Comparison of Oral Nursing on Endotracheal Intubation via The Nose and Transmouth for Patients

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【**Abstract**】**Objective:** To compare the clinical application of oral nursing on endotracheal intubation via the nose and transmouth for patients. **Methods:** 68 cases were divided into the 32 cases of intubation through the mouth (Group A)and the 36 cases of intubation via the nose (Group B)to Compare the complications and the advantages and disadvantages of the two ways of intubation. **Results:** The average time of oral nursing of Group A is longer than Group B (P<0. 001). The incidence rate of halitosis had significant difference between Group A and Group B (P<0. 001). The incidence rate of fungal infections had statistically significant difference between Group A and Group B (P<0. 05). there were no statistical significance on the fact of ventilator-associated pneumonia between Group A and Group B. **Conclusion:** Insertion through the mouth is easier, easier sputum drainage and less complications than insertion via the nose. Insertion via nose is more endurable, with longer retaining time, easier to stay, with easier mouth nursing. It is more effective in treating chronic respiratory diseases for patients. Insertion via nose can make patient comfortable, easier for oral care of patients and reduce the difficulty of oral nursing.

【**Key words**】Endotracheal intubation;Oral nursing;Effect

At present, endotracheal intubation and mechanical ventilation are widely used in emergency and critical care. The commonly used intubation methods in intensive care unit are oral endotracheal intubation and nasal endotracheal intubation, both of which have advantages and disadvantages. Oral care is particularly important for tracheal intubation. Misaspiration of colonized bacteria in the oropharynx is an important mechanism for the occurrence of ventilator-associated pneumonia (VAP). Studies have shown that every 0. 01 ml of oropharyngeal secretion contains 106~108 bacteria, and VAP is related to the colonization and translocation of oropharyngeal bacteria. In the bacterial culture results, 67%of the bacterial culture results showed that the lower respiratory tract and oral bacteria were consistent, indicating that oral bacteria are closely related to the occurrence of VAP[1, 2], so oral care is particularly important for patients with endotracheal intubation. This study compares the effects of two intubation methods on oral care from the perspective of oral care.

1 Data and methods

1.1 Case data

From January 2016 to July 2019, 68 cases of tracheal intubation were treated in our EICU, including 32 cases of oral intubation in Group A and 36 cases of nasal intubation in Group B. In group A, there were 18 males and

14 females, aged 20-82 (66. 48±12. 95)years old;in group B, there were 19 males and 17 females, aged 36-86 (67. 47±11.73)years old.

1.2 Oral care methods

Group A was operated by two nurses in cooperation with each other. First, the sputum and oral secretion in the trachea were aspirated, the pad and adhesive tape were removed, and the intubation depth was measured. One nurse fixed the patient's head and endotracheal intubation, the other nurse held the tongue depressor, the other held the saline cotton ball, wiped the tongue, teeth, cheeks, tongue coating, upper jaw and other parts, sucked the residual liquid in the mouth, replaced the tooth pad, fixed with adhesive tape and pad belt, and finally moistened the lips with paraffin oil. A nurse in group B can independently complete oral care, hold a saline cotton ball, wipe the tongue, teeth, cheeks, tongue coating, upper jaw and other parts, and suck the residual liquid in the mouth.

1.3 Experimental control method

Because the retention time of oral endotracheal intubation is shorter than that of nasal endotracheal intubation, the analysis time of the two groups for comparison observation is within 7 days.

1.4 Statistical treatment

SPSS19. 0 was used to statistically analyze the average oral care time, bad breath, mold, ulcer and VAP incidence of patients, and P≤0. 05 considered that the difference was statistically significant.

2 Results

There was a significant difference (P<0. 001)in the mean duration of oral care between patients who underwent orotracheal intubation compared with patients who underwent nasotracheal intubation under equal oral care and required assistance from another nurse. There was a significant difference in the incidence of halitosis, which was higher with orotracheal intubation than with nasotracheal intubation (P<0. 001), table 1.

Table 1

divide into groups	n	Average time of oral care (min)	Bad breath (n)
Group A	32	30. 40±5. 91	19
Group B	36	14. 78±1.99	3

F=49. 30, P<0. 001 There was significant difference in nursing time. χ^2=17. 902, P<0. 001, there is a significant difference in the incidence of bad breath

Under the same oral care, there was a statistically significant difference in the number of patients with mold in oral endotracheal intubation compared with that in nasal endotracheal intubation (P<0. 05). However, there was no statistically significant difference in the number of cases with ulcer and VAP (P>0. 05), as shown in Table 2.

