

Introduction: The American Joint Committee on Cancer (AJCC) staging manual has become the point of reference for classifying patients with cancer, defining prognosis, and determining the best treatment approaches. The eighth edition of the Head and Neck AJCC Cancer Staging Manual incorporates significant changes based on advances in our understanding of the etiology and certain histologic attributes of tumors. Changes were made only when there was strong evidence for inclusion, while balancing between “population-based” and a more “personalized” approach. We describe the main changes implanted into the AJCC 8th edition while analyzing the effects on treatment plans and survival metrics.

The most significant update, to better reflect the variety of diseases arising in the pharynx, creates a separate staging algorithm for high-risk human papillomavirus-associated cancer of the oropharynx. Therefore, pharynx carcinoma has been divided into 3 separate chapters — nasopharynx, high-risk HPV-associated (p16-positive) oropharynx, and hypopharynx and non-high risk HPV-associated (p16-negative) oropharynx. Another important update incorporates extra nodal extension as a prognostic variable for regional lymph node metastases in non-viral associated head and neck tumors. Significant changes to the tumor (T) categories for oral cavity are discussed, where, for every 5-mm increase in depth of invasion (DOI), categories will increase one level, demonstrating better consistent and predictive survival curves. A major tumor (T) category change for nasopharyngeal squamous cell carcinoma (SCC), regarding the prevertebral and pterygoid muscles, is discussed.

We go through the rationale behind the major changes while practicing the new staging system among different cases. ●

OROPHARYNGEAL CANCER: THE VIRUS THAT CHANGED THE RULES

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Head and neck cancer is the sixth most common malignancy worldwide. Along with other “classical” risk factors such as tobacco and alcohol use, the human papillomavirus (HPV) is well established to play a pivotal role in the development of head and neck cancers, particularly in oropharyngeal cancer (OPC). While head and neck cancer incidence decline worldwide, OPC is on the rise. The incidence of HPV-positive oropharyngeal carcinoma predominantly increased in younger, married male patients with higher socioeconomic status and with high-risk sexual practices. This OPC subtype is characterized by limited local tumor with a substantially larger regional nodal disease. However, HPV-positive OPC patients exhibited a significantly

better prognosis than patients with HPV-negative OPC, leading to a recent change in the clinical guidelines.

The current non-surgical standard of care for OPC results in excellent disease control, though associated with substantial toxicity. Numerous studies now focus on less intensive (i.e., deintensified) treatment for the improvement of patient safety while maintaining excellent disease control. Furthermore, the recent development of more advanced surgical techniques with promising outcomes may shift the therapeutic paradigm back to the operating room. During the past decade, there is widespread use of HPV vaccination, and lately, it was also approved for boys. However, the preventive effects of the HPV vaccine on head and neck cancers, particularly on OPC is yet to be determined. ●

THE USE OF ROBOTICS IN HEAD AND NECK SURGERY - THE EXPERIENCE OF RABIN MEDICAL CENTER

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In recent years, minimally invasive surgeries have been undergoing a revolution with the development of robotic assisted surgery. Due to the anatomical region in which many operations are carried out, in small spaces through natural orifices in the body such as the mouth, the nose or the ear, as well as the esthetic discomfort caused by external scars in the head and neck, the use of robotic assisted surgery in the field of head and neck surgery is gaining momentum and is being implemented more and more in Israel and around the globe. Most of the operations currently performed in otolaryngology are carried out through the oral cavity or through distant and camouflaged skin cuts.

In this article we will review the new applications and technologies in the field of surgical robotics in otolaryngology - head and neck surgeries, as well as summarize the experience of the Department of Otorhinolaryngology and Head and Neck Surgery at the Rabin Medical Center in robot assisted surgeries. ●

הערה לגבי מאמר שפורסם בגיליון דצמבר 2019

“השוואת היעילות בין שני תכשירי פוטסיום ציטראט בטיפול במחלת אבני כליה” | ת' דרורי, י' אברגאנס, נ' קליינמן וחב' בעמוד 774

המערכת הייתה ערה לאפשרות של קיום ניגוד עניינים בין כותבי המאמר לבין חברה המייצרת את התרופה שדווח עליה במאמר. לפיכך, המערכת פנתה לפני פרסום המאמר באופן יזום אל הכותבים להצהיר באופן קטגורי שאין להם ניגוד עניינים וקשר עם החברה. הכותבים אכן שללו קשר כלשהו. יחד עם זאת, עם הפקת החוברת על ידי בית ההפקה, הופתעה המערכת לראות פרסום על התרופה באותה חוברת.

