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НОВЫЕ МЕТОДЫ ЛАРИНГОПЛАСТИКИ У БОЛЬНЫХ С ХРОНИЧЕСКИМ ПАРАЛИТИЧЕСКИМ СТЕНОЗОМ ГОРТАНИ

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ABSTRACT

The aim of the study was to evaluate the effectiveness of various types of surgical treatment of patients with bilateral paralytic stenosis of the larynx. The study involved 22 patients aged 2 to 60 years, suffering from paralytic stenosis of the larynx, who was treated in the period from 2015 to 2020. The results of treatment with the use of laser resection of the vocal fold, Closing the surgical wound with matching the edges of the mucous membrane and suturing provides fast healing by primary intention, which allows you to start early therapeutic and phonopedic rehabilitation. All this allows us to recommend laser submucosal chordaritenoidotomy for use in clinical practice.

Key words: *paralytic stenosis of the larynx, laser laryngoplasty, chordaritenoidotomy, vocal folds, surgical intervention.*

РЕЗЮМЕ

Целью исследования явилось оценка эффективности различных видов хирургического лечения боль-ных с двусторонними паралитическими стенозами гортани. В исследовании приняли участие 22 пациентов в возрасте от 20 до 60 лет, страдающий паралитическим стенозом гортани, находившийся на лечении в период с 2015 по 2020 год. Результаты лечения с применением лазерную резекцию голосовой складки, Закрытие операционной раны с сопоставлением краев слизистой оболочки и наложением швов обеспечивает быстрое заживление первичным натяжением, что позволяет начать раннюю лечебно-фонопедическую реабилитацию. Все это позволяет рекомендовать лазерную подслизистую хордаритеноидотомию к использованию в клинической практике. ***Ключевые слова:*** *паралитический стеноз гортани, лазерная ларингопластика, хордаритеноидотомия, голосовые складки, хирургическое вмешательство.*

ХУЛОСА

Тадқиқотнинг мақсади ҳиқилдоқнинг икки томонлама паралитик торайиши бўлган беморларни турли хил жарроҳлик даволаш самарадорлигини баҳолашдан иборат эди. Тадқиқотга 2015 йилдан 2020 йилгача бўлган даврда 20 ёшдан 60 ёшгача бўлган ҳиқилдоқ паралитик торайиши билан оғриган 22 нафар бемор жалб қилинган. Овоз бойлами лазерли резекцияси натижалари шуни кўрсатдики, юқоридаги жарроҳлик аралашув усулларидан сўнг бирламчи жарохатнинг қисқа вақт ичида тикланиши эрта даволаш- фонопедик реабилитацияга имкон беради. Буларнинг барчаси лазерли шиллиқ ости хордаретиноидотомияни амалиёт кенг қўллашга йўл очиб беради.

Калит сўзлар: *ҳиқилдоқнинг паралитик торайиши, лазерли ларингопластика, хордаритеноидотомия, овоз бурмалари, жарроҳлик аралашуви.*

A method of surgical treatment of chronic paralyt-ic stenosis of the larynx - laser endoscopic submucosal chordaritenoidotomy, based on the studies, has shown its clinical effectiveness. Antibacterial inhalation therapy occupies an important place in the complex of medical rehabilitation of patients, it is an effective method of pre-venting complications, a method of local anti-inflamma-tory treatment, which promotes rapid rehabilitation in the postoperative period.

Chronic stenosis of the larynx (CSL) is a group of diseases that differ in etiological factor, the main symptom of which is persistent narrowing of the larynx lumen, disrupting the flow of air into the respiratory tract, leading to the development of obstructive respiratory failure, as well as pronounced impairment of the voice function. The course of CSL is characterized by a slowly progressive development. Decompensation of stenosis is a life-threatening condition for the patient that in some cases requires immediate surgical intervention. The presence of a tracheostomy leads to social maladjustment and persistent disability in a significant number of patients of working age [1, 5, 6, 9, 10, 13].

One of the types of stenosis is paralytic stenosis of the larynx (PSL), in which the narrowing of the larynx lu-men is associated with a disorder of motor function in the form of a decrease in the strength / amplitude of volun-tary movements (paresis) or their complete absence (pa-ralysis) due to a violation of the innervation of the corre-sponding muscles of the larynx. Neurogenic disorders of the motor function of the larynx account for up to 30% of all diseases of the vocal apparatus. Up to 90% of patients with this pathology are persons of working age, of which 86% are women [11].

