

Anatomical characteristics and significance of recurrent laryngeal nerve in thyroid surgery

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Abstract: Objective. Anatomical characteristics and significance of recurrent laryngeal nerve in thyroid. Methods. From July 2018 to January 2019, 82 patients with thyroid diseases were randomly divided into 41 study group and 41 control group, in which the rln was dissected and the RLN was not dissected. The incidence and treatment of nerve injury were compared between the study group and the control group. Results. There were 2 cases of recurrent laryngeal nerve injury in study group. The patient's pronunciation returned to normal within 30 days. No permanent damage. And there were 7 cases of recurrent laryngeal nerve injury in control group without special treatment. The longest patient's speech returned to normal within four months, with permanent damage. Compared with the control group, the number of nerve injury in the study group was less, and there was a significant difference between the two groups ($p < 0.05$). The effective number of the study group was 39, the effective rate was 95.12%, The effective number of the control group was 34, the effective rate was 82.93%, Compared with the study group, the treatment effect was better. The difference between the two groups is significant and statistically significant ($p < 0.05$). Conclusion. Anatomic exposure of the recurrent laryngeal nerve (rln) in thyroid surgery can effectively reduce the incidence of rln injury and prevent the occurrence of nerve injury. It is an ideal application method and can be fully utilized.

Recurrent laryngeal nerve injury is a common surgical complication of thyroid patients, but also a very serious complication. Based on the literature review^[1], anatomic exposure of the recurrent laryngeal nerve (rln) is a good method. For this reason, we selected 82 thyroid patients who were treated in our hospital from July 2018 to January 2019 as the study subjects, and analyzed the nerve injury of patients with and without anatomic exposure of the recurrent laryngeal nerve. Details are as follows.

1. Materials and methods

1.1 Basic data

The 82 thyroid patients who were selected for treatment in our hospital from July 2018 to January 2019 were randomly divided into 41 study groups and 41 control groups. The former were 22 men and 19 women, aged between 23 and 60. The average age is 41.16 ± 3.25 ; The latter were 23 men and 18 women, aged between 22 and 61, with an average age of 42.56 ± 2.41 years. All the subjects met the study criteria and were representative enough to participate in the experimental analysis. There was no significant difference between the two groups ($p > 0.05$).

1.2 Methods

In the control group, the recurrent laryngeal nerve was not dissected, and the area of recurrent laryngeal nerve was avoided as far as possible. In the study group, effective protective measures were used during the operation. The dissection of the patients revealed the recurrent laryngeal nerve. The specific methods are as follows: First, a top-to-bottom approach, in which the superior thyroid vessels were cut off and ligated, the upper pole of the thyroid turned inward, exposing the thyroid

cartilage, and near where the recurrent laryngeal nerve entered the larynx. Note that the location of Venous plexus, easy to separate bleeding, so that the surgical field became blurred, damage to the branches. Second, from the bottom to the top approach: Separation and transection of the inferior thyroid artery and vein, traction of the lower pole of the thyroid [2]. The recurrent laryngeal nerve (RLN) can be found in the periphery of the parathyroid gland, because there are fewer blood vessels between the lower thyroid gland and the thyroid gland. It is simple and practical to find the rln with less bleeding based on the parathyroid gland during the operation. Anatomic exposure of the recurrent laryngeal nerve is very common during surgery.

1.3 Evaluation criteria

First, Comparison of neurologic injury in the study group and control group. Second, the treatment between the study group and the control group, no effect: The clinical symptoms of patients did not change, and the effect was general: The clinical symptoms of patients improved; The effect is good: The patient clinical symptom improvement is obvious [3].

1.4 Statistical methods

Using SPSS 22.0 software, mean plus minus standard deviation of measurement data, and t-test. Count data using percentage, and x 2 test, $p < 0.05$. Differences were statistically significant.

2. Results

2.1 Compared neurologic injury in the study group and control group.

There were 2 cases of recurrent laryngeal nerve injury in the study group. The patients' pronunciation returned to normal within 30 days without any permanent injury. In the control group, there were 7 cases of recurrent laryngeal nerve injury without special treatment. The longest patient's voice returned to normal within 4 months, with permanent injury. In contrast, the number of nerve damage in the study group was smaller, and the data between the two groups was quite different and statistically significant ($P < 0.05$). The details are shown in table 1.

Table 1 Comparison of the occurrence of nerve injury between the study group and the control group

group,	The number of cases	Recurrent laryngeal nerve injury	No damage to recurrent laryngeal nerve
study group	41	2	39
control group	41	7	34

($p < 0.05$)

2.2 Compared the treatment of the study group and the control group.

The effective number of the study group was 39, and the effective rate was 95.12%. The effective number of the control group was 34, and the effective rate was 82.93%. Compared with the study group, the treatment effect was better. The data of the two groups are quite different and have statistical significance ($P < 0.05$). See table 2 for details.

Table 2 comparison of treatment between study group and control group [n(%)]

group	number of cases	no effect (cases)	good effect (cases)	average effect (cases)	effective rate (%)
study group	41	2	20	19	39 (95.12)
control group	41	7	17	17	34 (82.93)
χ^2					5.9354
P					$P < 0.05$

3. Discussion

The injury of recurrent laryngeal nerve (rln) is related to the adhesion of peripheral tissues and improper treatment of hemorrhage. Therefore, the key to the treatment of thyroid patients is to protect the recurrent laryngeal nerve. The causes of recurrent laryngeal nerve (rln) injury in thyroid surgery are as follows: First, the anatomic level of rln is unclear during operation, the amount of bleeding during separation is large, and the operation field is blurred. Some recurrent laryngeal nerves pass through the thyroid capsule and are not well separated during the operation. Once removed, the recurrent laryngeal nerves will be damaged. Second, it is easy to bleed during surgery, and the treatment method is unreasonable. Misalignment leads to damage to the reentry nerve of the larynx, which is the main factor that causes damage to the reentry nerve of the larynx^[4]. Third, doctors do not fully understand the anatomical relationship between the inferior polar vessels and the recurrent laryngeal nerve. The results of this study showed that there were 2 cases of recurrent laryngeal nerve injury in the study group. The patients' pronunciation returned to normal within 30 days without any permanent injury. In the control group, there were 7 cases of recurrent laryngeal nerve injury without special treatment. The longest patient's voice returned to normal within 4 months, with permanent injury. The effective number of the study group was 39, the effective rate was 95.12%; The effective rate of the control group was 34, the effective rate was 82.93%. In contrast, the study group had fewer nerve injuries, and the two groups showed statistically significant differences.

In conclusion, anatomic exposure of the recurrent laryngeal nerve (rln) in thyroid surgery can effectively reduce the incidence of rln injury and prevent the occurrence of nerve injury. It is an ideal application method and can be fully utilized.

References

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