לפיכך, נשלח מכתב מטעם הר"י למפיק כדי למנוע הישנות אירועים כאלה, שבהם מדווח על תרופה או על תכשיר במאמר מדעי המתפרסם בכתב העת, ובאותו גיליון ובגיליונות העוקבים לו מופיעה פרסומת לאותה תרופה או לאותו תכשיר.

בברכה, המערכת

Jewish population has increased by threefold. Identifying the pathogenic variant makes it possible to study molecular pathogenesis, to anticipate and understand the prognosis, to calculate probability of concomitant morbidity, to offer prenatal diagnosis, prevent recurrence of deafness in the family and early rehabilitation. Currently, cochlear implant offers the greatest chance for rehabilitation. The hope is that understanding the molecular pathogenesis will in the future lead to personalized medical treatment.

We review the genetics of deafness, with an emphasis on the Jewish population in Israel, new diagnostic methods and suggest a diagnostic algorithm and future treatment methods. ●

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**COCHLEAR IMPLANTS
 IN SINGLE-SIDED DEAFNESS**

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In normal hearing, the brain receives bilateral auditory input from both ears. In individuals with only one functioning ear, listening in noisy environments and sound localization may become difficult. Historically, the impact of unilateral hearing loss in children had typically been minimized by clinicians, as it was assumed that one normal hearing ear provided sufficient auditory input for speech development and normal hearing experience.

Data supporting the negative effects of unilateral deafness has been accumulating during the last decades. The effects of unilateral deafness extend beyond spatial hearing to language development, slower rates of educational progress, problems in social interaction and in cognitively demanding tasks.

Until recently, treatments for single sided deafness were limited to routing signals from the deaf ear to the contralateral hearing ear either through conventional CROS aids or through bone anchored technologies. These technologies simply transfer sounds to the single functioning ear which allow sound awareness from the deaf side and minor improvement in hearing in noisy environments and localization. The cochlear implant is a surgically implanted electronic device that contains an array of electrodes which is placed into the cochlea, and stimulates the cochlear nerve. The cochlear implant bypasses the injured parts of the inner ear. Currently it is the only treatment to restore binaural hearing. This review aims to discuss the different aspects, the benefits and disadvantages of cochlear implantation in children with single sided deafness. ●

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**SURGEON PERFORMED THYROID
 AND NECK ULTRASOUND AS A TOOL
 FOR BETTER PATIENT CARE**

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Surgeon performed ultrasound (SUS) has become a valuable tool for the head and neck/endocrine surgeon. It allows for a complementary examination of the neck, following history and physical examination. With its reduced costs and being radiation free, US has become the modality of choice for imaging thyroid, parathyroid and lymph nodes of the neck.

In thyroid cancer, the role of US has constantly grown, as reflected in the latest American Thyroid Association (ATA) guidelines: The shift from whole body iodine scans to US has allowed for surveillance in low risk patients who underwent thyroidectomy, follow-up of microcarcinomas, and has a key role in the assessment of a thyroid nodule following initial aspiration. However, US is still limited by operator dependent inherent flaws, which are reflected by a relatively moderate inter-observer agreement, even among experts. When conducted by the same surgeon, SUS allows the patients to enjoy the benefits of US while overcoming this limitation. When compared to radiologist-performed US, several studies have shown that high volume surgeons can reach non-inferior predicative values for malignant nodules, using accepted suspicious sonographic features such as solid texture, hypoechogenicity, microcalcifications, irregular margins and taller rather than wider shape.

Several studies have tried to answer the most important utility of SUS – its ability to change the course of management of the cases. In all studies SUS was able to change the management of the cases in 17-45% of the patients, extending surgery in some patients while avoiding unnecessary dissections in others.