Paresis and paralysis of the muscles of the larynx are subdivided into central (cortical, cortico-bulbar, bulbar), developing with encephalitis, encephalopathy of various origins, congenital cerebral palsy, diffuse atherosclerosis of the cerebral vessels, circulatory disorders in the arter-ies of the anterior and lower upper, middle, lower lateral branches), neoplasms of the cerebellum. Peripheral stenosis occurs at various levels of the laryngeal nerve lesion.

In case of damage above the origin of the superior laryngeal nerve from the trunk of the vagus nerve, both laryngeal nerves are affected, and in case of damage below the origin, only one lower laryngeal nerve is affected.

The main causes of bilateral laryngeal nerve damage are:

surgical interventions on the organs of the neck and mediastinum – 82,8%, including primary and revision interventions on the thyroid gland – 75,8%;

neoplasms, diseases of the central and peripheral nervous system, toxic lesions, injuries – 17,8% [11].

The problem of surgical treatment of chronic paralytic stenosis of the larynx remains relevant to this day, which is associated with the lack of a unified approach to treatment tactics, the variety of proposed surgical inter-ventions, high technological complexity of their imple-mentation, a long period of rehabilitation and not always satisfactory results [3, 6, 7].

Tasks of surgical treatment for chronic paralytic steno-sis of the larynx at the present stage:

formation of a lumen of the larynx, sufficient to restore respiratory function and improve the quality of life;

preservation of the protective (dividing) function of the larynx;

the most sparing surgical access, operative reception, economical volume of resection, minimum time of surgical intervention;

minimum indications for preventive tracheostomy, prolonged intubation and laryngeal stenting;

rejection of extra-laryngeal surgical access as more traumatic;

quick rehabilitation (in the presence of a stoma - de-cannulation) of the patient;

the possibility of an early start of therapeutic and phonopedic rehabilitation [3,16].

The combination of transoral endoscopic access to the structures of the larynx as the most gentle with the microlaryngoscopy technique according to O. Kleinsasser (1968) is a universal technology that most closely matches the tasks of modern laryngoplasty and is widely used by laryngologists all over the world [12, 13].

Today, many laser systems are used in medicine with various media fillers, wavelengths and physical effects: CO2 (10 600 nm.), Ho: YAG (2 100 nm.), Nd: YAG (1 064 nm.), KTP (532 nm.), Diodes (600-1000 nm.), Dye (608-1 300 nm.), Alexandrite (710-820 nm.), Ruby (694 nm.), Kr + (568 nm.), Ar + (514 nm.), Excimer (170-532 nm.), Er: YAG (2940 nm.). The use of a surgical laser for endoscopic interventions has opened up new possibilities in endolaryngeal microsurgery, which has become mini-mally invasive and has significantly expanded its indica-tions for use [2, 4, 6, 8].

In traditional direct reference microlaryngoscopy according to O. Kleinsasser (1968), the delivery of laser energy to the operating field is carried out in two modes:

- distant (non-contact) - using mirror optical systems (Ruby, Nd: YAG, CO2);
- contact - using flexible light guides (Diodes, KTP, Nd: YAG). Each of these methods has its own advantages and disadvantages.

CO2 - the laser works in a non-contact mode, is well absorbed by water and causes instant tissue evaporation, while thermal damage to surrounding healthy tissues is minimal and spreads to a depth of 500-100 microns outside the ablation crater. CO2 laser is a convenient tool for deep resections of the larynx structures, provides good hemostasis of small capillary vessels, but is insufficient for bleeding from large vessels. In addition, given the complex anatomy of the larynx cavity, working in a non-contact mode creates certain difficulties when performing operations in hard-to-reach areas. With direct laryngoscopy, CO2 laser radiation is supplied from the source at a considerable distance - up to 400 mm. At the same time, radiation can be repeatedly reflected from the walls of the laryngoscope, instruments, and the surgical field, which requires the use of serious measures for the safety of the patient, medical workers, and the development of special instruments with an anti-reflective coating [12, 13].

