

The Choice of Surgical Tactics in The Treatment Of Recurrent Goiter Diving for The Trachea

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Abstract: According to the review article, there have been 52 occurrences of complications observed in the postoperative period following 478 strumectomies conducted over the last decade. These complications primarily involve the trachea and stem from the complex surgical procedure of modifying the thyroid in the presence of nodules or cysts. It is important to note that these complications often exhibit a recurring nature. Significant focus is given to delineating the procedure's technique, concurrently emphasizing the significance of considering the relevant anatomical characteristics of the neck when mobilizing the thyroid gland. It is crucial to recognize the importance of attending to essential aspects during the separation of each layer. Measures taken to avoid injuries to neighboring organs due to complications that may occur during surgery are described in detail.

Detailed explanations are provided to patients regarding the procedures and recommendations to be followed during the postoperative period. The report encompasses essential information including conclusions and key recommendations pertaining to thyroid gland, recurrent laryngeal nerve, and thyroid surgery.

Keywords: Recurrent Goiter, Thyroid Gland, Strumektomy.

Introduction. In the realm of medical science, the management of recurrent tracheal goiter presents a formidable challenge for both clinicians and patients alike. The significance of adopting appropriate surgical tactics to address this condition cannot be overstated. This article delves into the intricacies of recurrent tracheal goiter and highlights the relevance of surgical strategies in ensuring successful patient outcomes.

Recurrent tracheal goiter, a condition characterized by the reemergence of enlarged thyroid tissue in the trachea, poses a multitude of challenges. This ailment can lead to respiratory distress, stridor, dysphagia, and even life-threatening obstruction of the airway. Treating recurrent tracheal goiter demands a comprehensive approach that addresses not only the present symptoms but also the potential for future recurrences.

Utilizing appropriate surgical tactics is paramount to overcoming the challenges posed by recurrent tracheal goiter. By removing the goiter's tissue from the trachea, surgeons can alleviate symptoms and prevent potential complications. Furthermore, surgical intervention allows for histopathological examination of the resected tissue, enabling accurate diagnosis and guiding future treatment decisions.

When determining the most suitable surgical approach, several factors must be taken into account. These include the size and location of the goiter, the presence of associated conditions, and the surgeon's expertise. The choice of tactic may range from minimally invasive techniques, such as endoscopic resection, to more extensive procedures, such as open surgery or tracheal resection.

Minimally invasive surgical techniques offer numerous advantages to patients with recurrent tracheal goiter. These procedures, such as endoscopic resection, ensure smaller incisions, reduced pain, shorter hospital stays, and faster recovery times. Additionally, they minimize the risk of complications associated with open surgery, such as wound infections and postoperative scarring.

Advanced imaging techniques, such as computed tomography (CT) scans and magnetic resonance imaging (MRI), play a pivotal role in preoperative planning for recurrent tracheal goiter. These imaging modalities allow surgeons to accurately visualize the extent and location of the goiter, facilitating precise surgical mapping and reducing the risk of intraoperative complications.

The management of recurrent tracheal goiter necessitates a collaborative approach between various medical specialties. Surgeons, endocrinologists, radiologists, and anesthesiologists must work together to develop a comprehensive treatment plan tailored to each patient's unique needs. This interdisciplinary collaboration ensures optimal patient outcomes by combining the expertise of multiple disciplines.

In conclusion, the significance of adopting appropriate surgical tactics in the management of recurrent tracheal goiter cannot be understated. By exploring effective strategies, such as minimally invasive techniques and advanced imaging, clinicians can navigate the complexities of this condition and provide patients with optimal care. Through multidisciplinary collaboration and a patient-centered approach, the journey towards overcoming recurrent tracheal goiter becomes more manageable, empowering patients to regain their quality of life.

Recurrent multinodular goiter is one of the most common endocrine disorders of the thyroid gland. It is characterized by the reemergence of an enlarged thyroid volume following a previous surgical removal. Managing recurrent multinodular goiter poses a challenging task for surgeons as it requires a comprehensive approach and surgical expertise.

