

BACKGROUND INFORMATION

Cartilaginous tumors of the head and neck are exceedingly rare, with chondrosarcomas of the larynx accounting for 0.5% of all laryngeal primary tumors. These neoplasms are often low grade and present late due to their propensity for slow growth³.

Chondrosarcomas of the larynx are most often seen in Caucasian males in the sixth to seventh decade of life, initially presenting with hoarseness and shortness of breath. Additionally, chondrosarcomas of the larynx typically arise from the cricoid cartilage, with a cricoid-to-thyroid ratio of 3:1. Metastasis of chondrosarcomas of the larynx is rare; despite this, total laryngectomy may be performed due to frequency of recurrence in cases of incomplete excision⁴.

Upon gross examination, chondrosarcomas of the larynx may be sectioned transversely rather than the standard sagittal sectioning to better evaluate extension from laryngeal cartilages and invasion into the airway, as well as to better assess margin status⁵.

PATIENT INFORMATION

A case is presented as a 73-year-old male with a 7-month history of stridor and shortness of breath. The patient presented to the ER and received a tracheostomy, panendoscopy and biopsy. CT showed a large cricoid mass obstructing the airway. No evidence of metastatic disease was found. Biopsy showed a laryngeal cartilaginous neoplasm with differentials of either chondroma or low-grade chondrosarcoma.

The patient underwent a total laryngectomy, and intraoperative frozen section revealed cartilaginous-type tissue negative for malignancy at the distal tracheal margin.

GROSS EXAMINATION

Gross examination revealed a total laryngectomy specimen including larynx, stoma, hyoid bone, and a portion of trachea (Figures 1 and 2).

The specimen was serially sectioned in the transverse plane rather than parasagittal due to an obvious mass extending posteriorly, pushing into the perilaryngeal soft tissue.

Sectioning revealed a heterogenous cartilaginous mass 4.0 cm in greatest dimension obliterating the cricoid cartilage below the glottis. The mass appeared lobulated with focal areas of hemorrhage and was pushing into the tracheal space with near complete obstruction, abutting both the anterior and posterior perilaryngeal soft tissue margins (Figure 3).

The epiglottis and vocal cords were unremarkable, and the stoma was patent and unremarkable.