The 960-980nm diode laser also absorbs well in water, providing minimal damaging effect and good regeneration. Radiation is transmitted from the source to the working tool through fl exible quartz fi ber with minimal loss. The active chromophores for the diode laser are hemoglobin and oxyhemoglobin. The opera-tion of a diode laser is possible both in a distant mode and when the quartz tip is in contact with tissues. In the non-contact mode of exposure, the laser energy is accumulated in the capillaries and blood cells, pro-viding coagulation of blood vessels. When tissue is dissected, hemostasis occurs instantly, surgical inter-vention takes place with a “dry” operating fi eld. The operation of the tip of the diode laser in the dissection mode makes it easy to carry out bloodless separation of the mucous membrane of the larynx, connective, cicatricial, cartilaginous tissues, performing the func-tions of a scalpel, coagulator and raspator simultane-ously [2, 6, 7, 8].

Objective: To evaluate the effectiveness of laser en-doscopic laryngoplasty in patients with chronic bilateral paralytic laryngeal stenosis.

Patients and methods: We observed 22 patients with chronic bilateral paralytic stenosis of the larynx. The age of patients ranged from 22 to 66 years, of which 16 were female, 6 were male. In 11 admitted patients, the cause of bilateral vocal cord paralysis was surgery on the thyroid gland; there was no history of surgery on the larynx. A combined (cicatricial-paralytic) form of stenosis was diagnosed in 11 patients: in 3 patients in history, in addition to surgical interventions on the thyroid gland, repeated interventions were performed on the larynx. In 7 patients, paralysis of the laryngeal muscles and cicatricial process were of traumatic etiology. At admission, 8 patients were chronic cannulated carriers. The duration of wearing a tracheostomy ranged from 6 months. up to 4 years.

Evaluation of the effectiveness of the treatment was carried out on the basis of the data of general clinical, standard otorhinolaryngological examination, video endostroboscopy, fibrolaryngoscopy, spirometry [11, 14].

According to the data of endoscopic research methods, the vocal folds of the patients were in the paramedian po-sition before the surgical treatment. In 7 of them, cicatri-cial changes were revealed in the area of the interscapular part of the larynx, in 4 patients, scars and granulations were noted in the sublining space, above and around the tracheostomy tube.

Based on the data of the examination of patients, when planning the surgical intervention, we adhered to the fol-lowing indications for endoscopic laryngoplasty:

the patient has no positive dynamics and the effective-ness of conservative treatment for 6-12 months. from the onset of the disease;
with a stenosis area less than 50 mm2;
deviation from the norm in the gas composition and acid-base state of the blood;
the presence of inspiratory dyspnea and stridor at rest;
lack of exercise tolerance;
high threat of decompensation of stenosis and asphyxia in case of potential upper respiratory tract infection (URTI) [3, 14].

In the surgical treatment of patients with chronic paralytic stenosis of the larynx, we used the method of laser endoscopic submucosal chordaritenoidotomy. A diode la-ser with a wavelength of 980 nm was used in the contact mode. The radiation was delivered using a quartz optical fiber with a diameter of 600 μm. We used a pulsed mode with a pulse duration of 30 ms, a pulse repetition rate of 12,5 Hz, a pulse energy of 0.75 J and an average radiation power of 9.4

W. This mode of action provides effective ablation of tissues without thermal damage to deep- lying tissues, without necrosis and wound carbonization. [3, 4, 7, 8].

Operation technique. Surgery is performed under gen-eral anesthesia. Tracheal intubation is performed tran-sorally or through a tracheostomy. With mechanical ven-tilation, it is possible to use both the traditional ventilation mode and high-frequency jet ventilation of the lungs through a microcatheter.

In conditions of direct supporting microlaryngoscopy, using a surgical diode laser, the mucous membrane of the vocal fold is incised along its upper surface from the middle of the vocal fold through the vocal process to the apex of the arytenoid cartilage. Then the vocal process of the arytenoid cartilage is submucosally secreted and freed from the muscle fibers. The posterior third of the vocal fold muscle fibers are isolated and resected using laser vaporization. Then the fibers of the arytenoid muscle are separated from the muscular process of the arytenoid cartilage. During the operation, using a surgical diode laser, the arytenoid cartilage is resected in the following volume: the vocal process, most of its body, the apex and part of the muscular process. Catgut (chrome-plated catgut 4-0, 5-0) interrupted sutures are applied to the wound of the mucous membrane. First, a suture is applied to the front corner of the wound. In this case, the needle is injected into the area of the upper edge of the wound. Then the lower edge of the wound is captured together in the vocal cord and the upper edge of the elastic cone. The suture of the mucous membrane is tightened and tied in such a way as to achieve contact of the edges of the mucous membrane incision and the expansion of the larynx lumen. When suturing a wound, 3 to 5 sutures are applied from the front to the back corner of the wound.