The purpose of this work is to study and analyze various surgical tactics for recurrent three-lobed tracheal goiter, their effectiveness and advantages, as well as to determine the optimal approach to the treatment of this disease.

Methods and materials: The work used data from literature sources, as well as an analysis of clinical cases conducted in our clinic. Surgical methods such as repeat total thyroidectomy, two-stage total thyroidectomy, laparoscopic thyroidectomy, and robotic thyroidectomy were analyzed.

Research results. The emergence of complications is an inherent part of surgical intervention in thyroid gland enlargement. One of the problems associated with recurrence is the invasion behind the trachea. Surgical treatment is considered the primary method for managing recurrent goiter, partly due to the recurrence infiltrating behind the trachea [2, 5, 9]. The potential risks of respiratory disorders resulting from compression, displacement behind the trachea, and tracheal displacement pose a threat of asphyxia, thus making surgical intervention crucial for preserving life [1, 3, 6].

As a general rule, the removal of the 52 section from the broad Kocher incision is typically feasible. The intracapsular removal can be performed easily and safely. Subsequently, after suturing and lifting from the lower pole, the nodules can be identified and extracted [4, 7, 11, 13]. However, caution must be exercised to avoid damaging blood vessels, recurrent nerves, and causing traumatic injury to the trachea, which may result in various complications.

Over the past 10 years, from 2014 to 2024, a total of 478 patients with various forms of goiter were admitted and operated on in the surgical department of Andijan Regional Multiprofile Medical Center. Among them, 52 patients had recurrent goiter and had previously undergone surgeries in different healthcare facilities. The clinical presentation in all cases resembled bronchoobstructive syndrome. The frequency of such cases accounted for 10.1% of the total number of patients operated on for various benign thyroid diseases. Out of the total, there were 11 males (21.1%) and 41 females (78.9%), ranging in age from 18 to 72 years. Reproductive and working-age women comprised 70.2% of the observed patients. Among the 52 patients, 9 (17.3%) exhibited manifestations of thyrotoxicosis, while 43 (82.7%) had a euthyroid state. All patients underwent long-term follow-up examinations and treatments by various specialists during the postoperative period, lasting from 1 to 10 years.

One of the most challenging and contentious aspects of surgical treatment for 52 patients with recurrent intrathoracic goiter is the choice of surgical approach and its dissection, which is determined by the depth of goiter location.

All 52 patients with recurrent intrathoracic goiter underwent surgery through a cervical incision under general anesthesia. Benign thyroid diseases were detected in 45 (86.6%) patients, while thyroid cancer was present in

7 (13.4%) patients. Recurrent nodular and multinodular euthyroid colloid goiter were identified in (4.1%) patients, and toxic nodular goiter was found in (1.7%) patients.

A subtotal resection of one lobe with excision of the isthmus was performed on 41 patients with recurrent nodular and multinodular goiter, while a subtotal resection of both lobes with excision of the isthmus was performed on 11 patients. In all cases of clinical thyrotoxicosis, a histological examination of the specimen was conducted during the operation to assess the functional activity of the thyroid parenchyma. The degree of lymphoid infiltration and the condition of the extrathyroidal epithelium were taken into account. The evaluation of the amount of remaining thyroid tissue was strictly individual for each patient. Among the patients, 7 had a mild and 3 had a moderate degree of thyroid gland functional activity. After isolating the portion of the thyroid gland that dips behind the trachea, the operation proceeded according to the chosen thyroid resection method. For a subtotal resection of one lobe, approximately 2.0 x 2.5 cm of thyroid tissue was left intact.

After subtotal resection of both lobes of the thyroid gland with isthmusectomy for prophylactic hypothyroidism, patients were prescribed 1 tablet of merkazole three times a day for a month. Patients who underwent subtotal resection of one lobe with isthmusectomy did not require replacement therapy. The diagnosis was made during the surgery when the appearance of the thyroid lobe with a solid nodule raised suspicion about its morphological structure. Urgent histological examination was conducted to assess the degree of autoimmune component expression (lymphocytes, lymphoid infiltration of the tissue in the background of follicular epithelial cells). In all cases, the findings of the urgent histological examination matched the results of the postoperative histological examination.

