doi: 10.13241/j.cnki.pmb.2019.16.019

甲状腺术中喉返神经显露对暂时性喉返神经损伤发生率的影响*

马建仓 徐金锴 李宗禹 赖婧玥 关 昊 白育花

(西安交通大学第二附属医院普外科 陕西 西安 710004)

摘要 目的:探究甲状腺术中喉返神经显露对暂时性喉返神经损伤发生率的影响。**方法**:选择我院2016年10月-2018年10月收治的行甲状腺切除术的115例患者为研究对象,按照其入院顺序经随机数字表法分为两组,两组患者均行常规甲状腺切除术。其中,对照组58例患者未显露喉返神经;研究组57例患者常规显露喉返神经,记录并比较两组患者的手术时间、术中出血量、术后引流量、切口长度和住院时间等围术期手术指标,术后1d、4d、7d的甲状旁腺激素(PTH)水平、钙离子(Ca^{2+})水平,术后暂时性喉返神经损伤、术后声音嘶哑、低钙血症等并发症的发生情况。**结果**:研究组患者的手术时间、术中出血量、术后引流量均短于(少于)对照组($P<0.05$),但两组患者的切口长度和住院时间无显著性差异($P>0.05$);研究组患者术后1d、4d、7d的血清PTH、Ca^{2+}水平均高于对照组($P<0.05$),暂时性喉返神经损伤、术后声音嘶哑、低钙血症发生率均低于对照组($P<0.05$)。**结论**:甲状腺术中喉返神经显露可有效预防暂时性喉返神经和甲状腺功能的损伤,降低术后并发症的发生率,且患者的围术期指标均显著改善。

关键词:甲状腺切除术;喉返神经显露;暂时性喉返神经损伤;甲状旁腺激素

中图分类号:R653 **文献标识码**:A **文章编号**:1673-6273(2019)16-3102-04

Effect of Recurrent Laryngeal Nerve Exposure on the Incidence of Temporary Recurrent Laryngeal Nerve Injury during Thyroid Surgery*

MA Jian-cang, XU Jin-kai, LI Zong-yu, LAI Jing-yue, GUAN Hao, BAI Yu-hua

(Department of General surgery, The Second Affiliated Hospital of Xi'an Jiaotong University, Xi'an, Shaanxi, 710004, China)

ABSTRACT Objective: To investigate the effect of recurrent laryngeal nerve exposure on the incidence of temporary recurrent laryngeal nerve injury during thyroid surgery. **Methods:** A total of 115 patients who underwent thyroidectomy from October 2016 to October 2018 in our hospital were enrolled in the study. They were divided into two groups according to their admission order by random number table method. Both groups underwent routine thyroidectomy. Among them, 58 patients in the control group did not show recurrent laryngeal nerve; 57 patients in the study group routinely showed recurrent laryngeal nerve. The perioperative surgical indexes such as operation time, intraoperative blood loss, postoperative drainage volume, incision length and hospitalization time were recorded and compared between the two groups. The levels of serum parathyroid hormone (PTH) and calcium (Ca^{2+}) at 1d, 4d and 7d after operation, the complications of postoperative temporary recurrent laryngeal nerve injury, postoperative hoarseness and hypocalcemia were compared between two groups. **Results:** The operation time, intraoperative blood loss and postoperative drainage volume of study group were significantly shorter than (less than) those of the control group ($P<0.05$). However, there was no significant difference in the incision length and hospitalization time between the two groups ($P>0.05$). The serum PTH and Ca^{2+} levels of study group were significantly higher than those of the control group at 1d, 4d and 7d after operation ($P<0.05$). The incidence of temporary recurrent laryngeal nerve injury, postoperative hoarseness and hypocalcemia in the study group were significantly lower than those in the control group ($P<0.05$). **Conclusion:** Throat retinal nerve exposure during thyroid surgery can effectively prevent temporary recurrent laryngeal nerve and thyroid function damage, reduce the incidence of postoperative complications, and the perioperative period of the patients are significantly improved.

