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Research Article

Application of Electronic Hourglass Timer in Preventing Complications after Tonsillectomy in Children

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Abstract

Purpose: To explore the clinical effect of electronic hourglass timer in preventing complications after tonsillectomy in children. **Method:** 78 children with chronic tonsillitis in our hospital from January 2023 to March 2023 were randomly divided into control group (n = 39) and study group (n = 39). The electronic hourglass timer was applied in postoperative nursing in study group. The average gargling time, average gargling times, incidence of postoperative complications, postoperative incision healing, length of hospital stay and nursing satisfaction were compared between the two groups. **Result:** the average gargle time of the study group was 1.18 ±0.43min, which was significantly longer than that in the control group (0.91 ±0.44min). The average number of gargling times in the study group was 5.39 ±0.81times, which was significantly higher than that in the control group (4.72 ±1.12times). The incidence of postoperative complications in the study group was 5.13%, which was significantly lower than that in the control group (20.51%). The length of incision healing in the study group was 4.28 ±0.83 days, which was less than 5.08 ±1.94 days in the control group, and the difference was statistically significant ($P < 0.05$). The average hospital stay in the study group was 5.33 ±1.11 days, which was less than 6.41 ±2.46 days in the control group ($P < 0.05$). The nursing satisfaction of the family members of the study group was 92.31%, which was significantly higher than that of 71.79% in the control group. **Conclusion:** The electronic hourglass timer is effective in preventing complications after tonsillectomy in children. it can effectively increase the duration and frequency of mouth gargling after tonsillectomy, reduce the incidence of complications, promote postoperative recovery, shorten the length of hospitalization, reduce hospitalization costs and improve the nursing satisfaction of children's families, which is worthy of clinical application.

Key words: The Electronic Hourglass Timer; Children; Tonsillectomy; Complication; Care.

Introduction

Tonsillitis is a common clinical non-specific inflammatory disease in children, which mainly occurs in the pharynx. The further development of the disease will lead to symptoms of "high fever and sore throat", leading to complications such as myocarditis (1). tonsillectomy is often adopted for the treatment in clinic (2). Studies have confirmed that regular oral care and diet management effectively reduce the incidence of complications such as infection and bleeding after tonsillectomy (3). The aim is to study the effect of electronic

hourglass timer in nursing care of children after tonsillectomy in our department.

1. Materials and Methods

1.1 General information

78 children who underwent tonsillectomy in our hospital from January 2023 to March 2023 were studied. Inclusion criteria: there exist indications of tonsillectomy;no surgical contraindications. Exclusion criteria: concurrent with cognitive or language disorders; abnormal function of important organs; abnormal blood coagulation or malnutrition; complicated with respiratory diseases or systemic allergic diseases. The children were randomly divided into control group (n = 39) and study group (n = 39). There were 26 boys and 8 girls in the study group, aged from 3 to 11 years old, with an average age of (6.02 ±2.42) years, while in the control group, there were 31 boys and 13 girls, with an average age of (5.62 ±2.03) years. There was no significant difference in sex, age, condition, education level and basic data of family members between the two groups (P > 0.05). This study was carried out with the inform consent of the children family members.

1.2 Interventions

1.2.1 **Control group:** children accepted routine nursing of otorhinolaryngology head and neck department, explained to the family members about tonsillar operation,anesthesia and related knowledge before and after operation, closely observed the wound condition of the patients, and carried out diet nursing, pain nursing and medication guidance.

1.2.2 Study group: the electronic hourglass timer was added to postoperative nursing In addition to the control group. ①After children being sent back to the ward from operation room, nurse distributes Wechat QR code containing the health education content to the family members and informs them about the health guidance contents such as postoperative diet, oral cleaning, respiratory tract management, bleeding prevention and soon. ②Issue the 1min cartoon electronic hourglass timer according to the gender of the child, and guide the family members to use it correctly. Children are advised to rinse their mouths every time they eat or when oral secretions increase, so as to reduce the production of bacteria, maintain the balance of microecology in the mouth and eliminate bad breath. before gargling, put the 1min cartoon electronic hourglass timer on the horizontal table to start the clock, gargle according to correct method, when the sand is running out, the timing is finished (4). ③After operation, rinse with suitable mouthwash such as normal saline, hydrogen peroxide solution, compound tinidazole mouthwash and so on as directed by the doctor. Gargle time 1-2 minutes, and should make mouthwash even contact with all sides of the mouth, especially the tonsil fossa, in order to play a better bacteriostatic effect. The method of gargling: in order to rinse the mouth repeatedly with the tongue up and down, left and right, back and forth, and flush to the buccal oral mucosa, so that the oral cavity can be fully cleaned (5). ④Wound observation: under normal circumstances, the pseudomembrane of the wound is white or yellow-white, and there is no peculiar smell, such as the white membrane is yellowish green, the uneven distribution usually indicates infection of the incision; when the white membrane falls off, wound bleeding always take place, if only half of the white membrane is found. Remember that you can't lick the rest with your tongue or tear off the rest with a tool, and the mature white membrane will fall off by itself (6).

1.3 Observation Indicators and Evaluation of therapeutic effect

1.3.1 Average gargle time and gargle times

On the day after operation, the responsible nurse issued the 1min cartoon electronic hourglass timer and instructed the correct use and gargling method. The responsible nurse randomly checked the gargle time and gargle times of the children every day after operation.

1.3.2 Incidence of incision infections

Those who meet any of these rules will be included in the cases of incisional infection: for example, on the 3rd day after operation or a sudden increase in body temperature or the postoperative body temperature remains above 38.5 ℃, the white blood cell count and the percentage of neutrophils increase significantly; the white membranea in the tonsillar fossa is thick yellow or thick yellowish green with uneven distribution.