In 7 patients, we performed laser vaporization of scars in the laryngeal cavity and granulations in the sublining space and trachea.

During the first days after the operation, the patients were under observation in the intensive care unit, then transferred to the clinic.

Medical treatment. Surgical trauma inevitably causes reactive inflammation from all the anatomical structures of the larynx. In fact, in the postoperative period there is acute laryngitis caused not by an infectious agent, but by a physical (heat energy) and mechanical factor (surgery). Under the conditions of an operating injury, the systems of local immunological protection of the respiratory epithelium are significantly affected, the risk of infection with pathogenic flora, colonization of opportunistic microorganisms and the development of formidable puru-lent complications increases. Prevention of these condi-tions is the most important component of drug treatment in the postoperative period.

Antibiotic prophylaxis (intravenous administration of ceftriaxone or amoxicillin / clavulanate) is carried out 1 hour before the start of the operation and during the first days after it. Along with symptomatic treatment (pain relievers, agents for the prevention and control of bleeding), parenteral administration of glucocorticosteroid hormones (prednisolone, dexamethasone), which have anti-inflammatory and desensitizing effects, is indicated. Doses of glucocorticosteroids (GCS) are calculated indi-vidually per course. Compulsory in the treatment of GCS is the appointment of proton pump inhibitors (omepra-zole) to prevent complications from the gastrointestinal tract [3].(Figure 1).

Research results. Already on the second day after the operation, all patients noted an improvement in breathing. During fibrolaryngoscopy and video endostroboscopy, the following dynamics of the laryngoscopic picture was observed: during the first 48 hours after the operation, there was edema of the mucous membrane in the area of the surgical intervention. On the 3rd-7th day after the operation, the edema of the laryngeal mucosa decreased signifi cantly (Fig. 1), on the 10th-14th day, reactive infl ammation in the larynx was minimal (Fig. 1). Can-nulation carriers: 6 patients were decannulated in the early postoperative period. A silicone T-shaped stent according to Montgomery was installed in 2 patients

Fig.1. Videoendostroboscopy after endoscopic laser submucosal chordarinetoidotomy

after laser vaporization of coarse scars of the larynx cavity for a period of 3-6 months.

We studied the function of external respiration before the operation, 14 days after the operation and in the long-term postoperative period. The dynamics of the main spirographic indicators was assessed in percent. Analyzing the data before and after surgery, we can conclude that there is a statistically signifi cant im-provement in the patency of the upper airways.

All patients in the early postoperative period under-went phonopedic exercises in a gentle mode: the for-mation of the lower diaphragmatic type of breathing, activation of articulatory motor skills. From the 10-12th day after the operation, the goal of phonopedic training was to get a sonorous voice. In all patients, after a course of phonopedic exercises in the early postoperative period, an improvement in voice func-tion was noted.

In the long-term postoperative period (after 4-6 months), we examined 9 patients. With video endostroboscopy: the glottis is triangular; during phonation, the anterior 2/3 of the vocal fold on the side of the operation performed touch the contralateral side, which provides a sonorous voice (Fig. 1).

All patients subjectively noted a signifi cant improvement in breathing. In spirographic examination, an increase in peak expiratory volumetric velocity and an increase in lung volume were recorded.

In the late postoperative period, 7 patients underwent a course of phonopedic rehabilitation, which made it possible to significantly improve the vocal function: to increase the sonority and volume of the voice.

Thus, transoral endoscopic access, microlaryngoscopy according to O. Kleinsasser and the use of modern laser surgical systems are today the optimal technology in reconstructive surgery of the larynx. Based on the studies carried out, it can be concluded that the proposed method of surgical treatment of chronic paralyt-ic stenosis of the larynx is sufficiently effective. Laser submucosal chordaritenoidotomy is a gentle method of surgical treatment due to the fact that the volume of the resected tissues is optimal for the formation of a lumen of the larynx sufficient for breathing and preservation of the voice and protective function of the larynx. Also, the proposed modes of laser surgical exposure have high coagulation properties, which ensures the absence of intraoperative bleeding, minimal surgical trauma. Closing the operating wound with matching the edges of the mucous membrane and suturing ensures rapid healing by primary intention, which allows early therapeutic and phonopedic rehabilitation to begin. All this allows us to recommend laser submucosal chordaritenoidotomy for use in clinical practice.