Key words: Thyroidectomy; Recurrent laryngeal nerve; Temporary recurrent laryngeal nerve injury; Parathyroid hormone

Chinese Library Classification(CLC): R653 Document code: A

Article ID: 1673-6273(2019)16-3102-04

前言

甲状腺作为人体最大的内分泌腺,具有分泌甲状腺激素和调节机体代谢等作用[1,2]。近年来,甲状腺疾病的发病率在我国呈逐年上升趋势[3],甲状腺手术是其常见的术式,喉返神经损伤是常见且严重的并发症之一,发生率在3%左右[4,5]。术中钳夹、牵拉过度、缝扎等操作不良均可引起喉返神经损伤,导致患者出现声带麻痹和声音嘶哑的不良后果,甚至出现呼吸困难、窒息等,严重影响患者生活质量和生命安全[6]。因此,如何预防或降低喉返神经损伤将成为甲状腺手术优劣的重要评判标准。

* 基金项目:陕西省科技攻关项目(2012SF2-13)

作者简介:马建仓(1972-),男,硕士,副主任医师,研究方向:甲状腺及血管疾病,电话:13629270660,E-mail:majiancang710000@163.com

(收稿日期:2019-01-07 接受日期:2019-01-30)

研究显示在甲状腺手术的实施过程中,常规显露喉返神经可有效避免术中相关操作损伤喉返神经,有利于保护患者的喉返神经[7,8]。但也有学者提出过多地剥离喉返神经在一定程度上也会引起喉返神经的损伤[9,10]。因此,临床上关于在甲状腺手术中是否需要进行喉返神经显露仍存在显著争议。本研究选择我院 2016 年 10 月 -2018 年 10 月收治的行甲状腺切除术的 115 例患者为研究对象,主要探讨了甲状腺术中喉返神经显露对暂时性喉返神经损伤发生率的影响,结果报道如下。

1 资料与方法

1.1 一般资料

选择 2016 年 10 月 -2018 年 10 月于我院行甲状腺切除术患者 115 例,按照随机数字表法分为两组。其中,研究组 57 例患者中,男 30 例,女 27 例,平均年龄为 44.6± 5.1 岁,平均病程为 14.6± 3.8 个月,病情种类:甲状腺腺瘤伴腺瘤囊性变 15 例,结节性甲状腺肿 20 例, 甲状腺腺瘤伴结节性甲状腺肿 12 例,甲状腺癌 10 例;对照组 58 例患者中,男 32 例,女 26 例,平均年龄为 43.9± 4.6 岁,平均病程为 14.8± 3.5 个月,病情种类:甲状腺腺瘤伴腺瘤囊性变 16 例,结节性甲状腺肿 19 例,甲状腺腺瘤伴结节性甲状腺肿 14 例,甲状腺癌 9 例;两组一般资料具有可比性。本研究已获得我院医学伦理委员会的批准且患者知情同意,并签署《知情同意书》。

1.2 纳入和排除标准

纳入标准:(1)确诊为甲状腺病变者,并存在明确手术指征者;(2)年龄在 18-50 岁之间;(3)了解本次研究,并自愿参与者。

排除标准:(1)心、脑、肝、肾等重要脏器存在严重器质性病变,不能接受麻醉及手术治疗者;(2)术前已存在喉返神经损伤者;(3)患有精神系统疾病者;(4)妊娠及哺乳期妇女;(5)存在严重传染性疾病者;(6)预计生存期<3 个月者;(7)合并糖尿病、高血压、凝血功能障碍者。

1.3 手术方法

两组患者均行常规甲状腺切除术。其中,对照组未显露喉返神经,具体操作为:对患者实施全身麻醉,完全暴露甲状腺后,结扎甲状腺上极血管,分离并结扎甲状腺中静脉,结扎甲状腺下动脉前后支,从甲状腺被膜中分离出甲状旁腺,不解剖喉返神经,切断甲状腺峡部和悬韧带,保留甲状腺背侧,行次全切甲状腺。研究组常规显露喉返神经:对患者实施全身麻醉,完全暴露甲状腺后,切开甲状腺被膜,分离并结扎甲状腺的上极动静脉和中静脉,向内牵引甲状腺侧叶,在与甲状腺下级相平行的位置分离出喉返神经,结扎甲状腺下级血管,切除患侧腺叶及所连接的峡部。

1.4 观察指标

(1)手术时间、术中出血量、术后引流量、切口长度、住院时间等围术期指标;(2) 术后 1d、4d、7d 的甲状旁腺激素 (PTH)水平、钙离子(Ca^{2+})水平;(3)术后暂时性喉返神经损伤、术后声音嘶哑、低钙血症等并发症的发生率。

1.5 统计学分析

全部数据均采用 SPSS20.0 统计学软件进行处理, 计数资料以百分率表示,组间比较采用卡方检验,计量资料以均数± 标准差表示,组间比较采用 t 检验,以 *P<0.05* 表示差异具有统计学意义。