1.3.3 Incidence of incision bleeding

Frequent oral blood clot, blood-containing saliva or frequent oral hematemesis shall be included in the case of incision bleeding.

1.3.4 Time of wound healing and average time of hospital stay

The doctor observed the wound healing every day, the responsible nurse recorded the results of the doctor's observation on the summary form, counted the wound healing time and the average hospitalization time when the child was discharged from the hospital.

1.3.5 Nursing satisfaction degree

On the day of discharge, the family members filled out the satisfaction questionnaire made by the department, with a total score of 100. By comparing the results, they were divided into three grades: very satisfactory (≥90), satisfaction (70-89), dissatisfaction (≤69), satisfaction degree= (very satisfactory + satisfaction) / total × 100%.

1.4 Statistics

SPSS26.0 was used for data analysis. The counting data were described by the number of cases, the chi-square test was used for comparison between groups, the mean ±standard deviation was used to describe the measurement data, and two independent samples t-test or repeated measurement analysis of variance were used for comparison between groups. The difference was statistically significant ($P < 0.05$).

2. Result

2.1 Average gargle time and gargle times

the average gargle time of the study group was 1.18 ±0.43min, it was significantly longer than the control group (0.91 ±0.44min). The average number of gargling times of the study group was 5.39 ±0.81times, while the control group (4.72 ±1.12times), there are significant difference between them.

2.2 Incidence of complications in two groups of children

The incidence of postoperative complications in the study group was 5.13%, it was significantly lower than that in the control group (20.51%).

2.3 Average wound healing time and hospital stay in two groups

The wound healing time in the study group was 4.28 ±0.83 days, it was less than 5.08 ±1.94 days in the control group, and the difference was statistically significant ($P < 0.05$).

The average hospital stay in the study group was 5.33 ±1.11 days, it was less than 6.41 ±2.46 days in the control group ($P < 0.05$).

2.4 Nursing satisfaction of family members in the two groups

The nursing satisfaction of the family members of the study group was 92.31%, it was significantly higher than that of 71.79% in the control group.

Table 1. Average gargle time and gargle times in the two groups.

	N	Gargle time	Gargle times
Study group	39	1.18±0.43	5.39±0.81
Control group	39	0.91±0.44	4.72±1.12
t		-2.743	-1.883
P		0.008	0.004

Table 2. Incidence of complications in the two groups.

	N	complication		
		Infection	Hemorrhage	Incidence（%）
Study group	39	2	0	5.13
Control group	39	5	3	20.51
X^2			4.129	
P			0.042	

Table 3. Average healing time and hospital stay in the two groups.

	N	Healing time	Hospital stay
Study group	39	4.28±0.83	5.33±1.11

Control group	39	5.08±1.94	6.41±2.46
t		2.356	2.495
P		0.022	0.016

Table 4. Nursing satisfaction of family members in the two groups.

	N	Nursing satisfaction			
		very satisfactory	satisfaction	dissatisfaction	Satisfaction degree（%）
Study group	39	29	7	3	92.31
Control group	39	23	5	11	71.79
X^2					5.571
P					0.018

3. Discussion

Talking and eating after tonsillectomy make the movement of pharyngeal muscle and friction of wound,resulting in pharygeal pain when swallowing, patients will be afraid of speaking and eating, leading to accumulation of bacteria in the wound and the decrease of local resistance also increase the risk of postoperative infection.In addition,the factors inducing infection after operation include bad eating habits, incorrect oral care and so on.Oral care reduce the incidence of infection after tonsillectomy and promote wound healing (7). Therefore, comprehensive and meticulous health guidance and promotion of children's compliance are important measures to reduce postoperative complications. The electronic hourglass timer can be used to control the time node of mouthwash and ensure sufficient gargling time, so as to reduce the incidence of complications after tonsillectomy, improve children's compliance, and provide a simple and easy method to standardize oral cleaning behavior.

This study showed that the gargling time and gargling times of the study group were higher than those of the control group, and the incidence of complications in the study group was significantly lower than that in the control group. Standardized oral care is important during postoperative recovery in children,the electronic hourglass timer, is simple, safe and interesting,which enhance the enthusiasm of children's gargling and ensure rational duration and times of mouthwashes, so as to reduce the incidence of complications.mean while, it is convenient for nurses to effectively supervise the oral care of children. Additionally, this study shows that the wound healing time and hospitalization time of children in the observation group are lower than those in the control group, which is due to the fact that nurses should have an electronic hourglass timer to ensure that the gargling time can reach 1-2 minutes at a time, which can effectively prevent symptoms such as wound infection and bleeding. promote the wound healing of children, and then reduce the length of hospitalization.With the active cooperation of the children and their families, as well as the careful guidance of nurses, the communication between nurses and patients is more smooth, and the nursing satisfaction of children's family members is effectively improved.

The above contents suggest that the electronic hourglass timer can be used to improve the compliance of children,effectively improve the length and frequency of gargling, and reduce the complications after tonsillectomy, which is worthy of clinical application.

Declarations

1) Consent to publication

We declare that all authors agreed to publish the manuscript at this journal based on the signed Copyright Transfer Agreement and followed publication ethics.

2) Ethical approval and consent to participants

This case has ethical approval and patient consent.

3) *Disclosure of conflict of interests*

We declare that no conflict of interest exists.

4) Funding

None

5) Availability of data and material

We declare that the data supporting the results reports in the article are available in the published article.

6) *Acknowledgement*

None.

7) Authors 'contribution

Authors contributed to this paper with the design (YZ), research (LW), writing (LW), revision (LW, YZ), editing (LW) and final approval (YZ).

8) Authors' biography

None

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