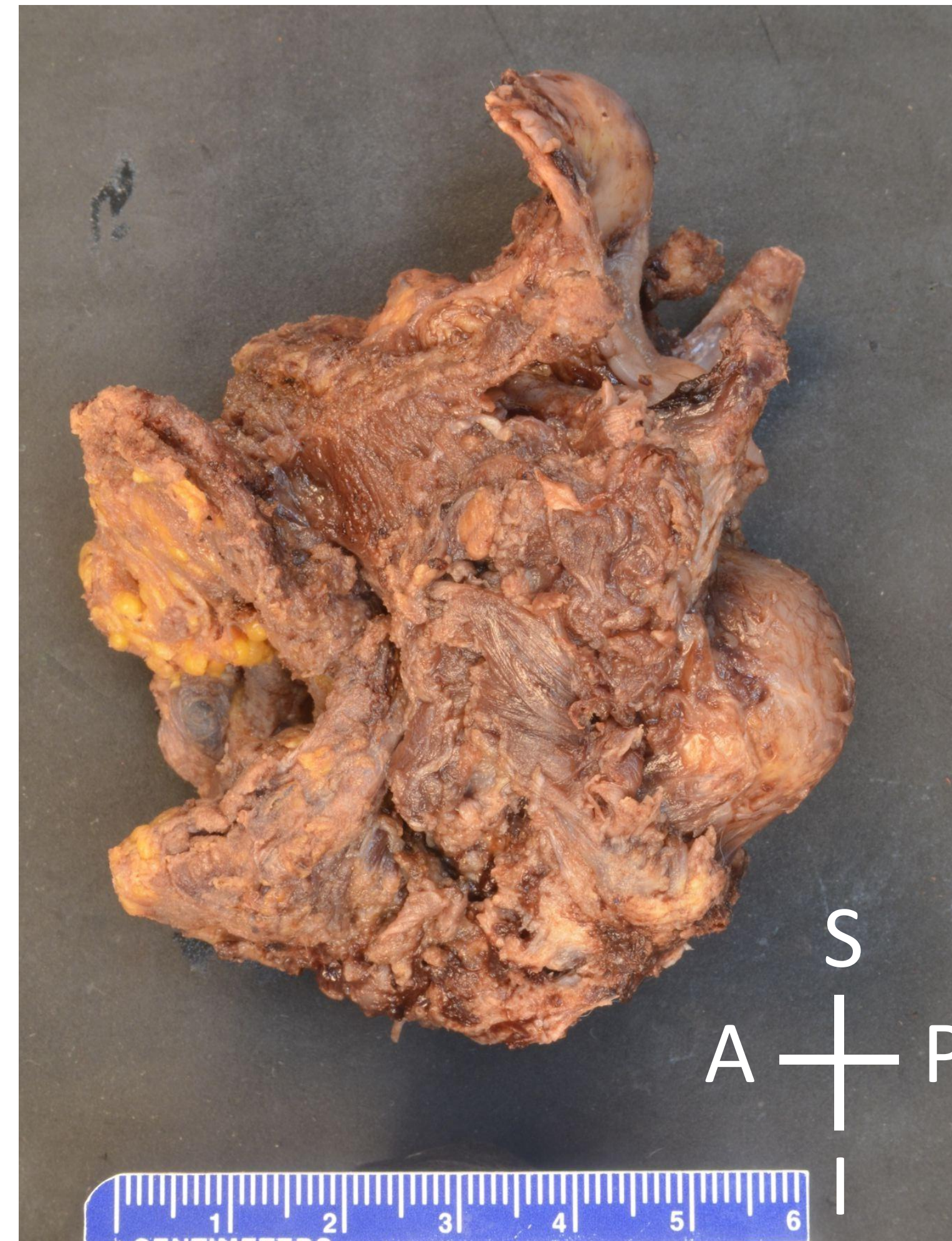


Figure 1: Lateral view with mass extending posteriorly. S = superior, P = posterior, I = inferior, A = anterior.