In summary, SUS is an important, feasible tool for the head and neck and endocrine surgeons. Studies have shown that high volume surgeons can reach excellent rates of prediction and detection, thus saving the patients unnecessary clinic visits, tension and additional imaging, and can even directly influence the management of the patients. ●

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**HEAD AND NECK MALIGNANCIES
 CLASSIFICATION, THE 8TH EDITION
 OF THE AMERICAN JOINT COMMITTEE
 ON CANCER – WHAT IS NEW?**

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were reviewed. Data concerning age, gender, timing and the type of treatment performed was retrospectively analyzed.

Results: Fifteen patients were included in the study. Ten implants were found in the left sinus and five in the right side. Eight implants were seen in the lower medial alveolar recess. None of the patients presented with an oro-antral fistulae. Ten patients were treated endoscopically - eight through a nasal approach, and two through the mouth. All patients healed uneventfully.

Conclusions: Different approaches can be used to remove implants from the maxillary sinus.

Discussion: Most patients in this study were referred adjacent to the displacement of the dental implant. The medial alveolar recess is the most common area of implant displacement. While either a nasal or oral approach can be used to retrieve the implant in the absence of sinus disease, a nasal approach should be preferred in the presence of such pathology.

Summary: The collaboration between the otorhinologist and the maxillofacial surgeon, enables both the dental and rhinosinus considerations to be considered. This cooperation allows practitioners to design better treatment plans for patients with dental implants involving the sinuses. ●

THE INFLUENCE OF NASOTRACHEAL INTUBATION ON NASAL RESISTANCE

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Introduction: Tracheal intubation is a vital and common procedure during surgical care. The tracheal tube may be inserted orally or trans-nasally. Nasal intubation enables a non-restricted approach for oral and oropharyngeal regions. Thus, nasotracheal intubation is more suitable for surgeries such as uvulopalatopharyngoplasty treating obstructive sleep apnea. Obstructive sleep apnea is an independent risk factor for postoperative cardiorespiratory complications. Thus, meticulous treatment during and post-operatively is needed keeping the upper airway open including the nasal cavity. In several studies, nasotracheal intubation resulted in disruption of the nasal mucosa.

Objectives: The objective of this study is evaluating the developing nasal resistance post nasotracheal intubation and comparing it to nasal resistance post-oro-tracheal intubation. To our knowledge, this is the first data on nasal obstruction following nasal intubation.

Methods: Forty-four candidates, for elective non-head

and neck procedures were randomized into two groups: oral intubation group and nasal intubation group. The nasal resistance of all participants was measured by anterior rhinomanometry upon the recommendation of the standardization committee on objective assessment of the nasal airway. Statistical analysis with paired T test, Chi square and McNemar's test was performed. Statistical significance was evaluated at $P \leq 0.05$.

Results: There were no differences between the study groups regarding nasal resistance before and after intubation. However, nasotracheal intubation was found to disrupt the normal nasal cycle of the nasal mucosa.

Conclusions: Nasotracheal intubation does not negatively affect nasal resistance in the early postoperative period.

Discussion and summary: Nasotracheal intubation does not affect nasal resistance and it seems to be safe for OSA patients. More research has to be conducted to evaluate the nasal resistance in patients who undergo oral and nasal surgeries. ●

INNOVATIONS IN RESEARCH OF HEREDITARY DEAFNESS

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Deafness is the most common sensory disability in humans affecting all aspects of life. Approximately 50% of congenital deafness is hereditary and about half of genetic deafness is still unsolved. To date, more than 150 genes are known to cause hearing loss worldwide, with specific genes contributing to deafness in distinct populations. Of these, more than 20 genes are involved in deafness among the Jewish Israeli hearing-impaired population.

The most common gene in many worldwide populations, including Israel, is GJB2, which encodes the connexin 26 protein. The second most common gene among Jews is TMC1, with most pathogenic variants found only among Jews of Moroccan origin. Most other pathogenic variants found in the Jewish population are origin-specific and not found in other Jewish ethnic groups or in other worldwide populations. In patients where hereditary deafness is suspected, known variants in the specific ethnicity are routinely examined. In Israel, the GJB2 gene is screened in all cases of hereditary deafness and the TMC1 gene is screened in deaf persons of Jewish Moroccan origin. In cases where no variant is found in a known gene, more comprehensive diagnostic tests should be used.

