



Observation of Clinical Effects of 3D Endoscopy in Total Thyroidectomy and Central Lymph Node Dissection

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Abstract: Objective: The main focus of this study is to explore the clinical effects of 3D endoscopy in total thyroidectomy and central lymph node dissection. Methods: Eighty patients undergoing thyroid cancer total thyroidectomy at Shengjing Hospital, China Medical University, from February 2017 to March 2018, were divided into two groups. The experimental group, consisting of 40 patients, underwent treatment using 3D endoscopy, while the control group, also comprising 40 patients, underwent treatment using 2D endoscopy. A comparison was made between the two groups in terms of the incidence of adverse reactions and relevant clinical indicators. Results: Whether in terms of surgical time, blood loss, or postoperative drainage, the experimental group performed better than the control group. Additionally, there were no significant differences between the two groups in postoperative hospital stay, lymph node dissection frequency, lymph node metastasis quantity, and cost. Regarding the incidence of adverse reactions, the experimental group and the control group were 7.50% and 30.00%, respectively, with the former significantly lower than the latter, and the difference between the two groups was statistically significant. Conclusion: 3D endoscopy exhibits good clinical effects in total thyroidectomy and central lymph node dissection, effectively improving patient outcomes, and is worthy of promotion.

Keywords: 3D endoscopy, total thyroidectomy, central lymph node dissection

1. Introduction

Thyroid cancer is a common clinical disease, and in clinical treatment, total thyroidectomy and central lymph node dissection are commonly used procedures. With the development of medical technology, 3D laparoscopy has been widely utilized and has made significant progress in the treatment of thyroid cancer [1]. This study focuses on 80 patients undergoing total thyroidectomy for thyroid cancer, analyzing the clinical effects of 3D endoscopy in procedures such as total thyroidectomy. The report on the relevant findings is presented below:

2. Materials and Methods

2.1 General Information

This study included 80 patients admitted to Shengjing Hospital, China Medical University, over more than a year (from February 2016 to March 2017). The relevant medical records of these patients were retrospectively analyzed. Based on this analysis, the 80 patients were randomly divided into two groups: the experimental group and the control group. In the experimental group, there were 14 male and 26 female patients, with the oldest patient being 56 years old and the youngest being 32 years old. In the control group, there were 15 male and 25 female patients, with the oldest patient being 58 years old and the youngest being 33 years old. The average age was (43.68 ± 7.52) years for both groups. The differences in basic information between the two groups were not statistically significant ($P > 0.05$).

2.2 Treatment Methods

The surgical procedures for 3D endoscopy and 2D endoscopy were the same. The experimental group underwent surgery using 3D endoscopy, while the control group underwent surgery using 2D endoscopy. The main steps of the surgery were as follows: employing the three-hole method through the chest and breast approach; injecting CO₂ gas and maintaining a constant pressure of around 6 mmHg; using relevant surgical instruments to fully expose the patient's thyroid gland; then performing the surgery with an ultrasonic scalpel from the trachea to the isthmus; cutting off the inferior vessels, pulling the gland inward, and pulling it upstream, finally ligating the superior vessels; exposing the recurrent laryngeal nerve beneath the thyroid, removing the tumor and residual thyroid; subsequently, removing the central lymph nodes on the same side. Throughout this process, it was crucial to protect the recurrent laryngeal nerve and parathyroid glands, ensuring their integrity.

2.3 Assessment Criteria

A comparative analysis was conducted on the incidence of adverse reactions and clinical effects between the two groups [2].

2.4 Statistical Methods

Relevant data of the two groups of patients in this experiment were recorded, and then these data were subjected to simple statistical analysis. Subsequently, statistical software SPSS 21.0 was used for the final analysis and processing of the relevant information of the two groups. Count data were expressed as percentages (%), the chi-square test (χ^2) was used for testing methods, and t was used for counting data of the two groups of patients. The differences between the two groups were statistically significant.

3. Results

3.1 Comparison of Clinical Indicators between the Two Groups

Whether it was surgical time, blood loss, or postoperative drainage, the experimental group outperformed the control group, and the differences between the two groups were statistically significant ($P < 0.05$). The differences between the experimental group and the control group in postoperative hospital stay, lymph node dissection frequency, lymph node metastasis quantity, and cost were not significant, and the intergroup differences lacked statistical significance ($P > 0.05$). As shown in Table 1:

Table 1. Comparison of Clinical Indicators between the Two Groups ($\pm s$)

Group (n=40)	Surgical Time (min)	Blood Loss (mL)	Postoperative Drainage (mL)	Postoperative Hospital Stay (d)	Lymph Node Dissection Frequency	Lymph Node Metastasis Quantity	Cost (CNY)
Experimental Group	119.37 \pm 21.13	40.56 \pm 25.19	129.17 \pm 52.63	5.76 \pm 1.34	6.56 \pm 4.22	1.37 \pm 2.08	19153 \pm 1136
Control Group	144.17 \pm 30.72	62.18 \pm 27.03	169.42 \pm 65.28	5.86 \pm 1.05	5.22 \pm 2.05	0.82 \pm 1.27	18842 \pm 1017
t	4.2067	3.7008	3.0358	0.3715	1.8064	1.4273	1.2900
p	0.0001	0.0004	0.0033	0.7113	0.0747	0.1575	0.2009