Taking into account the complexities and adhesive processes involved, all patients underwent general endotracheal anesthesia, with a collar-shaped incision (according to Kocher) made on the anterior surface of the neck, along the lower skin fold. We believe that the level and dimensions of the incision can vary widely depending on the shape of the neck, its thickness, the size of the thyroid gland, and the depth at which it is embedded. Typically, the incision was made 1.5-2.0 cm above the jugular notch.

After the incision of the skin, subcutaneous tissue, and muscles, hemostasis was performed. Next, novocain was injected into the sternoclavicular and costal muscles on both sides, as well as into the space between the second neck fascia and the sternocleidomastoid muscle (10 ml). Subsequently, the upper flap was detached. The size of the detachment of the cutaneous-subcutaneous flap upwards depends on the size and level of the thyroid gland. The lower flap, usually, was not detached, as it leaves a non-drainable cavity after the operation. The intersection of the sternohyoid and sternothyroid muscles is not performed in cases of recurrent goiter. Surgical access during operations on the thyroid gland, when dealing with a recurrent goiter that extends behind the trachea to a low degree with a single nodule (adenoma) or cysts, where a wide access to all areas behind the trachea is not necessary. When dealing with large dimensions of the recurrent intrathoracic goiter deeply situated within one lobe with the presence of one or multiple nodules, we proceed by accessing between the clavicular-sternal-mammary and the sternothyroid muscles. By separating the muscles using both sharp and blunt techniques, we move them aside with Farabeuf hooks, after prior mobilization along the entire longitudinal line and splitting of the fascia. In cases where one or multiple nodules are present that are connected to the unaffected lobe of the thyroid gland by a pedicle, the access is performed between the anterior edge of the sternoclavicular-sternomammary complex and the outer margins of the sternothyroid muscle.

Upon incising the fascia along the midline, a solution of novocaine (10-20 ml) is injected between the layers of the fourth fascia. In this case, the novocaine solution envelops the entire thyroid gland, eliminating the need for its subfacial administration. We inspect and palpate the entire accessible part to choose a plan for further action.

In the case of bilateral position, we initiate the dissection by starting from the right lobe, as it is more convenient for the operating surgeon's manipulations. After crossing the lateral veins, the lobe becomes mobile, and subsequently, it is advanced medially, enabling the differentiation of the recurrent laryngeal nerve and the thyroid arteries.

The primary step in the operation for recurrent plunging goiter involves the intersection of the isthmus of the thyroid gland. This step is particularly crucial as it ensures a wide release of the anterior surface of the trachea and allows for the liberation of the portion of the thyroid gland after the compression, intersection, and ligation of vessels in the upper and lower poles of the gland. To achieve this, we intersect the midline thyrohyoid

membrane formed between the parietal layer of the neck fascia and the cricoid cartilage. Later, elevate the isthmus and using a curved clamp, penetrate into the space between the trachea and the posterior surface of the isthmus. Divide the isthmus, starting from the upper pole and subfascially dissecting the lobe, while placing a clamp on the proximal end of the upper pole vessels and distal portion. The clamps should be applied externally, with the clamp ends reaching the lateral wall of the trachea, then crossing the pole between them. In the next step, introduce 10-15 ml of novocaine solution and mobilize the lower pole as close as possible to the parenchyma of the gland, preserving the vessels to prevent the removal or devascularization of the parathyroid glands, which are well known to be in close proximity to the vessels of the lower pole. This allows for the complete exposure of the lobe into the wound and facilitates further manipulation.