Since the beginning of the deep sequencing era, less than a decade ago, the number of deafness-related genes in the

BALLOON DILATION OF THE EUSTACHIAN TUBE - THE EXPERIENCE ESTABLISHED IN HILLEL YAFFE MEDICAL CENTER

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Introduction: The Eustachian tube ventilates the middle ear while keeping pathogens out. Obstructive dysfunction of the Eustachian tube is a common complaint, manifested by the inability to equilibrate middle ear pressure. Middle ear sequelae include inflammation, tympanic membrane retraction and rarely cholesteatoma. Balloon dilation is a new procedure for treating obstructive dysfunction of the Eustachian tube.

Objectives: This research evaluates the outcome of balloon dilation of the Eustachian tube (BDET) performed at Hillel Yaffe Medical Center and compares results with those reported in global publications.

Methods: Patients indicating that ear pressure had significantly impacted their quality of life were recruited. Most received a conductive hearing loss audiogram and either a B or C tympanogram. BDET was performed. A 12-month follow-up survey was conducted, including an ETDQ7 questionnaire and repeat audiograms and tympanograms.

Results: A total of 16 patients were recruited and 24 BDETs were conducted. Aside from one patient, who received ambulatory treatment for subcutaneous emphysema, no patients had BDET complications; average ETDQ7 scores improved from 25.9 (n=20) to 15.3 (n=9) 12 months post-op. (P=0.001)

Conclusion: BDET is a safe procedure and benefits those who suffer from an obstructed Eustachian tube. A comprehensive literature review also concludes that BDET is safe, that it relieves the obstructive Eustachian tube and is superior to conservative treatments. BDET is increasingly being used on a global scale and the Hillel Yaffe Medical Center is applying it in Israel. ●

THE SIGNIFICANCE OF TORSIONAL NYSTAGMUS ON THE ROLL REST

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Objective: To characterize a subgroup of patients that were diagnosed with benign paroxysmal positional vertigo of the posterior semicircular canal pBPPV, with findings of geotropic-torsional nystagmus on the roll rest (RT) that intensified on the Dix-Hallpike exam (DH).

Patients and Methods: The study population consisted of patients with the diagnosis of pBPPV. First, the roll test (RT) and then the DH test were performed. Characteristics were compared between group 1 – patients with a negative RT and positive DH (in keeping with pBPPV), and group 2- patients with a torsional-geotropic nystagmus on the RT, that intensified on DH. Patients from both groups were treated with the Epley maneuver. If the nystagmus continued, further Epley maneuvers were performed until it subsided. Patients continued follow-up visits until they were asymptomatic and the exam was normal.

Results: Ninety-one consecutive patients were diagnosed with pBPPV. Sixty nine patients belonged to group 1 and 22 to group 2. The average age was just under 60 and the percentage of males was 22 in group 1 and 45 in group 2, which was significantly different. Additional significant differences included: 1. Symptom duration, in days, until diagnosis (43.2 in group 1 and 22.3 in group 2). 2. The fraction of patients requiring only one Epley maneuver in the first treatment session was 77.4% in group 1 and 23.4% in group 2.

Conclusions: The appearance of a torsional-geotropic nystagmus during RT is most probably due to pBPPV, with a more severe clinical presentation, requiring more Epley maneuvers than in patients with a negative RT. These patients had increased symptoms and were diagnosed earlier. However, the response to treatment was similar in both groups.

It is most important to differentiate these patients in group 2 from patients with BPPV arising from the horizontal semicircular canal, which has different clinical features and is treated differently. ●

UNCONTROLLED PENETRATION OF THE DENTAL IMPLANT TO THE MAXILLARY SINUS – A COLLABORATION BETWEEN ENT AND ORAL AND MAXILLOFACIAL SURGERY

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Introduction: The popularity of dental implants is continuously increasing. Displacement of implants into the maxillary sinus is a well-documented complication following this treatment.

