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CLINICAL ARTICLE

COMPARATIVE STUDY OF VARIOUS TECHNIQUES TONSILLECTOMY

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Abstract

Objective: The purpose of the study was to compare intraoperative factors and postoperative outcomes between the image-guided acute dissection technique and the endoscopic image-guided acute dissection technique.

Material and methods: The study was conducted in 153 patients (81 men and 72 women, average age 26.4 years) who underwent tonsillectomy (2018-2023). Patients were randomly assigned 2 group 52% percent of patients(group1) underwent tonsillectomy with acute dissection technique under visual control, and 48% of patients (group 2) underwent tonsillectomy with acute dissection technique under endoscopic visualization using a 4.0 mm 0° endoscope (Karl Storz, Tuttlingen, Germany).

Indications for tonsillectomy were hypertrophy of the tonsils in 82 patients, recurrent tonsillitis in 23 patients and focal infection of the tonsils in 48 patients. Tonsillectomy was performed under general anesthesia using an oral speculum specifically designed for tonsillectomy. All patients were assessed and compared for postoperative pain, bleeding, recurrence, or tonsil tissue growth in the immediate and late postoperative period. The removed adenoid is sent for histology. Clinical diagnosis: Chronic decompensated tonsillitis. Pathohistological diagnosis: Within the limits of the examined material, the histological picture corresponds to chronic tonsillitis, hypertrophy of nasopharyngeal adenoid tissue.

Results: There were no serious intra- or postoperative complications. Bleeding points were identified in 47 patients (31 patients group1 and 16 patients group 2). The source of bleeding was observed in the central deep part of the adenoids - in 18 patients, in the lateral parts of the adenoids - in 16 patients, adenoids on both sides in 13. Remnants of adenoid tissue were found in 23 patients, (17 patients group 1 and 6 patients group 2). Remnants of adenoid tissue were removed using bipolar diathermy under image guidance. The operation time for endoscopic tonsillectomy is shorter than for traditional procedures.

Conclusions: The visibility provided Tonsillectomy by endoscopic techniques improves the ease and precision of surgery. Clinical significance determines the need for further testing of already proposed means and methods.

Keywords: *tonsillitis; Technique tonsillectomy; Endoscope-assisted tonsillotomy.*

Introduction

Chronic tonsillitis (CT) continues to be one of the most common diseases in otorhinolaryngology both among the adult age group and among children, where every second child suffers from this disease.[1] Chronic tonsillitis (CT) is a condition in which a person suffers from seven or more attacks of tonsillitis per year.[2]

The main symptoms are inflammation and swelling of the tonsils, sometimes so serious that they can cause airway obstruction. These symptoms are usually accompanied by pain in the throat, redness or yellow plaque on the tonsils. Hoarseness of the voice, headache, loss of appetite, pain in the ears, fever, chills and bad breath may be observed. Symptoms may also include nausea, vomiting and abdominal pain in children. Tonsillitis is caused by streptococci or viral agents (adenoviruses, influenza viruses, Epstein-Barr viruses, parainfluenza and enteroviruses).[3]

Tonsillar surgery, its indications and methods continue to develop. Over the past 10 years, a large number of articles on tonsillar surgery published in the literature is evidence of the ongoing growth, development and controversy associated with this procedure. The standard of treatment is bilateral tonsillectomy. Tonsillectomy is a “surgical procedure performed with or without adenoidectomy that completely removes the tonsil, including its capsule, by dissecting the peritonsillar space between the tonsil capsule and the muscular wall.[4]

Tonsillectomy is a surgical procedure known in Hindu medicine 3000 years ago, and its essence is the removal of the palatine tonsils.[5,6] Over the past 40 years, this surgical procedure has undergone conceptual changes in indications and surgical techniques.[7] Tonsil surgery, its indications and methods continue to evolve. Currently, modern medical equipment makes it possible to achieve a clinical effect with minimal surgical trauma to the peritonsillar tissue, which undoubtedly has a positive effect on the patient’s quality of life in the early postoperative period - this is especially true for pediatric patients.[8]