3.2 Incidence of Adverse Reactions in Patients

Regarding the incidence of adverse reactions, the rates in the experimental group and the control group were 7.50% and 30.00%, respectively, with the former being superior to the latter. Through a comparative analysis of the incidence of adverse reactions, it is evident that the treatment method used in the experimental group is more effective than the treatment method used in the control group, and the differences between the two groups are statistically significant ($P < 0.05$). Refer to Table 2 for details.

Table 2. Incidence and Clinical Manifestations of Adverse Reactions in Patients [n(%)]

Group (n=40)	Incision Infection	Transient Hypocalcemia	Limb Numbness	Hoarseness	Cough	Postoperative Dizziness or Vomiting	Total Incidence Rate (%)
Experimental Group	0	1	1	0	0	1	7.50 (3/40)
Control Group	1	2	1	3	2	3	30.00 (12/40)
t	/	/	/	/	/	/	6.6462
p	/	/	/	/	/	/	0.0099

4. Discussion

In the clinical treatment of thyroid cancer, traditional open surgical methods often leave scars on the patient's neck, causing significant psychological burden and impacting the patient's quality of life [3]. In contrast, endoscopic techniques enable scarless surgical treatment and have been widely applied in clinical practice. Currently, endoscopic techniques mainly include 2D and 3D; the former lacks depth and spatial information, requiring doctors to accumulate extensive clinical experience to master the technique accurately. Additionally, due to the insufficient stereoscopic levels of 2D endoscopy, more time is often wasted during lymph node dissection, affecting both the surgical outcome and increasing the occurrence of patient complications [4]. On the other hand, 3D endoscopy is a high-precision and accurately spatially positioned endoscopic technology. It allows physicians to understand the depth and stereoscopic levels of anatomy effectively, reducing

surgical risks and shortening the learning curve for operators. Furthermore, 3D endoscopy provides a high-definition, realistic view, facilitating precise positioning and aiding in the meticulous cleaning of lymph nodes. Additionally, 3D endoscopy ensures the protection of the recurrent laryngeal nerve and parathyroid glands, enhancing surgical safety, reliability, and overall effectiveness [5]. In this experiment, different treatment methods were applied to the two groups of patients. The experimental group consistently outperformed the control group in surgical time, blood loss, and postoperative drainage, and these clinical differences were statistically significant ($P < 0.05$). However, there were no significant differences between the two groups in postoperative hospital stay, lymph node dissection frequency, lymph node metastasis quantity, and cost ($P > 0.05$). Adverse reactions were observed in only 3 cases in the experimental group, while 12 cases in the control group experienced adverse reactions. The adverse reaction rate was 7.50% in the experimental group and 30.00% in the control group, with the former being superior and the difference being statistically significant ($P < 0.05$).

In conclusion, compared to 2D endoscopy, 3D endoscopy in total thyroidectomy and central lymph node dissection for thyroid cancer has the advantages of improving treatment outcomes and significantly reducing the incidence of adverse reactions. Based on these findings, the clinical application of 3D endoscopy is worthy of promotion.

References

- [1] Zhao Zhiqiang, Yang Huifen. Application of Fine Fascial Anatomy Combined with Nerve Detection in Total Thyroidectomy and Central Lymph Node Dissection [J]. *China Practical Medicine*, 2017, 12(31): 64-65.
- [2] Zhao Zhiqiang, Yang Huifen. Application of Nano-Carbon in Total Thyroidectomy and Central Lymph Node Dissection for Thyroid Cancer [J]. *World Latest Medical Information Abstracts*, 2017, 17(77): 67+70.
- [3] Liu Xuewen, Li Qiang, Chen Fei, Li Zhichao, Huang Zonghai. Clinical Effects of 3D Endoscopy in Total Thyroidectomy and Central Lymph Node Dissection [J]. *Journal of Southern Medical University*, 2017, 37(06): 842-846.
- [4] Su Qingchang, Zhang Guihua, Sun Shanping, Xie Panpan, Zhang Yang. Clinical Application of Recurrent Laryngeal Nerve Monitoring Technology in Central Lymph Node Dissection for Differentiated Thyroid Carcinoma [J]. *Chinese General Surgery Literature (Electronic Edition)*, 2016, 10(06): 441-444.
- [5] Zhang Hua, Wang Minghua, Wang Geng. Application of Nano-Carbon Suspension in Central Lymph Node Dissection for cN_0 Papillary Thyroid Carcinoma [J]. *Modern Oncology Medicine*, 2017, 25(01): 38-41.