Goals: To characterize patients treated in our institution for uncontrolled penetration of dental implants into the maxillary sinus, and highlight the importance of the multidisciplinary approach in treating these cases.

Methods: The charts of all patients treated in 2018 within the Sinuses and Dental Clinic at the Meir Medical Center

Introduction: The larynx is the most common site of neuroendocrine tumors in the head and neck region. Tumors are divided morphologically into epithelial-derived tumors (carcinomas) and neural-derived tumors (paragangliomas). The classification of neuroendocrine tumors has evolved over the past two decades.

Study objectives: To investigate the incidence and histological types of laryngeal tumors in Israel.

To evaluate laryngeal neuroendocrine tumors treated at a single tertiary referral center, while describing current classification and controversies.

Methods: Retrospective investigation was conducted of laryngeal tumors treated at Hadassah University Hospital between the years 2007 and 2016.

Analysis was performed of all cases diagnosed in Israel between 2005 and 2014.

Previous and current classifications of laryngeal neuroendocrine tumors were reviewed.

Results: Two hundred and twenty new laryngeal cancers were diagnosed on average annually in Israel during the study period. Squamous cell carcinoma consisted in most cases (95%); yet, no documentation of neuroendocrine tumors was noted. Three patients, in their fifties, were treated for laryngeal neuroendocrine tumors at Hadassah. Tumors consisted of paraganglioma, typical carcinoid and small cell neuroendocrine carcinoma. Investigation, treatment, outcome, and classification are described.

Discussion and conclusions: This is the first description of laryngeal neuroendocrine tumors in Israel. The lack of clarity for diagnosis, documentation and classification of this rare, heterogenic group of tumors, described worldwide, was noted in Israel as well. A multidisciplinary team, including experienced pathologists, radiologists, head and neck surgeons and oncologists, is mandatory for providing the best patient care. ●

PREOPERATIVE THREE-DIMENSIONAL PLANNING FOR COMPLEX HEAD AND NECK RECONSTRUCTION

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Background: The treatment of patients with advanced head and neck cancers requires an extensive oromandibular and craniomaxillofacial resection in many cases. The reconstruction after these extensive resections presents many challenges to the reconstructive surgical team. The purpose of the reconstruction is not only to rehabilitate the physical facial appearance, but also to rehabilitate function,

in order to improve future quality of life. To achieve this goal, the use of free tissue reconstruction is often required. The main challenge with osseous free flap reconstruction of the facial bones is the need of perfect alignment at the defect site. The use of different 3D technologies including computerized models and printed 3D stereolithographic models in the preoperative setting improves the accuracy and the outcome of the reconstruction. ●

FOCUSING AND UPDATING INDICATIONS FOR VENTILATING TUBES INSERTION IN PEDIATRIC COCHLEAR IMPLANT CANDIDATES WHO SUFFER FROM OTITIS MEDIA

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Background: After cochlear implantation (CI) there is concern regarding the potential risks of spread of middle ear infection along the electrode array into the cochlea and central nervous system and regarding late sequela of otitis media (OM): eardrum perforation, atelectasis and cholesteatoma. The age for implantation in children overlaps the peak age incidence of acute OM (AOM) and secretory OM (SOM) and delay of implantation reduces the potential benefit from the intervention. Therefore, control of OM by inserting ventilating tubes (VT) is widely performed in pediatric CI candidates who also suffer from otitis media.

Objective: To refine indications for VT insertion in candidates for cochlear implantation who also suffer from OM.

Patients and methods: Of 200 children referred for CI and implanted one after another, 126 were classified as OM-prone, 98 due to AOM and 28 due to SOM. The rate of development of late sequela of middle ear disease was compared between the two subgroups of OM-proneness.

Results: A total of 15 children (7.5%) developed late sequela of middle ear disease; all belonged to the SOM group; 3.5% developed eardrum perforation; 3.5% atelectasis and 0.5% cholesteatoma.