2 结果

2.1 两组患者围术期各手术指标对比

研究组患者的手术时间、术中出血量、术后引流量均显著短于(少于)对照组(*P<0.05*);但两组患者的切口长度和住院时间无显著性差异(*P>0.05*)。

表 1 两组患者围术期各手术指标对比(均数± 标准差)

Table 1 Comparison of the surgical indexes between the two groups in the perioperative period(mean± SD)

Groups	n	Operation Time(min)	Intraoperative Blood Loss(mL)	Postoperative Drainage(mL)	Incision Length(cm)	Hospital Stay(d)
Research Group	57	54.5± 6.4*	10.9± 1.8*	42.8± 4.6*	6.3± 2.1	15.2± 3.4
Control Group	58	61.3± 5.1	12.7± 2.1	55.0± 5.8	6.2± 1.8	15.5± 3.2

Note: *$P<0.05$ compared with the control group.

2.2 两组患者术后血清 PTH、Ca^{2+}水平水平对比

研究组患者术后 1d、4d、7d 的血清 PTH、Ca^{2+}水平均显著高于对照组(*P<0.05*)。

2.3 两组患者术后并发症发生情况对比

研究组患者的暂时性喉返神经损伤、术后声音嘶哑、低钙血症发生率均显著低于对照组(*P<0.05*)。

表 2 两组患者术后血清 PTH、Ca^{2+}水平对比(均数± 标准差)

Table 2 Comparison of the serum PTH and Ca^{2+} levels between the two groups after operation(mean± SD)

Groups	n	PTH(mg/mL)			Ca^{2+}(mmol/L)		
		1d after surgery	4d after surgery	7d after surgery	1d after surgery	4d after surgery	7d after surgery
Research Group	57	37.9± 5.6*	23.1± 4.0*	32.4± 5.3*	2.12± 0.20*	2.15± 0.15*	2.13± 0.18*
Control Group	58	18.7± 4.4	12.6± 3.9	15.2± 4.7	1.44± 0.11	1.38± 0.09	1.41± 0.10

Note: *$P<0.05$ compared with the control group.

表 3 两组患者术后并发症发生情况对比[例(%)]

Table 3 Comparison of the incidence of postoperative complications between two groups[n(%)]

Groups	n	Temporary recurrent laryngeal nerve injury	Postoperative hoarseness	Hypocalcemia
Research Group	57	1.75%(1/57)*	3.51%(2/57)*	3.51%(2/57)*
Control Group	58	17.24%(10/58)	20.69%(12/58)	25.86%(15/58)

Note: *$P<0.05$ compared with the control group.

3 讨论

喉返神经损伤为甲状腺手术中较为严重的并发症之一,引发喉返神经损伤的主要原因有:(1)手术实施者并未完全掌握喉返神经的解剖学特点,术中器械、牵拉、钝性分离等操作均可引发喉返神经损伤[11];(2)术中出现出血时,常规采用结扎血管进行止血,由于喉返神经与甲状腺下极动脉血管伴行,结扎止血易引发喉返神经损伤[12]。近年来,随着广大医学研究者对喉返神经解剖学的关注与研究,常规显露喉返神经在甲状腺手术中应用越来越广泛[13-15]。本研究结果显示研究组患者的手术时间、术中出血量、术后引流量均显著短于(少于)对照组,表明甲状腺术中喉返神经显露可有效改善患者的围术期各指标。

甲状旁腺激素(PTH)是指由甲状旁腺主细胞分泌的碱性单链多肽类激素,检测方法包括化学发光免疫测定法、酶联免疫法和放射免疫法等,临床可通过测定其水平变化从而判断机体的甲状旁腺功能[16-18]。PTH 的分泌主要受血浆 Ca^{2+}浓度的调节,血浆 Ca^{2+}浓度升高,PTH 的分泌即受到抑制;血浆 Ca^{2+}浓度降低,则刺激 PTH 的分泌[19-21]。本研究结果显示研究组患者术后 1d、4d、7d 的 PTH、Ca^{2+}水平均显著高于对照组,表明甲状腺术中喉返神经显露可有效预防患者甲状旁腺功能的损伤。由于甲状腺在人体内的位置较为特殊,加之解剖区域的复杂性,喉返神经损伤这一并发症极易在甲状腺手术中出现,若损伤严重,其可导致患者出现声音嘶哑、声带麻痹。同时,甲状旁腺是成年人最大的内分泌腺,具有调节体内钙平衡的功能[22-24]。本研究结果显示研究组患者的暂时性喉返神经损伤、术后声音嘶哑、低钙血症发生率均显著低于对照组,表明,甲状腺术中喉返神经显露可有效预防暂时性喉返神经,降低术后并发症的发生率。

