

Analysis of the Istanbul Forensic Medicine Institute expert decisions on recurrent laryngeal nerve injuries due to thyroidectomy between 2008-2012

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ABSTRACT

Objective: The aim of this study was to evaluate the approach of Forensic Medicine Institution for recurrent laryngeal nerve injuries. In addition, parameters that were taken into consideration by Forensic Medicine Institution in the differentiation of complication and malpractice were evaluated.

Material and Methods: The files of 38 patients, with recurrent laryngeal nerve injury following thyroidectomy, that were referred to Istanbul Forensic Medicine Institute with request of expert opinion between 2008-2012 were retrospectively investigated. Data regarding expert decisions, age, gender, diagnosis, hospital type, preoperative vocal cord examination, intraoperative nerve monitoring (IONM), identification of nerve injury during operation, repair of nerve during operation, and type of injury were assessed.

Results: Surgeons were found to be faulty in all files with bilateral nerve injury, however, one-sided injury files were considered as a medical complication. Twenty-one (55.2%) patients were female, and 17 (44.8%) were male, with a mean age of 35,8 in women, and 34,1 in men. None of these patients had undergone preoperative vocal cord assessment. The recurrent laryngeal nerve was intraoperatively identified in 21 (55.2%) patients, while it was not seen in 17 (44.8%) patients. IONM was not applied in any patients. There was no attempt for nerve repair during any operation. Nineteen patients had unilateral, and 19 patients had bilateral nerve damage.

Conclusion: Bilateral recurrent laryngeal nerve injuries are considered as malpractice, when imaging or pathology reports fail to state a cause for difficulty in nerve identification.

Keywords: Recurrent laryngeal nerve, thyroidectomy, complications, forensic medicine

INTRODUCTION

The rate of recurrent laryngeal nerve injury during thyroidectomy is reported as 0.3-3.6% (1-3). Although some protective methods have been defined, how to completely avoid this type of injury has not yet been described. Malpractice is defined as a failure in standard practice during the patient's diagnosis and treatment, the lack of information and skills to provide adequate treatment, which causes predictable and preventable detrimental consequences (4). On the other hand, complication is an undesirable, unforeseeable and unavoidable result not related to lack of knowledge and skills during medical interventions. However, when differentiating between complication and malpractice, it is necessary to pay attention to details as well as parameters such as the nature of complications, their frequency, early identification of the negative consequence, and the ability to avoid the situation (4). Inadequacies in these parameters can also lead a complication to be considered as malpractice. Although there is one published study from the Institute for Forensic Medicine in our country on malpractice during thyroidectomy or the management of its complications (5), a specific study on the approach to recurrent laryngeal nerve injury is not available. In our study, we aimed to evaluate the approach of the Institute of Forensic Medicine 3rd Specialty Board to patients with recurrent laryngeal nerve injury, and parameters taken into consideration in differentiating complication and malpractice.

MATERIAL AND METHODS

Thirty-eight files that were referred to the Institute of Forensic Medicine 3rd Specialty Board between 2008-2012 to be considered for recurrent laryngeal nerve injuries that occurred during thyroidectomy were retrospectively analyzed. The decision of the Forensic Medicine Institute, the patient's age, gender, diagnosis, type of hospital, pre-operative vocal cord evaluation, visualization of the nerve during the operation, application of intraoperative nerve monitoring (IONM), noticing the injury during surgery, status on repair during surgery, and nerve injury type were investigated.

While maintaining all the powers and responsibilities within the institution, patient consents together with approval of the Istanbul Forensic Medicine Institution and the ethics committee were obtained. On behalf of protecting rights of institutions and individuals, information on patients and physicians, hospital names, or any information that could identify patients and physicians were not disclosed. Such information is protected within corporate structure.

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Statistical Analysis

Rates and distribution in this case series were shown as percentage and frequency.