Conclusions: Pre-CI VT insertion in children with SOM who underwent CI did not prevent development of late sequela of middle ear disease; VT insertion with the object of preventing late sequela of middle ear disease in CI candidates who suffer from SOM only is not required; in otitis-prone children a long term oto-microscopic follow-up is needed in order to identify late sequela of middle ear disease. ●

OTOLARYNGOLOGY, HEAD AND NECK SURGERY – VARIETY OF PATHOLOGIES AND MANAGEMENT OPTIONS

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The field of otolaryngology, head and neck surgery faces a wide range of medical conditions, starting with upper airway morbidity, head and neck tumors, hearing loss and deafness, ear diseases, nose, sinuses, and anterior skull base conditions, pediatric otolaryngology, laryngology and facial and reconstructive plastic surgery.

The current issue of this journal presents a variety of manuscripts that are in the forefront of our specialty in Israel and around the world. The management of laryngeal tumors is undergoing thorough modification aiming to preserve the organ while early tumors are treated endoscopically using laser technology. The human papilloma virus is one of the major changes that recently emerged as an important etiologic factor for oropharyngeal carcinoma in young nonsmokers.

Hearing loss and deafness are negative contributors to the quality of life. Congenital hearing loss has a major effect on brain development, and speech and language development, therefore, early cochlear implantation is beneficial for well child development. Different aspects associated with cochlear implantation are discussed in this issue.

Many fields that are associated with our specialty are gradually utilized by otolaryngologists, for example the utilization of ultrasound by surgeons.

The field of otolaryngology head and neck surgery is dynamic and abundant with innovative technologies that are presented in this article, starting with cochlear implants, robotic surgery, and the utilization of 3D printers for complicated facial reconstructions. We are in the midst of a journey and we may assume that the future holds great promise both for our patients and for us as health care providers. ●

EARLY LARYNGEAL CANCER – TREATMENT OUTCOMES OF TRANSORAL LASER MICROSURGERY

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Background: Transoral laser microsurgery (TLM) is the treatment of choice for early laryngeal cancer. The current

study aimed to assess the outcomes and validity of carbon dioxide (CO₂) laser microsurgery in patients with early larynx cancer and to determine predictors for outcomes.

Main objective of the study: To evaluate predictive factors for local control, larynx preservation and overall survival in patients with early laryngeal cancer, who were treated with endoscopic transoral CO₂ laser microsurgery.

Methods: A retrospective study included all patients who were treated with laser microsurgery, in the Department of Otolaryngology, Head and Neck Surgery, Carmel Medical Center, Haifa, between the years 2009-2016. We evaluated outcomes according to local control, margin status, larynx preservation, and overall survival. Cordectomy types I-V were classified by the European Laryngological Society (ELS).

Results: Laser microsurgery was performed in 74 patients with early laryngeal cancer, mean age 68.2±10.4 years, M: F 65:9, mean follow-up 58±28 months. Seventy-three percent (73%) were smokers. Primary tumor location was glottic in 68 patients (92%), supraglottic (5 patients - 7%), and subglottic (1 patient - 1%). Tumor stage was as follows: Tis: 18 patients (24%), T1a: 35 patients (47%), T1b: 10 patients (14%) and T2: 11 patients (15%). In 72 patients (97%), margins were taken from the patient side, 64% (46 patients) had negative margins, whereas 26 patients (36%) had positive margins.

Patients with positive margins had either further laser surgery (19%), or radiotherapy (14%). Two patients were not treated for positive margins, both had recurrent disease in a mean follow-up of 26 months, and both had total laryngectomy. Five years local control rate (LCR) stratified by stage was as follows: Tis-81.5%, T1a- 88%, T1b-100% and T2 - 58% (NS).

Overall 5-year local control rate (LCR) was 83%, with no significant difference between patients with positive or negative margins. Overall 5-year survival was 87% and organ preservation rate was 93%.

Conclusions: Laser microsurgery provides an excellent rate of disease free/overall survival for early laryngeal cancer and has a valuable role in organ preservation. No significant differences were found in LRC and overall survival between patients with positive margins compared to patients with negative margins, most probably due to immediate further intervention in patients with positive margins. ●

LARYNGEAL MALIGNANCIES IN ISRAEL – THE DIAGNOSIS, CLASSIFICATION AND TREATMENT OF NEUROENDOCRINE TUMORS

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