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KINESIO TASMALASH VA UNING YUZ-JAG' SOXASI YALLIG'LANISH KASALLIKLARIDA QO'LLANILISH IMKONIYATLARI

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ХУЛОСА

Yuz-jag' jarrohligi va jarrohlik stomatologiyaning dolzarb muammolaridan biri – yuz- jag' soxasi o'tkir odontogen yiringli yallig'lanish kasalliklarida xirurgik muolajadan so'ng kinesio tasmalari yordamida reabilitatsiya qilish samaradorligini oshirish bo'yicha adabiyotlar sharxi.

Maqsad *- yuz-jag' sohasi kasalliklarida kinesio tasmalariga bag'ishlangan nashrlarning materiallarini o'rganish.*

Metodika. *Mikrosirkulyatsiyani normallashtirishda, shish paydo bo'lishini kamaytirishda va og'riqning og'irligida amalga oshiriladigan sanogenetik jarayonlar uchun qulay sharoitlar yaratilishiga olib keladigan, teriga dasturlar shaklida qo'llaniladigan kinesiologik tasmaning ta'sir qilish mexanizmlari batafsil tavsifl angan. Sportchilarda mushak-skelet tizimining shikastlanishlarini oldini olish va davolashda kinesio teyplash usulidan foydalanish yuzasidan nashrlar sonining ko'payishi qayd etilgan. Bundan tashqari, hozirgi vaqtda kinesio tasmalari klinik tibbiyotda, masalan, nevrologiya va ortopediya amaliyotida ham qo'llanilmoqda. Zamonaviy ilmiy izlanishlarga ko'ra, surunkali bel og'rig'i, subakromial impijment sindromi bilan og'rigan bemorlarda kinesio lentalarini qo'llash og'riq sindromining og'irligini sezilarli darajada kamaytirishi mumkin.*

Natijalar*. Kinesio lenta usuli sport va klinik tibbiyotda juda keng qo'llanilishiga qaramay, mavjud adabiyotlarda uni yuz-jag' jarrohligida, xususan soxasi o'tkir odontogen yiringli yallig'lanish kasalliklari uchun foydalanishga bag'ishlangan oz sonli ishlar mavjud. Yuz- jag' soxasi o'tkir odontogen yiringli yallig'lanish kasalliklari operativ muolajaidan so'ng kinesio tasma usulidan foydalanish yallig'lanish shishishi darajasini va og'riq sindromining intensivligini sezilarli darajada kamaytirishga imkon berdi.*

Xulosa. *Chop etilgan adabiyotlarni ko'rib chiqish natijalari shuni ko'rsatadiki, kinesio tasmasi - bu yuz-jag' soxasining o'tkir odontogen yallig'lanish kasalliklarini operativ davolashidan so'ng reabilitatsiya qilishning istiqbolli, sodda, shikast yetkazmaydigan usuli hisoblanib, u nojo'ya ta'sir va asoratlarni yuzaga keltirmaydi va bemorlarning hayot sifatini sezilarli darajada yaxshilaydi. Taqdim etilgan ilmiy nashrlarning materiallarini tahlil qilish natijasi, hozirgi vaqtda yuqorida keltirilgan ta'sir mexanizmlariga hamda og'riq va shishishni kamaytirish imkoniyatiga qaramay, yuz-jag'soxasining o'tkir odontogen yallig'lanish kasalliklarida kinesio tasmalarini qo'llash bo'yicha tadqiqotlar yetarli emasligini ko'rsatib berdi.*

Kalit so'zlar: *Yuz-jag' soxasi o'tkir odontogen yallig'lanish kasalliklari, yuz-yuz sohasi, og'riq sindromi, operatsiyadan keyingi shish, reabilitatsiya, kinesio tasmalari*

РЕЗЮМЕ

Предмет. *Представлен обзор литературы, посвященный актуальной проблеме челюстно-лицевой хирургии и хирургической стоматологии*

повышению эффективности реабилитации пациентов с переломами нижней челюсти с использованием кинезиотейпирования.

Цель *— изучить материалы публикаций, посвященных кинезиотейпированию при воспалительных заболевании челюстно-лицевой области. Методология. Подробно описаны механизмы действия кинезиологического тейпа, наложенного в виде аппликаций на кожу, которые приводят к созданию благоприятных условий для саногенети-*