Table 2

divide into groups	n	Mold (n)	Ulcer (n)	Number of VAP cases (n)
A 组	32	7	2	7
B 组	36	1	0	6

The three chi-square tests are χ^2=4. 254, P=0. 039, χ^2=0. 646，P=0. 422 χ^2=0. 056，P=0. 813

3 Discussion

At present, it is generally believed that oral hygiene is directly related to the occurrence of VAP[3]. Improving the quality of oral care can significantly reduce the incidence of VAP[4]. Compared with nasal endotracheal intubation, oral endotracheal intubation increases the difficulty of oral care, but oral endotracheal intubation and nasal endotracheal intubation have their own advantages and disadvantages, and are widely used in clinical practice. However, according to the experimental data of this group, although the average time of oral care, the incidence of bad breath and the incidence of mold in nasotracheal intubation are significantly superior to those in oral endotracheal intubation and the difference is statistically significant, there is no significant difference in the incidence of VAP. This may be due to the fact that the two methods of tracheal intubation have no significant impact on VAP after both groups have standardized oral care. Of course, it also needs large sample data support.

Oral tracheal intubation increases the difficulty of oral care, but retrospective analysis of the above cases shows that most of the patients who are more prone to bad breath due to mold are related to tartar and dental caries. Therefore, strengthening oral health education for healthy people, regularly cleaning teeth and preventing dental caries are also conducive to reducing the incidence of complications after the disease. According to the patient's medication, after using dehydrating drugs and anticholinergic drugs, try to keep the mouth moist, which can reduce the occurrence of oral ulcer.

The importance of oral care in oral endotracheal intubation has been increasingly valued. At present, the commonly used oral care methods for patients with oral endotracheal intubation include oral cotton ball wiping, oral care liquid washing and toothbrush brushing. Of course, most of the three methods are optional. The cotton ball scrubbing method is most widely used in China. Toothbrush brushing method only accounts for 19. 93%, and 83. 2%of ICU nurses use wiping method or wiping plus washing method to implement oral care for patients[5]. Australia NSW Health Intensive Care Guidelines, the British Association for Disability and Oral Health (BSDH), and the American Association of Intensive Care Nurses (AACN)[6, 7, 8]Oral care recommends the use of toothbrushes for oral care to reduce oral secretions and colonization bacteria. Even if there are teeth missing, the oral mucosa, gums and tongue should be brushed with a soft bristle toothbrush. AACN recommends at least two times a day for 3-4 minutes each time. The care content is teeth+tongue+gums, which can remove dental plaque. In recent years, the negative pressure suction toothbrush can be used to wash and brush the mouth as a new way of oral care. It can be used while washing. The use of the toothbrush can meet the flexible operation in the mouth, effectively remove oral secretions, food residues, dental crevices, and dental plaque at the contact of the gums. At the same time, it can clean the tongue, and effectively reduce oral odor/bad breath[9]. It reduces the risk of cotton balls left in the mouth of patients, and makes oral care of patients with oral endotracheal intubation more safe. Through the effective removal of oral colonization bacteria, the incidence of bacteria flowing into the lower respiratory tract was reduced, and the incidence of VAP was significantly reduced. These oral care methods have their own advantages and disadvantages. As for which method should be selected according to the patient's economy and the patient's own oral health. At

present, there is no uniform standard and guideline for oral care frequency. According to foreign research, about 72%of nurses think that the oral care frequency of patients with endotracheal intubation is 5 times/d or more, while the oral care frequency of patients without endotracheal intubation is only 2 to 3 times/d[10].

To sum up, oral care is particularly important for patients who use respirators for endotracheal intubation in order to prevent the occurrence of VAP, enable patients to take off the tube as soon as possible and shorten the length of stay in ICU. At present, many intensive care units attach great importance to the quality of oral care, and use Beck oral scoring system or improved Beck oral scoring system to evaluate the quality of oral care of patients. However, at present, the selection of oral care methods, oral care solution and oral care frequency all need a lot of data to optimize the best plan and further guide clinical practice. This clinical observation and study showed that under the condition that tracheal intubation mode can be selected, nasal tracheal intubation can be more convenient for oral care of patients and save nursing resources. Patients with oral endotracheal intubation need to determine the best oral care plan according to their own oral health status, including oral care methods, oral care frequency, and optimization of standardized operation process, in order to improve the quality of oral care and benefit more patients.