鉴于以上研究结果,本文总结了预防喉返神经损伤的几点建议:(1)临床医师应熟练掌握喉返神经的解剖学结构,可及时有效地在手术过程中进行分辨和操作,从而降低对喉返神经的损伤;(2)临床医师在实施操作的过程中,应掌握好手术的力度,不可应用大块钳夹结扎,避免因暴力牵拉甲状腺组织而损伤喉返神经[25-27]。同时,采用由外而内的方式查找喉返神经,避免因反向操作而出现的喉返神经缺血、坏死[28-31]。本研究结果还存在一定的不足之处,例如样本量选择较少、检测指标不全面等,后期应进一步选择大样本量的研究对象进行验证。

综上所述,甲状腺术中喉返神经显露可有效预防暂时性喉返神经和甲状腺功能的损伤,降低术后并发症的发生率,且患者的围术期指标均显著改善。

参 考 文 献(References)

[1] Joliat G R, Guarnero V, Demartines N, et al. Recurrent laryngeal nerve injury after thyroid and parathyroid surgery: Incidence and postoperative evolution assessment [J]. Medicine, 2017, 96(17): e6674

[2] Randolph G W, Kamani D. Intraoperative electrophysiologic monitoring of the recurrent laryngeal nerve during thyroid and parathyroid surgery: Experience with 1, 381 nerves at risk [J]. Laryngoscope, 2017, 127(1): 280

[3] Oshikiri T, Nakamura T, Miura Y, et al. Practical Surgical Techniques for Lymphadenectomy Along the Right Recurrent Laryngeal Nerve During Thoracoscopic Esophagectomy in the Prone Position [J]. Annals of Surgical Oncology, 2017, 24(8): 2302-2302

[4] Wojtczak B, Kaliszewski K, Sutkowski K, et al. A functional assessment of anatomical variants of the recurrent laryngeal nerve during thyroidectomies using neuromonitoring [J]. Endocrine, 2018, 59(1): 82-89

[5] Yuan J, Li J, Chen X, et al. Predictors of lymph nodes posterior to the right recurrent laryngeal nerve metastasis in patients with papillary thyroid carcinoma: A retrospective study [J]. Medicine, 2017, 96(35): e7908

[6] Polednak A P. Relationship of the recurrent laryngeal nerve to the inferior thyroid artery: A comparison of findings from two systematic reviews[J]. Clinical Anatomy, 2017, 30(3): 318-321

[7] Shan J, Jiang H, Ren D, et al. Anatomic Relationship Between Right Recurrent Laryngeal Nerve and Cervical Fascia and Its Application Significance in Anterior Cervical Spine Surgical Approach [J]. Spine, 2017, 42(8): E443

[8] Park A M, Bhatt N K, Paniello R C. Paclitaxel inhibits post-traumatic recurrent laryngeal nerve regeneration into the posterior cricoarytenoid muscle in a canine model[J]. Laryngoscope, 2017, 127 (3): 651

[9] Cho I, Jo M, Choi S, et al. Some posterior branches of extralaryngeal recurrent laryngeal nerves have motor fibers [J]. Laryngoscope, 2017, 127(11): 2678

[10] Li Z G, Zhang X B, Wen Y W, et al. Incidence and Predictors of Unsuspected Recurrent Laryngeal Nerve Lymph Node Metastases After Neoadjuvant Chemoradiotherapy in Patients with Esophageal Squamous Cell Carcinoma[J]. World Journal of Surgery, 2018, 42(8): 1-8

[11] Arteaga A M, Peloni G, Leuchter I, et al. Modification of the Surgical Strategy for the Dissection of the Recurrent Laryngeal Nerve Using Continuous Intraoperative Nerve Monitoring [J]. World Journal of Surgery, 2017, 42(Suppl 1): 1-7

[12] Udelsman R, Citino S B, Prasad M, et al. Parathyroid, Thyroid and Recurrent Laryngeal Nerve Anatomy in an Indian Rhinoceros (Rhinoceros unicornis) [J]. World Journal of Surgery, 2018, 42 (2): 514-520

[13] Shimizu H, Shiozaki A, Fujiwara H, et al. Short- and Long-term

Progress of Recurrent Laryngeal Nerve Paralysis After Subtotal Esophagectomy[J]. Anticancer Research, 2017, 37(4): 2019-2023

