotary retreatment files have become an indispensable technical tool for treating infected root canals. The Dentsply ProTaper rotary retreatment file system offers operational stability with variable taper design. Its cutting tip facilitates penetration through existing root canal fillings, while the non-cutting rounded tip maintains the original canal morphology. The variable taper design matches the average canal diameter in the middle third, and the smaller taper in the apical region facilitates gutta-percha removal. Refined technical procedures demand high-quality nursing cooperation, as optimal treatment outcomes require seamless collaboration among clinicians, nurses, and patients. This study investigates the application effect of nursing cooperation in infected root canal retreatment.

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1. Materials and Methods

1.1 Study Design and Participants From [MONTH] at Beijing Stomatological Hospital, [NUMBER] cases of posterior teeth with infected root canals requiring retreatment were selected as study subjects. All patients had no systemic diseases and voluntarily signed informed consent forms. Participants were randomly divided into a control group and an observation group using a digital random table method, with [NUMBER] cases in each group. The control group comprised [NUMBER] males and [NUMBER] females, with an average age of ([AGE]) years. The observation group comprised [NUMBER] males and [NUMBER] females, with an average age of ([AGE]) years. Comparison of general data between the two groups showed no statistically significant differences.

1.2 Nursing Procedures Control Group (Routine Nursing Care):
Preoperative routine X-rays were taken. The treatment process and objectives were communicated to patients and/or family members to alleviate concerns. Past medical history, drug allergies, and previous dental treatment history were recorded. Informed consent was obtained. Disposable supplies and root canal retreatment instruments were prepared. After the clinician removed old root canal fillings using retreatment files, EDTA and % sodium hypochlorite solution were prepared for chemical preparation. A Morita apex locator assisted in working length determination. Following canal preparation, Cavitron P was prepared for routine ultrasonic irrigation to thoroughly remove residual debris. Paper points were passed for canal drying. Calcium hydroxide was prepared for inter-appointment medication, and glass ionomer cement assisted in coronal temporary sealing. Patients were instructed to return after one week for routine root canal filling and to seek immediate follow-up if discomfort occurred.

Observation Group (Refined Nursing Cooperation):
Based on routine nursing care, the observation group implemented refined cooperation protocols. Preoperatively, patients were instructed to maintain wide mouth opening during procedures. A mouth prop was prepared when needed. For patients with limited mouth opening, the nurse assisted by supporting the mandible with one hand without interfering with the clinician's operation, reminding patients to avoid swallowing and breathe through the nose to relieve anxiety. During removal of coronal fillings and decay, the three-way syringe was used promptly to rinse the mouth mirror, maintaining a clear operative field. A heat carrier was prepared for removing the coronal one-third of gutta-percha, with high-volume suction used to eliminate smoke and odor, protecting patients from coughing and mucosal burns. When the clinician used Protaper rotary nickel-titanium retreatment files to remove remaining filling material, the nurse coordinated by pre-adjusting the motor speed and torque, verbally reporting the number of uses of each file during transfer, wiping instruments promptly, and replacing them immediately if deformation was detected. After filling removal, the Morita apex locator assisted in determining working length. During canal preparation, EDTA and % sodium hypochlorite solution were used for chemical preparation. When changing to the next rotary file, % sodium hypochlorite solution was prepared to assist with canal irrigation. Cavitron P was then prepared for multiple ultrasonic irrigation cycles. After canal drying with appropriately tapered paper points delivered via locking forceps, calcium hydroxide was prepared for inter-appointment medication and glass ionomer cement for temporary sealing. If either the clinician or patient required brief rest during treatment, the nurse could promptly suggest a short break with closed mouth to facilitate continued treatment. Postoperatively, patients were instructed to return after one week for routine root canal filling, comply with medical advice, attend regular follow-ups, and seek immediate care if discomfort arose.

1.3 Outcome Measures The operation time for molar infected root canal retreatment (in minutes) was observed, recorded from the insertion of the first

file to completion of treatment.

1.4 Statistical Methods SPSS software was used for statistical analysis. Measurement data were expressed as mean ± standard deviation (x ± s). Comparisons between groups were performed using t-tests. The significance level was set at α = [VALUE], with P < [VALUE] considered statistically significant.

2. Results

The operation time for molar infected root canal retreatment in the observation group was significantly lower than that in the control group, with a statistically significant difference (P < [VALUE]) (Table 1).

Table 1 Comparison of operation time for molar infected root canal retreatment between two groups (x ± s, min)

3. Discussion

Infected root canal retreatment requires strict infection control to effectively prevent pushing infected material apically and exacerbating periapical infection. The unique design of Protaper retreatment files reduces or eliminates the amount of infected debris extruded through the apical foramen during preparation, helping to minimize postoperative reactions. In terms of treatment duration, the observation group was significantly shorter than the control group. Reduced treatment time improves patient experience, enhances tolerance during root canal retreatment, and increases comfort and satisfaction, while also enabling more efficient clinical workflows.

During root canal retreatment, three-way collaboration among patient, clinician, and nurse is crucial for ensuring smooth procedures. For patients with limited mouth opening, a mouth prop can assist, or the nurse can support the mandible without interfering with routine clinical operations, preventing temporomandibular joint discomfort or pain from prolonged opening and effectively avoiding sudden mouth closure that could cause intraoral injury. Throughout treatment, nurses must promptly observe patient expressions (e.g., frowning) and alert clinicians to allow brief rest periods, preventing accidental swallowing. When clinicians use high-speed handpieces, nurses should retract buccal mucosa, tongue, and lips during routine suction to avoid unnecessary lacerations or burns. During four-handed delivery of rotary nickel-titanium retreatment files, residual debris should be promptly cleared and instruments wiped clean to prevent cotton fiber contamination while checking for thread unwinding or tightening to avoid file separation within the canal.

In conclusion, comprehensive nursing cooperation during infected root canal retreatment significantly reduces operation time, enhances treatment efficiency,

improves patient comfort and safety, and optimizes clinical outcomes through meticulous coordination and infection control measures.

Note: Figure translations are in progress. See original paper for figures.