RESULTS

In all 19 files with bilateral nerve injury, the expert committee found surgeons to be at fault while in 19 files with unilateral injury, the injuries were considered as complications and it was reported that physicians were not at fault. The committee of experts consisted of forensic medicine expert, general surgeon, orthopedic surgeon, neurologist, internal medicine specialist, pediatrician, pulmonologist and infectious diseases expert. Twenty-one patients (55.2%) were female and 17 (44.8%) were male, with a mean age of 35.8 for women, and 34.1 for men. Preoperative diagnoses were multinodular goiter (MNG) in 19 (50%) patients, Graves' disease in 4 (10.5%), diffuse goiter in 4 (10.5%), suspicion of malignancy in 5 (13.1%), nodular goiter in 3 (7.8%), toxic MNG in 1 (2.6%), and thyroid cancer in 1 (2.6%). Postoperative pathologic diagnoses revealed diffuse goiter in 7 (18.4%) patients, diffuse lymphocytic thyroiditis in 4 (10.5%), follicular adenoma in 2 (5.2%), MNG in 24 (63.1%), and papillary thyroid cancer in 1 (2.6%). Twenty-one (55.2%) patients underwent bilateral total, 15 (38.4%) bilateral subtotal, 1 (2.6%) lobectomy (2.6%), and 1 (2.6%) left subtotal + right total thyroidectomy. Thirteen operations (34.2%) were performed in public hospitals, 7 (18.4%) in teaching and research hospitals, 8 (21%) in private hospitals, 9 (23.6%) in university hospitals, and one (2.6%) in a foundation hospital. None of the patients had undergone preoperative examination of their vocal cords. The nerve was reported to be visualized during operation in 21 (55.2%) patients and not to be detected in 17 (44.8%). IONM was not used in any cases. None of the injuries was reported to be identified during surgery in any of the files. There were no immediate repairs. The recurrent laryngeal nerve injury was unilateral in 19 patients while it was bilateral in 19 patients. Within 19 patients with bilateral injuries (50%), 13 (68.4%) underwent bilateral total, 5 (26.3%) bilateral subtotal, and 1 (5.2%) right total+ left subtotal thyroidectomy. In the 19 patients with unilateral injuries, 8 (42.1%) underwent bilateral total, 10 (52.6%) bilateral subtotal, and one (5.2%) lobectomy. 10 of the 19 patients with bilateral injuries (52.6%) had tracheostomy. Five (26.3%) laser cordotomy and 4 (21%) arytenoid fixation were performed as repair procedures (Table 1).

DISCUSSION

The Istanbul Forensic Medicine 3rd Specialty Board investigates the appropriateness of the surgical indication, thyroidectomy type, the surgical technique and postoperative follow-up according to medical guidelines in assessing recurrent laryngeal nerve injury during thyroidectomy. In unilateral nerve injury, if the operation indication, thyroidectomy and post-operative follow-up are proper, the board assesses the injury as complication regardless of the surgical technique. However, if the injury is bilateral then the surgical technique is also evaluated along with the operation indication and postoperative follow-up. Bilateral injuries were considered as complications if preoperative imaging or preoperative and postoperative pathology reports indicated situations such as severe growth, adhesion, fibrous tissue, and tumor invasion that make it difficult to dissect and visualize the nerve. On the contrary, if the reports did not include such findings then the injuries were all considered as malpractice.

In the study on 222 patients with thyroidectomy complications, Schulte et al. (6) reported that recurrent laryngeal nerve injury constituted 50% of all cases. Sixteen percent of the 222 cases were considered as malpractice for reasons such as requirement for a second operation, an improper indication and insufficiency during postoperative follow-up. In our study, none of the 38 cases had misconduct in surgical indication, thyroidectomy type or postoperative follow-up. In 19 patients with bilateral nerve injury, any situation that may prevent or complicate nerve dissection was not stated in pre-operative imaging reports, operation notes, or pathology reports. Therefore, all bilateral nerve injuries have been considered as malpractice. The unilateral nerve injuries were considered to be complications since there was no failure in surgical indication and postoperative follow-up.

