Introduction

In 1952, William M. Christopherson, a surgical pathology fellow at Memorial Sloan Kettering Cancer Center, published 12 cases describing the incredibly rare and yet unnamed alveolar soft part sarcoma (ASPS). ASPS makes up 0.5-1.0% of soft tissue sarcomas; it usually involves the lower extremities in young adults and the head and neck in children. Though it grows slowly, ASPS has a high degree of vascularity and predilection for spread → early metastasis (21-45% at diagnosis), usually to the lungs, brain, and bone.

The increased vascularity of ASPS, limited surgical field of the larynx, and proximity of vital structures demand excellent surgical technique but also well-equipped equipment. This case highlights not only a rare tumor but also the efficacy of a new instrument.

The LF-40 GOLD Laser is a 980nm laser containing indium, arsenide phosphate, and gallium. Its delivery system combines suction with the laser for concurrent cutting/coagulation and blood/smoke removal. It allows for a thermal incision depth of 0.3mm and a 2.2mm length of incision.

The minimal depth of incision combined with low temperature of the fiber tip reduces collateral damage while providing rapid hemostasis.

These factors allow for fewer complications, better prognosis, and increased postoperative healing by controlling damage to nearby tissue, focusing laser curettage on target tissue, and minimizing blood loss.

Case Report

58-year-old Hispanic male with a long history of smoking complained of worsening dysphagia, hoarseness, and dyspnea accompanied by a “ball-valve” effect with movement.

Physical examination revealed a diminutive and thin man with non-tender lymphadenopathy on the left side of his neck.

Clinical examination with a flexible fiberoptic laryngoscopy revealed a pedunculated mass arising from the left aryepiglottic fold, involving the posterior commissure.

Computer tomography (CT) and positron emission tomography (PET) scan indicated the presence of a hypermetabolic supraglottic mass without extranodal involvement.

Patient underwent endoscopic transoral resection using the Lightforce-40 GOLD Laser combined with a modified radical neck dissection to address possible lymphatic involvement.

A 3.4x3cm lesion was resected with <30ml of blood loss.

Pathologic samples exhibited large pink cells, arranged in an alveolar pattern, with eosinophilic cytoplasm; they contained periodic acid-Schiff positive, diastase resistant rhomboidal-shaped crystalline material pathognomonic for ASPS.

Patient postoperatively and at follow-up could phonate, breathe without difficulty, tolerate diet, and had no significant pain.

Discussion

ASPS is an extremely rare malignancy and even more rarely encountered in the larynx of adults; we found only four published cases. This case represents the oldest patient reported with ASPS as well as a novel approach to its resection, using the LF-40 GOLD Laser.

Previous cases utilized total and partial laryngectomy that have been shown to physically and psychosocially affect patients:

1. Excess sputum production, cough, forced expectation to clear the airway, voice rehabilitation, fatigue, sleep disturbances, and psychosocial distress all contribute to a lower quality of life.

2. Heat and moisture exchangers (HMEs) have been used to compensate for the reduced function of the upper respiratory tract (URT), but the LF-40 GOLD Laser resection obviated the need for a HME because the larynx—and URT function—was spared.

Better control of hemostasis, minimization of bleeding, and less collateral damage to healthy surrounding tissue reduce morbidity and mortality.

Conclusion

The LF-40 GOLD Laser would be an excellent option for highly vascular tumors, such as ASPS, in confined spaces (e.g., the larynx), it should be considered another tool in the management of supraglottic masses.

The goal of technological advancement of surgical techniques is to provide patients safe alternatives and more efficacious approaches to standardized procedures.

Though this is only one instance, evaluating new technology on a case-by-case basis is an accepted starting point, and the outcome of these cases will establish confidence for broader acceptance by the medical community.

References


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