Numerous articles on tonsillar surgery published in the literature over the past 20 years testify to the continued growth, development, and controversy surrounding this procedure.[9] Studies on tonsillectomy are still popular. It is still unclear whether there is an optimal method of tonsillectomy, whether perioperative steroids are useful, and whether outpatient tonsillectomy is safe.[10] The intervention is carried out in case of chronic tonsillitis. Tonsillectomy can be performed by cold and hot methods.[11]

Cold techniques tonsillectomy (without the use of heat) include dissection, guillotine, partial tonsillectomy with microdebrider, harmonic scalpel, plasma ablation, and cryosurgery.[11-13] Hot methods include, electrocoagulation, ultrasound tissue removal, radiofrequency ablation, tissue removal with carbon laser, transoral robotic radical tonsillectomy.[14-17] Surgeons find these new tools attractive because they allow tissue to be removed with greater precision and less damage to surrounding tissue, and in many cases they can do it more quickly and easily than was possible with older techniques. If indicated, endoscopic adenoidectomy can be performed under endoscopic guidance with necessary hemostasis, as opposed to blind curettage of adenoid tissue (endoscopic adenotonsillectomy.[18,19]

The technological innovation adenoidectomy of any surgical intervention should be aimed at ensuring a bloodless surgical field, shortening the operative time, reducing post-operative pain, improving the speed of recovery, accessibility and safety.

Traditional adenoidectomy (TA) is a relatively blind procedure, which results in the possibility of leaving some adenoid tissue and does not allow bleeding points to be monitored or adequately controlled with selective cautery. Technologies are being actively implemented to reduce tissue damage, recovery time, and patient discomfort.[20] Endoscopically guided adenoidectomy allows for a thorough examination of the surgical site, control of bleeding, provides a safer, more manageable and functional procedure, and may improve the assessment of the nasopharyngeal region with careful resection.[21-24] Various complications may occur. The most common complication of tonsillectomy is bleeding during or after the operation. Despite the most sophisticated efforts of the surgeon to prevent it, bleeding remains the most significant complication after tonsillectomy.[25,26]

Described operative complications, which include trauma to the teeth, larynx, pharyngeal wall/soft palate, difficult intubation, laryngospasm, swelling of the larynx, aspiration, respiratory failure, inflammation of the endotrachea, and cardiac arrest.

Postoperative complications include nausea, vomiting, pain, dehydration, reflex otalgia, pulmonary edema, palato-pharyngeal insufficiency and nasopharyngeal stenosis. Rare late complications may include vascular damage, subcutaneous emphysema, jugular vein thrombosis, atlanto-axial dislocation/subluxation, taste disturbances, and persistent pain in the neck (Eagleton's syndrome or silopodyyyzhny syndrome).[27,28]

Transoral endoscopic examination of the nasopharynx at the end of adenoidectomy is a useful method, as it allows the surgeon to detect any remnants of adenoid tissue and any bleeding points that can be removed endoscopically under visual control. One of the methods for preventing complications of visualization of adenectomy using endoscopic control. The above justifies the relevance of this study.

The purpose of the study was to compare intraoperative factors and postoperative outcomes between the image-guided acute dissection technique and the endoscopic image-guided acute dissection technique.

Material and methods

The study was conducted in 153 patients (81 men and 72 women, average age 26.4 years) who underwent tonsillectomy (2018-2023). Patients were randomly assigned 2 group 52% percent of patients (group1) underwent tonsillectomy with acute dissection technique under visual control, and 48% of patients (group 2) underwent tonsillectomy with acute dissection technique under endoscopic visualization using a 4.0 mm 0° endoscope (Karl Storz, Tuttlingen, Germany). Indications for tonsillectomy were hypertrophy of the tonsils in 82 patients, recurrent tonsillitis in 23 patients and focal infection of the tonsils in 48 patients.

Tonsillectomy was performed under general anesthesia using an oral speculum specifically designed for tonsillectomy. Local infiltration anesthesia was performed with a 0.5% lidocaine solution, after which the capsule was cut and grabbed with tweezers, separated from the adhesions, and then the adenoid tissue was removed extracapsularly using acute dissection. Local bleeding was stopped with cotton swabs, and relatively large vessels were cauterized with bipolar forceps. Hemostasis is carried out with cotton swabs and Kaprofer solution is applied to the wound (Figures 1-5). After removal of the tampon, all patients underwent intraoperative examination of the adenoid bed. All patients were assessed and compared for postoperative pain, bleeding, recurrence, or tonsil tissue growth in the immediate and late postoperative period.