Many risk factors for recurrent laryngeal nerve injury have been described in the literature. Re-operation due to recurrence, Graves' disease, total thyroidectomy, operating for malignancy, and substernal goiter were considered as risk factors (7-11). In the study where the approach of the Institute of Forensic Medicine to thyroidectomy complications was examined, Erkol et al. (5) stated that two of five files with bilateral recurrent nerve injury were considered as malpractice. The reason for malpractice was indicated as having bilateral injury despite not having any risk factors for nerve injury. Within these risk factors, Graves' disease, malignancy and total thyroidectomy were present in our patients. However, the decisions were not only based on to the presence of these risk factors listed but

Table 1. Comparison of patients with bilateral and unilateral nerve injury

Recurrent nerve injury	Nerve Thyroidectomy	visualization	IONM	Tracheostomy	Laser cordotomy	Arythenoid fixation	Complication	Malpractice
Bilateral	Total=13 Subtotal=5 Total+Subtotal=1	10	None	10	5	4	0	19
Unilateral	Total=8 Subtotal=10 Lobectomy=1	11	None	0	0	0	19	0
Total	38	21 (55.2)	0	10 (26.3%)	5 (13.1%)	4 (10.5%)	19 (50%)	19 (50%)

IONM: Intraoperative nerve monitorization

if these pathologies complicated nerve dissection or not. For this purpose, the imaging and pathology reports were analyzed. This difference may be due to changes in the perspective of forensic medicine over the years.

Methods such as nerve dissection during the operation and using IONM have been tried in order to reduce the incidence of nerve injury. Nerve dissection is a fundamental step in reducing injury (7, 10). In our study, visualization of the nerve had been reported in 21 (55.2%) cases. Lack of this basic step to reduce nerve injury in 44.8% of the patients is a significant deficiency. The nerve injury in cases where the nerve was visualized may be due to retraction, crushing, ischemia or cauterization related burns as well as to a misinterpretation of the nerve or missing the injury due to not dissecting the nerve through its entire tract. The Institute of Forensic Medicine 3rd Specialty Board expresses its opinion without taking into consideration the operative report stating that the nerve has been visualized with nerve dissection. The reason for this stems from the idea that the physician may specify an incorrect statement in the operation note to protect him/herself.

Although there are studies suggesting that intraoperative nerve monitoring decreased injury rates, many studies comparing IONM and nerve dissection did not reveal any superiority of the methods over each other (11-14). In 2007, Dralle et al. (15) stated that not using IONM was considered as malpractice in several lawsuits. In our study, the Institute of Forensic Medicine 3rd Specialty Board did not take using IONM into consideration in any of the cases. The reason for this was that IONM is not accepted as a standard of care technique in our country.

Wang et al. (16) reported that the preoperative rate of vocal cord paralysis in thyroid diseases was 5.52%. Therefore, routine preoperative vocal cord examination was recommended. None of the patients in our study underwent preoperative vocal cord evaluation. Therefore, the Institute of Forensic Medicine 3rd Specialty Board accepted that all patients had normal vocal cords in the preoperative period, and the files were evaluated accordingly. Thus, it may be thought that some of these cases were inadvertently considered as operation related complication or malpractice.

While the final decision in judicial proceedings on medical matters depends on the judge's discretion, due to insufficiency in an average judge's knowledge level in such cases, expert reports have a significant impact on decision. In our study, a precise data on this matter could not be provided since the legal court decisions on cases that were consulted to the Institute of Forensic Medicine 3rd Specialty Board cannot be obtained. However, it can be predicted from the information that the doctors very likely faced criminal penalty.

CONCLUSION

In the absence of a situation that could obscure visualization of the nerve stated in imaging and pathology reports, the Institute of Forensic Medicine 3rd Specialty Board considers bilateral recurrent laryngeal nerve injuries as malpractice. In such cases, continuing the operation on the other side only after assuring that the nerve has not been damaged on one side by careful dissection may prevent surgeons from legal problems.

Ethics Committee Approval: Ethics committee approval was received for this study from the ethics committee of Istanbul Forensic Medicine Institution.

Informed Consent: Written informed consent was obtained from patients who participated in this study.

Peer-review: Externally peer-reviewed.

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