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口腔护理在经口气管插管与经鼻气管插管的应用比较

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【摘要】目的：对比观察经口气管插管与经鼻气管插管的口腔护理效果。方法：纳入 2016 年 1 月 2019 年 7 月我院 68 例经口气管插管与经鼻气管插管患者，观察两组口腔护理对患者并发症的影响。结果：68 例患者中，经口气管插管患者较经鼻气管插管患者护理平均时间更长（P＜0. 001）存在显著差异。口臭发生率经口气管插管发生率较经鼻气管插管更高（P＜0. 001）存在显著差异。经口气管插管发生霉菌的患者较经鼻气管插管的更多差异具有统计学意义 (P＜0. 05)。而在发生溃疡和 VAP 发生率例数上差异无统计学意义（P＞0. 05）结论：在可选择气管插管方式的条件下，选用经鼻气管插管可提高患者的舒适度，更便于患者的口腔护理。节约更多护理资源，降低口腔护理难度。

【关键词】气管插管；口腔护理；效果

目前气管插管与机械通气在急危重症救治使用广泛，重症监护室常用的插管方式为经口气管插管和经鼻气管插管, 这两种插管方式在各有优缺点。而口腔护理对于气管插管尤为重要，口咽部定植菌误吸是呼吸机相关性肺炎（ventilator-associated pneumonia，VAP）发生的重要机制。有研究表明，每 0. 01ml 的口咽分泌物中含 10^6～10^8 个细菌，VAP 与口咽部细菌的定植与易位相关。在细菌培养结果中发现，有 67%的细菌培养结果显示下呼吸道与口腔细菌一致，说明口腔细菌与 VAP 的发生密切相关[1, 2]，因此口腔护理对气管插管患者尤为重要。本研究从就口腔护理角度对两种插管方式口腔护理效果进行比较。

1 资料与方法

1.1 病例资料

在我院救治我院 EICU 于 2016 年 1 月～2019 年 7 月共行气管插管 68 例, 其中经口插管 32 例为 A 组, 经鼻插管 36 例为 B 组。A 组男 18 例, 女 14 例, 年龄 20～82（66. 48±12. 95）岁，B 组男 19 例，女 17 例，年龄 36～86（67. 47±11.73）岁。

1.2 口腔护理方法

A 组由两名护士相互配合进行操作，先吸净气管内痰液及口腔分泌物，去除垫带和胶布，测量插管深度。一名护士固定患者头部和气管插管，另一名护士一手持压舌板，一手持生理盐水棉球，擦净口舌、牙齿、颊部、舌苔、上颚等各个部位，吸尽口腔内残余液体，更换牙垫，胶布和垫带固定，最后用石蜡油润敷嘴唇。B 组口腔护理一名护士能独立完成，持生理盐水棉球，擦净口舌、牙齿、颊部、舌苔、上颚等各个部位，吸尽口腔内残余液体。

1.3 实验对照方法

因经口气管插管可保留时间较经鼻气管插管保留气管导管时间短，因此对照观察两组分析时间均选用 7 天内数据对比。

1.4 统计学处理

采用 SPSS19. 0 分别就患者平均口腔护理时间、口臭、霉菌、溃疡、VAP 发生率对其进行统计学分析，P≤0. 05 认为差异有统计学意义。

2 结果

在同等口腔护理情况下，经口气管插管患者较经鼻气管插管患者口腔平均护理时间更长（P＜0. 001）存在显著差异，并且需另一名护士协助。口臭发生率经口气管插管发生率较经鼻气管插管更高（P＜0. 001）存在显著差异，见表 1。

表1

分组	n	口腔护理平均时间（min）	口臭（n）
A 组	32	30. 40±5. 91	19
B 组	36	14. 78±1.99	3

F=49. 30，P＜0. 001 护理时间存在显著差异。 χ^2=17. 902，P＜0. 001 口臭发生率存在显著差异

在同等口腔护理情况下，经口气管插管发生霉菌的患者较经鼻气管插管的更多差异具有统计学意义(P＜0. 05)。而在发生溃疡和 VAP 发生率例数上差异无统计学意义（P＞0. 05），见表 2。