Figure 1. *Intraoral view adenoids*

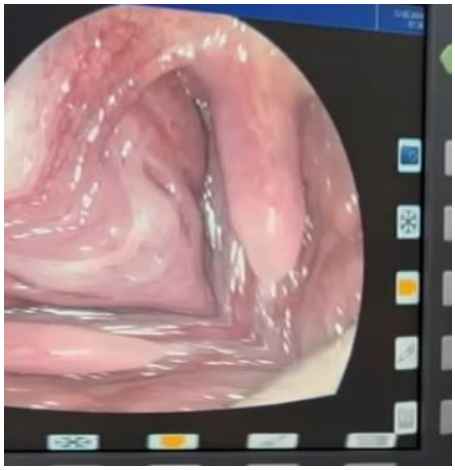

Figure 2. *Intraoral view adenoids under endoscopic visualization*

Figure 3. *Capsule was cut and grabbed with tweezers, separated from the adhesions*

Figure 4. *Removed adenoid*

Figure 5. *Intraoral view removed adenoid*

The removed adenoid is sent for histology. Clinical diagnosis: Chronic decompensated tonsillitis. Pathohistological diagnosis: Within the limits of the examined material, the histological picture corresponds to chronic tonsillitis, hypertrophy of nasopharyngeal adenoid tissue.

Results

There were no serious intra- or postoperative complications. Bleeding points were identified in 47 patients (31 patients group1 and 16 patients group 2). The source of bleeding was observed in the central deep part of the adenoids - in 18 patients, in the lateral parts of the adenoids - in 16 patients, adenoids on both sides in 13. Cauterization of bleeding sites using bipolar diathermy with curved blades and aspiration was performed under full visualization. Remnants of adenoid tissue were found in 23 patients, and remnants of adenoid tissue were removed using bipolar diathermy under image guidance. The operation time for endoscopic tonsillectomy is shorter than for traditional procedures.

Discussion

Traditionally, most surgeons perform tonsillectomy macroscopically.[29,30] Although many studies have compared endoscopic adenoidectomy and traditional adenoidectomy with curettage, there is still no consensus on which method is better. Therefore, we conducted an analysis to try to solve this problem. Poor surgical visibility of the inferior pole of the tonsil, attached to the root of the tongue, is associated with a higher incidence of postoperative hemorrhage. To reduce postoperative bleeding, it is important to improve the surgical appearance of the tonsil, especially its lower pole. If indicated, endoscopic adenoidectomy can be performed with the necessary hemostasis under endoscopic control, in contrast to blind curettage of adenoid tissue (endoscopic adenotonsillectomy).[31-33] Transoral endoscopic examination of the nasopharynx at the end of adenoidectomy is a useful technique because it allows the surgeon to detect any remnants of adenoid tissue and any bleeding points that can be treated endoscopically under visual guidance. In addition, it may reduce symptomatic regrowth of the adenoids in the postoperative period. Endoscopic imaging solves this problem by providing a clear and unobstructed view allowing the surgeon to accurately remove the tonsils and reduce unnecessary trauma.[34,35] Despite the use of various methods in tonselectomy,[36-38] complications during and after the procedure.[39-41]

In this study, 153 patients who underwent tonsillectomy were evaluated by acute dissection and image guidance with endoscopic visualization using an endoscope. The clear and magnified view of the surgical field available with endoscopic tonsillectomy allows for high accuracy, for example, in identifying tonsil capsules or small vessels flowing to the tonsils during tonsillectomy after peritonsillar infection. The operating time for endoscopic tonsillectomy is shorter than the traditional procedure because the preparation time is a few minutes. Studies have shown the advantages of the endoscopic

method over the traditional method in terms of blood loss and complications. Endoscopic visualization solves this problem, providing a clear and unobstructed view that allows the surgeon to accurately remove the tonsils and reduce unnecessary trauma, shorter operation time for endoscopic tonsillectomy is than for traditional procedures. Studies have shown the advantages of the endoscopic method over the traditional method in terms of blood loss and complications.