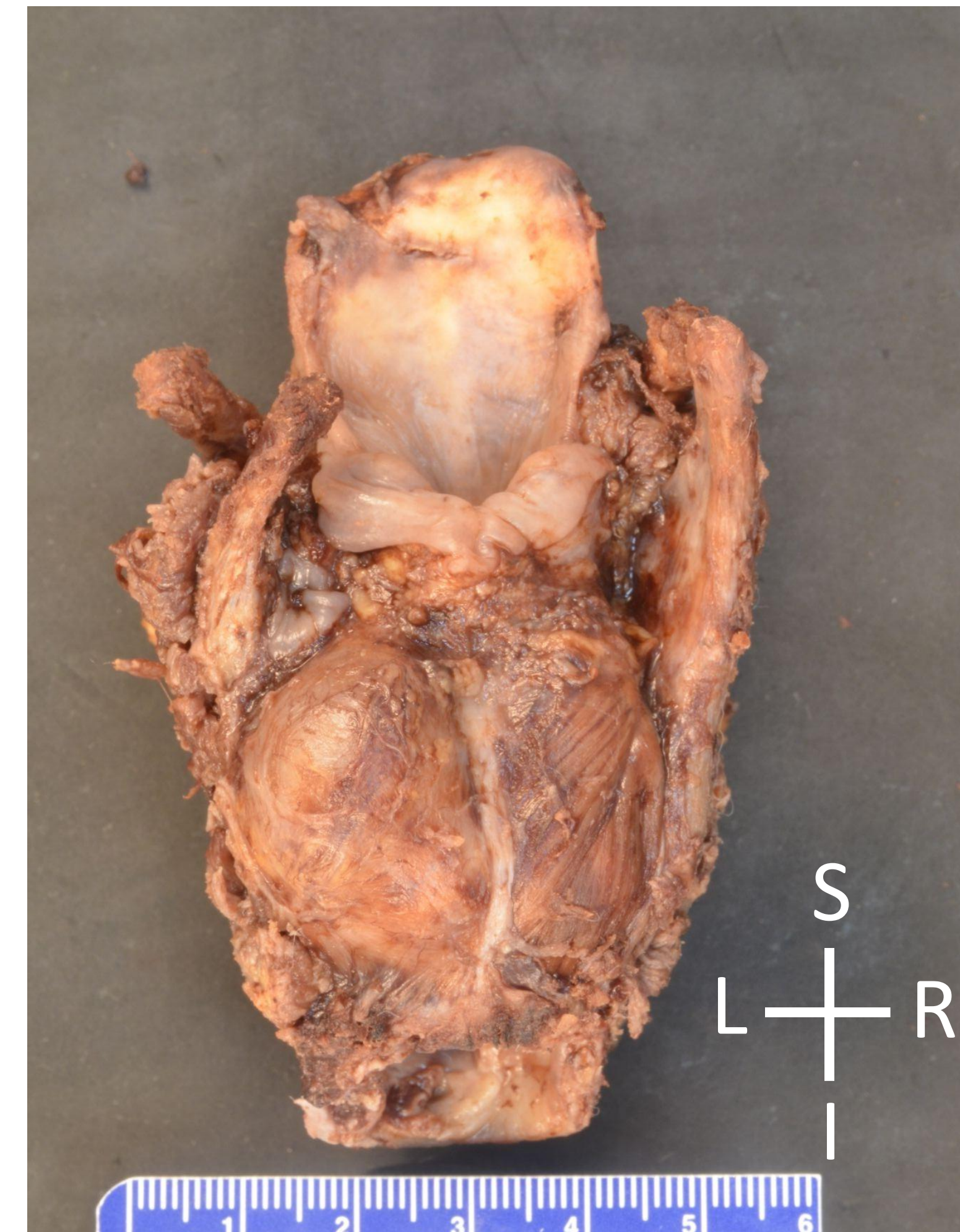


Figure 2: Posterior view demonstrating lateral extent of mass. S = superior, R = right, I = inferior, L = left.

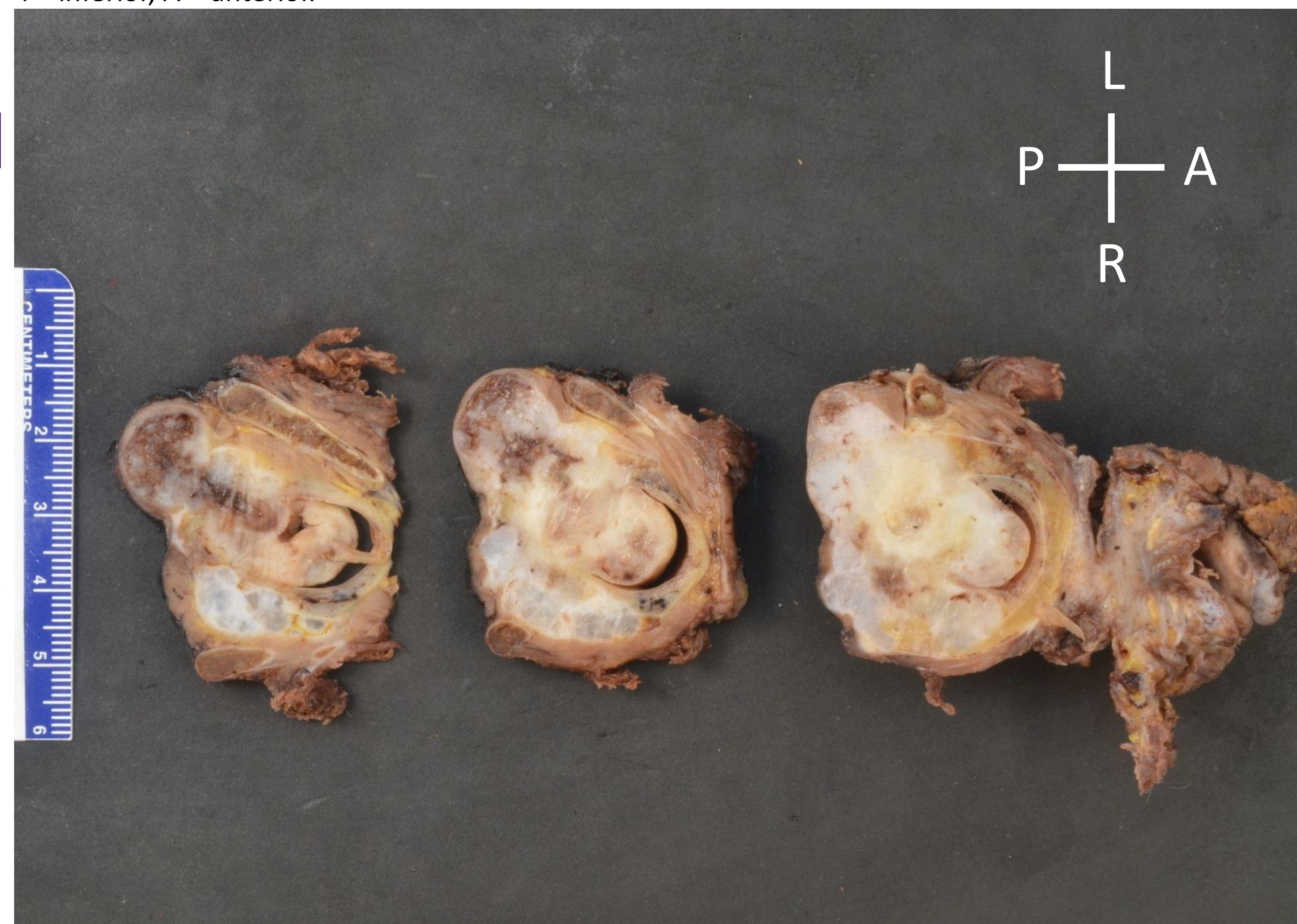


Figure 3: Transverse slices demonstrating mass bulging into the laryngeal space. L = left, A = anterior, R = right, P = posterior.