表 2

分组	n	霉菌（n）	溃疡（n）	VAP 发生例数（n）
A 组	32	7	2	7
B 组	36	1	0	6

三列卡方检验分别为 χ^2=4. 254, P=0. 039, χ^2=0. 646，P=0. 422 χ^2=0. 056，P=0. 813

3 讨论

目前普遍认为口腔卫生状况与 VAP 发生有直接关系[3]，提高口腔护理的质量可以使 VAP 发生率显著降低[4]。经口气管插管与经鼻气管插管相比增加了口腔护理的难度，但口气管插管与经鼻气管插管各有优缺点，在临床使用均比较广泛。然而根据本组实验数据显示尽管经鼻气管插管在口腔护理平均时间与口臭的发生率，霉菌发生率与经口气管插管相比存在明显优势并且差异有统计学意义，但在 VAP 的发生率并没有显著差异。这可能与两组都规范口腔护理后，两种气管插管方式对 VAP 无明显影响。当然这还需要大样本数据支持。

经口气管插管后增加了口腔护理难度，但回顾性分析上述病例，许多发生霉菌更容易发生口臭的患者大多数与牙垢、龋齿有关。因此对健康人加强口腔卫生的宣教，定时洁牙，预防龋齿也利于减少发病后并发症的产生。根据患者用药在使用脱水药与抗胆碱药物后，尽量保持口腔湿润，可减少口腔溃疡的发生。

口腔护理在经口气管插管的重要性已日益受到重视。目前经口气管插管患者的常用的口腔护理方法有口腔棉球擦拭法、口腔护理液冲洗法和牙刷刷洗法，当然大多选择三种方法随意搭配。棉球擦洗法在国内应用最为广泛。牙刷刷洗法仅占 19. 93%，83. 2%ICU 护士使用擦拭法或擦拭加冲洗法为患者实施口腔护理[5]。澳大利亚 NSW Health 重症监护指南、英国残疾和口腔健康协会（BSDH）、美国重症监

护护士协会（AACN）[6，7，8]口腔护理推荐使用牙刷进行口腔护理以减少口腔内分泌物及定植菌。即便是有牙齿的缺失，也应使用软毛的牙刷对口腔黏膜、牙龈、舌头进行刷洗，AACN 推荐至少每天 2 次，每次 3-4 分钟，护理内容为牙齿+舌头+牙龈，可以清除牙菌斑。近年来负压吸引式牙刷进行口腔进行冲洗+刷洗作为口腔护理的新方式，可边冲洗边吸引，牙刷的使用可满足口腔内灵活操作，有效清除口腔分泌物、食物残渣、齿缝、齿龈接触处的牙菌斑，同时可对舌头清洁，有效减轻口腔异味/口臭[9]。降低了棉球遗落在患者口腔的风险，使经口气管插管患者的口腔护理更加的安全。通过对口腔定植菌的有效清除，减少了细菌流入下呼吸道的发生率，明显降低 VAP 的发生率。这几种口腔护理方法各有利弊，至于选取何种方法应根据患者的经济以及患者自身的口腔卫生进行选择。口腔护理频次目前尚无统一标准及指南，国外研究显示，约 72%的护士认为对气管插管患者口腔护理的次数为 5 次/d 甚至更多，而非气管插管患者口腔护理的次数仅为 2~3 次/d［10］。

综上所述，对于气管插管使用呼吸机的患者，为预防 VAP 的发生、使患者能尽早脱机拔管和缩短患者 ICU 住院时间，口腔护理显得格外重要。目前许多重症监护室均高度重视口腔护理质量，并且采用 Beck 口腔评分系统或改良 Beck 口腔评分系统来评估患者口腔护理质量。但目前口腔护理的方法选择、口腔护理液的选择、口腔护理频次的选择，均需要大量数据来优化最佳方案进一步指导临床规范。此次临床观察研究表明在可选择气管插管方式的条件下，选用经鼻气管插管可更方便于患者的口腔护理，更节约护理资源。而经口气管插管患者需根据患者自身口腔卫生状况确定最佳的口腔护理方案包括口腔护理方法，口腔护理频次，标准化操作流程的优化，以提高口腔护理质量，使更多患者获益。

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