[14] Chitose S, Sato K, Fukahori M, et al. Recurrent laryngeal nerve regeneration using an oriented collagen scaffold containing Schwann cells[J]. Laryngoscope, 2017, 127(7): 1622

[15] Chen J Y, Shen Q. A New Technique for Identifying the Recurrent Laryngeal Nerve: Our Experience in 71 Patients [J]. Chinese Medical Journal, 2018, 131(7): 871

[16] Yuda M, Nishikawa K, Takahashi K, et al. A Strategy for Using Intraoperative Nerve Monitoring During Esophagectomy to Prevent Recurrent Laryngeal Nerve Palsy [J]. Anticancer Research, 2018, 38 (3): 1563-1567

[17] Empis d V O, Schmartz D, Brunaud L, et al. Recurrent Laryngeal Nerve Monitoring and Rocuronium: A Selective Sugammadex Reversal Protocol [J]. World Journal of Surgery, 2017, 41(10): 1-6

[18] Mattsson P, Frostell A, Björck G, et al. Recovery of Voice After Reconstruction of the Recurrent Laryngeal Nerve and Adjuvant Nimodipine[J]. World Journal of Surgery, 2018, 42(3): 632-638

[19] Rosko A J, Kupfer R A, Oh S S, et al. Immunohistologic analysis of spontaneous recurrent laryngeal nerve reinnervation in a rat model[J]. Laryngoscope, 2017, 128(3): E117-E122

[20] Liddy W, Barber S R, Cinquepalmi M, et al. The electrophysiology of thyroid surgery: electrophysiologic and muscular responses with stimulation of the vagus nerve, recurrent laryngeal nerve, and external branch of the superior laryngeal nerve [J]. Laryngoscope, 2017, 127 (3): 764-771

[21] Madani A, Gornitsky J, Watanabe Y, et al. Measuring Decision-Making During Thyroidectomy: Validity Evidence for a Web-Based Assessment Tool[J]. World Journal of Surgery, 2017, 42(86-94): 1-8

[22] Borel F, Christou N, Marret O, et al. Long-term voice quality outcomes after total thyroidectomy: a prospective multicenter study [J]. Surgery, 2018, 163(4): 796

[23] Angelos P. Commentary on "A Proposed Road Map for the Ethical Evaluation of Sham (Placebo) Surgery"[J]. Annals of Surgery, 2017, 265(4): 662

[24] Mau T, Pan H M, Childs L F. The natural history of recoverable vocal fold paralysis: Implications for kinetics of reinnervation [J]. Laryngoscope, 2017, 127(11): 2585

[25] Sitges-Serra A, Gallego-Otaegui L, Suárez S, et al. Inadvertent parathyroidectomy during total thyroidectomy and central neck dissection for papillary thyroid carcinoma [J]. Surgery, 2017, 161(3): 712-719

[26] Kluijfhout W P, Pasternak J D, Drake F T, et al. Application of the new American Thyroid Association guidelines leads to a substantial rate of completion total thyroidectomy to enable adjuvant radioactive iodine[J]. Surgery, 2017, 161(1): 127

[27] Caulley L, Johnson-Obaseki S, Luo L, et al. Risk factors for postoperative complications in total thyroidectomy: A retrospective, risk-adjusted analysis from the National Surgical Quality Improvement Program[J]. Medicine, 2017, 96(5): e5752

[28] Yu H W, Chai Y J, Kwon H, et al. Bilateral Axillo-Breast Approach Robotic Thyroidectomy (BABA RT) Does Not Interfere with Breast Image Follow-Up [J]. World Journal of Surgery, 2017, 41 (8): 2020-2025

[29] Jung M S, Visovatti M. Post-treatment cognitive dysfunction in women treated with thyroidectomy for papillary thyroid carcinoma[J]. Supportive Care in Cancer, 2017, 25(3): 915-923

[30] Liu Z, Sun M, Xiao Y, et al. Predictors of metastasis to lymph nodes posterior to the right recurrent laryngeal nerve in differentiated thyroid carcinoma: A prospective study [J]. Asian Journal of Surgery, 2017, 40(4): 270-277

[31] Wu C W, Hao M, Tian M, et al. Recurrent laryngeal nerve injury with incomplete loss of electromyography signal during monitored thyroidectomy-evaluation and outcome [J]. Langenbecks Archives of Surgery, 2017, 402(4): 1-9