Conclusions

The visibility provided tonsillectomy by endoscopic techniques improves the ease and precision of surgery. Clinical significance determines the need for further testing of already proposed means and methods.

Declaration

Ethical Approval and Consent to participate

The study was reviewed and approved Hospital Ethical Committee and in accordance with those of the World Medical Association and the Helsinki Declaration. Consent for publication Patients were informed verbally and in writing about the study and gave written informed consent to publish her image in the study.

Availability of data and materials

All data generated or analyzed during this study are included in this published article.

Competing Interest

The author declares that he has no competing Interest. None of the authors have relevant financial relations with a commercial interest.

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ՏՈՆԶԻԼԷԿՏՈՄԻԱՅԻ ՏԱՐԲԵՐ ՏԵԽՆԻԿԱՅԻ ՀԱՄԵՄԱՏԱԿԱՆ ՈՒՍՈՒՄՆԱՍԻՐՈՒԹՅՈՒՆ

Արայիկ Ղարիբյան,[1] Սոնա Գևորգյան,[2] Անժելա Չախոյան,[3] Մարիամ Օհանյան[3]

1. Քիթ-կոկորդ-ականջաբան, Առողջապահության ազգային ինստիտուտի գլխի և պարանոցի, էսթետիկ և վերականգնողական վիրաբուժության ամբիոնի դոցենտ, «ԱՐԹՄԵԴ» բժշկական կենտրոնի փոխտնօրեն, Երևան, Հայաստան
2. Երևանի Մ. Հերացու անվան պետական բժշկական համալսարանի վիրաբուժական ստոմատոլոգիայի և դիմածնոտային վիրաբուժության ամբիոնի դասախոս, Երևան, Հայաստան
3. Քիթ-կոկորդ-ականջաբան, Առողջապահության ազգային ինստիտուտի (ԱԱԻ) գլխի և պարանոցի էսթետիկ և վերականգնողական վիրաբուժության ամբիոնի օրդինատոր, Երևան, Հայաստան

Ամփոփում

Նպատակ. Հետազոտության նպատակն էր համեմատել ներվիրահատական գործոնները և հետվիրահատական արդյունքները սուր դիսեկսիայի տեխնիկայի և էնդոսկոպիկ վիզուալիզացիայի միջոցով տոնզիլոտոմիայի միջև:

Նյութեր և մեթոդներ. Հետազոտությունն իրականացվել է 153 հիվանդի (81 տղամարդ և 72 կին, միջին տարիքը՝ 26.4 տարեկան), ովքեր ենթարկվել են տոնզիլեկտոմիայի (2018-2023 թթ.):

Հիվանդները պատահականության սկզբունքով բաժանվել են 2 խմբերի՝ հիվանդների 52%-ը (1-ին խումբը) ենթարկվել է տոնզիլեկտոմիա սուր դիսեկսիայի տեխնիկայով՝ տեսողական հսկողության ներքո, և հիվանդների 48%-ը (2-րդ խումբը) ենթարկվել է տոնզիլեկտոմիա՝ սուր դիսեկցիոն տեխնիկայով՝ էնդոսկոպիկ վիզուալիզացիայի միջոցով՝ 4.0 մմ 0° էնդոսկոպով (Կարլ Ստորց, Թաթլինգեն, Գերմանիա): Տոնզիլեկտոմիայի ցուցումները եղել են նշագեղձերի հիպերտրոֆիան 82 հիվանդի մոտ, կրկնվող տոնզիլիտը 23 հիվանդի մոտ և նշագեղձերի կիզակետային վարակը 48 հիվանդի մոտ: Տոնզիլեկտոմիան իրականացվել է ընդհանուր անզգայացման տակ: Բոլոր հիվանդները գնահատվել և համեմատվել են հետվիրահատական ցավի, արյունահոսության, ռեցիդիվների կամ նշագեղձերի հյուսվածքի աճի համար անմիջապես և ուշ հետվիրահատական շրջանում:

Արդյունքներ. Չկային լուրջ ներվիրահատական կամ հետվիրահատական բարդություններ: Արյունահոսության կետեր են հայտնաբերվել 47 հիվանդների մոտ (31 հիվանդ 1-ին և 16 հիվանդ 2-րդ խումբ): Արյունահոսության աղբյուրը նկատվել է ադենոիդների կենտրոնական խորը հատվածում՝ 18 հիվանդի մոտ, ադենոիդների կողային հատվածներում՝ 16 հիվանդի, ադենոիդներ՝ երկու կողմերում՝ 13: Արյունահոսության տեղամասերի երկբևեռ դիատերմիա իրականացվել է ամբողջական վիզուալիզացիայի ներքո, կիրառվել է կոր շեղբերով կոագուլյատոր: Ադենոիդ հյուսվածքի մնացորդները հայտնաբերվել են 23 հիվանդի մոտ(17 հիվանդ 1-ին և 6 հիվանդ 2-րդ խումբ), ադենոիդ հյուսվածքի մնացորդները հեռացվել են երկբևեռ դիաթերմիայի միջոցով: Էնդոսկոպիկ վիզուալիզացիայի տեխնիկայով տոնզիլեկտոմիայի վիրահատության ժամանակն ավելի կարճ էր, քան ավանդական պրոցեդուրաների համար:

Եզրակացություններ. Էնդոսկոպիկ վիզուալիզացիայի միջոցով տոնզիլեկտոմիայի տեսանելիությունը բարելավում է հեշտությունն ու ճշգրտությունը: Կլինիկական նշանակությունը որոշում է արդեն առաջարկված միջոցների և մեթոդների հետագա փորձարկման անհրաժեշտությունը:

СРАВНИТЕЛЬНОЕ ИССЛЕДОВАНИЕ РАЗЛИЧНЫХ ТЕХНИК ТОНЗИЛЛЭКТОМИИ

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Абстракт

Цель: Целью исследования было сравнение интраоперационных факторов и послеоперационных результатов при использовании техники острой диссекции под визуальным контролем и техники острой диссекции под эндоскопическим контролем.

Материалы и методы: Исследование проведено у 153 пациентов (81 мужчина и 72 женщины, средний возраст 26,4 года), перенесших тонзиллэктомию (2018-2023 гг.). Пациенты были случайным образом разделены на 2 группы: 52% пациентов (1-я группа) выполнена тонзиллэктомия методом острой диссекции под визуальным контролем, а 48% пациентов (2-я группа) выполнена тонзиллэктомия методом острой диссекции под эндоскопическим контролем эндоскоп 4,0 мм 0°, (Carl Storz, Татлинген, Германия). Показаниями к тонзиллэктомии были гипертрофия миндалин у 82 больных, рецидивирующий тонзиллит у 23 больных и очаговая инфекция миндалин у 48 больных. Тонзиллэктомию проводили под общей анестезией. Все пациенты были обследованы и сравнены на наличие послеоперационной боли, кровотечения, рецидива или роста ткани миндалин в ближайшем и отдаленном послеоперационном периоде.

Результаты: Серьезных интра- и послеоперационных осложнений не было. Точки кровотечения выявлены у 47 пациентов (31 пациент 1-й группы и 16 пациентов 2-й группы). Источник кровотечения наблюдался в центральной глубокой части аденоидов - у 18 больных, в латеральных отделах аденоидов - у 16 больных, аденоиды с обеих сторон - у 13. Прижигание мест кровотечения с помощью биполярной диатермии с изогнутыми лезвиями и аспирации проводили под полной визуализацией. Остатки аденоидной ткани были обнаружены у 23 пациентов(17 пациентов 1-й группы и 6 пациентов 2-й группы), остатки аденоидной ткани были удалены с помощью биполярной диатермии под визуальным контролем. Время операции эндоскопической тонзиллэктомии короче, чем при традиционных процедурах.

Выводы: Видимость, обеспечиваемая эндоскопическими методами, повышает простоту и точность хирургического вмешательства. Клиническая значимость определяет необходимость дальнейшего тестирования уже предложенных средств и методов.