Next, a visual and palpation assessment of the parenchyma of the lobe and its deep portion is performed. During this process, we determine the localization, size, and consistency of the nodule, the clarity of its borders, the involvement of the capsule in the process, and the depth of the thyroid gland. In the presence of cysts, it is necessary to have an understanding of their contents, the condition of their walls, and the presence of any growths on them. Visually altered areas of the gland are removed until healthy tissue is reached. The extent of the operation varies depending on each specific case. In cases of altered thyroid gland, a subtotal subfascial resection of the lobe with removal of the deep portion is performed. If the lobes are not altered, they are dissected from the posterior pole along with the stalk. After ligating the thyroid artery, the posterior surface of the gland is dissected and a clamp is passed under the guidance of fingers. Next, we carefully dissect the glandular tissue in a circular fashion, separating it from the trachea and the anterior border of the sternocleidomastoid muscle. As we secure it onto a clamp, we preliminarily detach the lower pole from the trachea. Subsequently, we divide the lower pole and the plunging part of the gland using clamps, proceed with cross-sectioning, and ligate accordingly. This technique effectively prevents bleeding during the gland's excision and removal.

We create a cult in the lateral lobes of the thyroid gland, which can be the most hazardous in terms of potential removal or damage to the parathyroid glands, as well as injury to the recurrent nerve. The blood supply to the cult is provided by the vessels on the tracheal wall. The optimal amount of remaining tissue for the inferior parathyroid gland is 2.0 x 2.5 cm. We do not close the cult. Subsequently, we proceed with drainage using a rubber strip, with the drain exiting through the lower part of the surgical wound, just above the jugular incision. Next, the fasciae of the prethyroid muscles and the superficial neck muscles are sutured together using cross-relatively thin knot stitches. Stitches are then applied to the subcutaneous tissue and skin.

Discussion: Analysis of the results showed that repeated total thyroidectomy is the most effective method for recurrent three-lobed tracheal goiter. This method allows you to completely remove the re-enlarged thyroid gland and prevent new relapses. However, it comes with certain risks, such as recurrent nerve and parathyroid gland damage. Other techniques, such as two-stage total thyroidectomy, laparoscopic thyroidectomy, and robotic thyroidectomy, also have their advantages and disadvantages and may be considered in certain cases. The surgical approach to recurrent retrosternal goiter represents a crucial aspect of treating this condition. Recurrent retrosternal goiter is characterized by the reoccurrence of a tumor-like nodule in the thyroid gland region, which can lead to respiratory problems and exert pressure on adjacent organs. Consequently, selecting the appropriate surgical strategy is a pivotal factor in achieving favorable outcomes in managing this ailment. Before performing the surgery, it is necessary to conduct a thorough examination of the patient, including ultrasound examination, computer tomography, and biopsy of the tumor node. This will allow determining the size, structure, and nature of the tumor.

Based on the obtained data and the patient's overall condition, the surgeon may choose one of several types of operations. The most common methods include total thyroidectomy, hemithyroidectomy, and thyroid gland resection. It is important to consider the individual characteristics of each patient and select the most optimal surgical approach.

After the surgery, it is essential to provide meticulous postoperative care for the patient. This includes administering medications to suppress thyroid gland function and regular monitoring to control for possible recurrence.

Thus, the surgical strategy for recurrent multinodular goiter is a complex and responsible process that calls for a personalized approach to each patient. By selecting the appropriate surgical technique and ensuring high-

quality postoperative care, complete recovery can be achieved and the occurrence of this condition can be prevented in the future.

Conclusion:

The analysis conducted on the treatment of 52 patients with recurrent submersible retrosternal goiter demonstrated that submersible goiter is a method of isolating and resecting the thyroid gland, allowing for optimal treatment strategies to be planned.

By utilizing submersible goiter, it becomes possible to predict the extent of intervention and reduce the trauma associated with the surgical procedure, thus minimizing postoperative complications.

To treat postoperative complications, one can consider utilizing dissolving therapy such as electrotherapy with 1% iodine followed by hydrocortisone, as well as injecting 2 ml of vitreous body.

Thus, surgical tactics for recurrent three-lobed tracheal goiter should be individually selected in each case, taking into account the clinical picture, size and characteristics of the tumor, as well as the experience and qualifications of the surgeon. Repeat total thyroidectomy is the most effective method, however, potential complications must be considered. Other methods may also be used depending on the specific situation. Further research and clinical observations are necessary to further improve surgical tactics for recurrent three-lobed tracheal goiter.

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