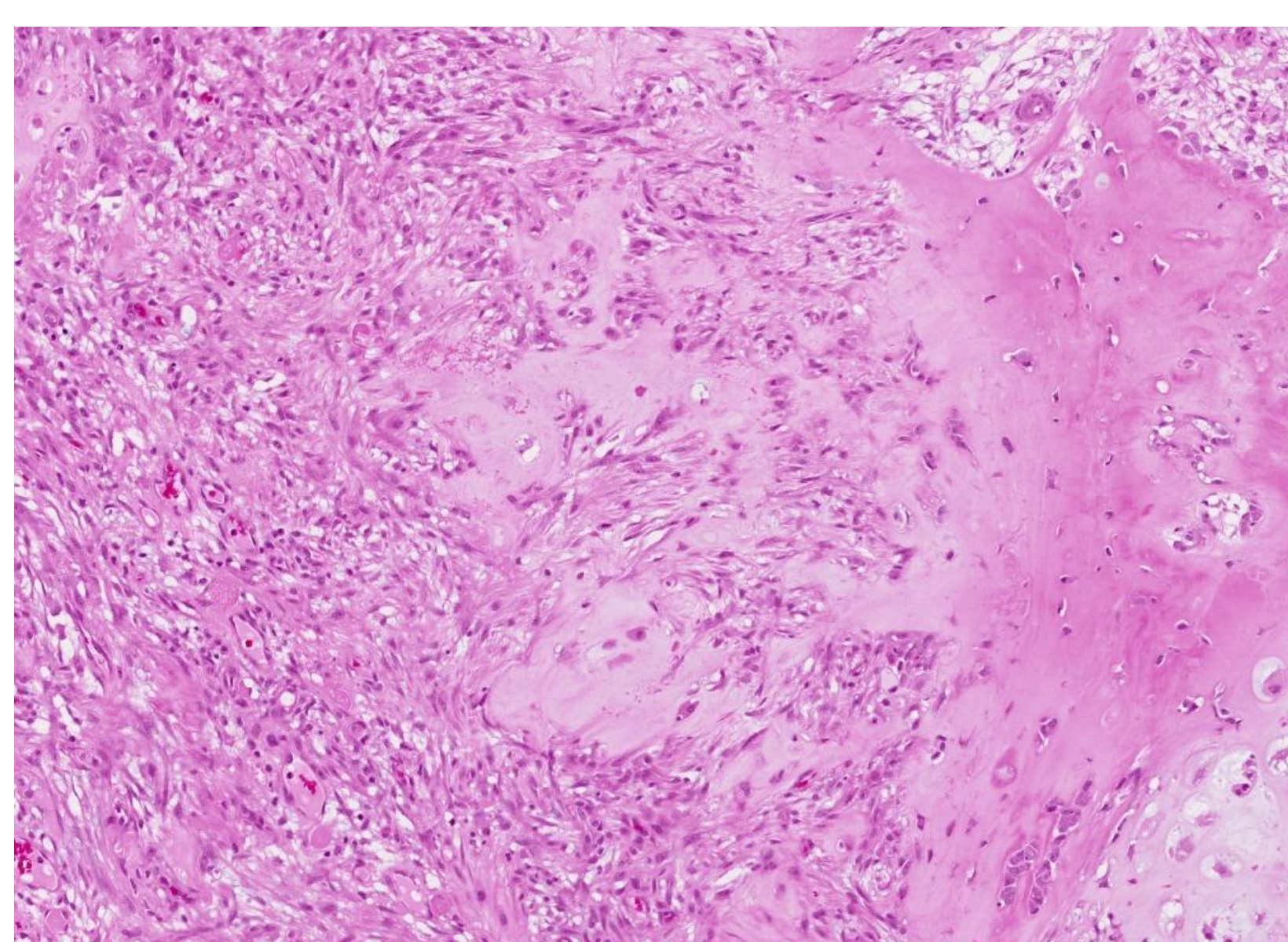


Figure 4: Focal area demonstrating grade 2 chondrosarcoma

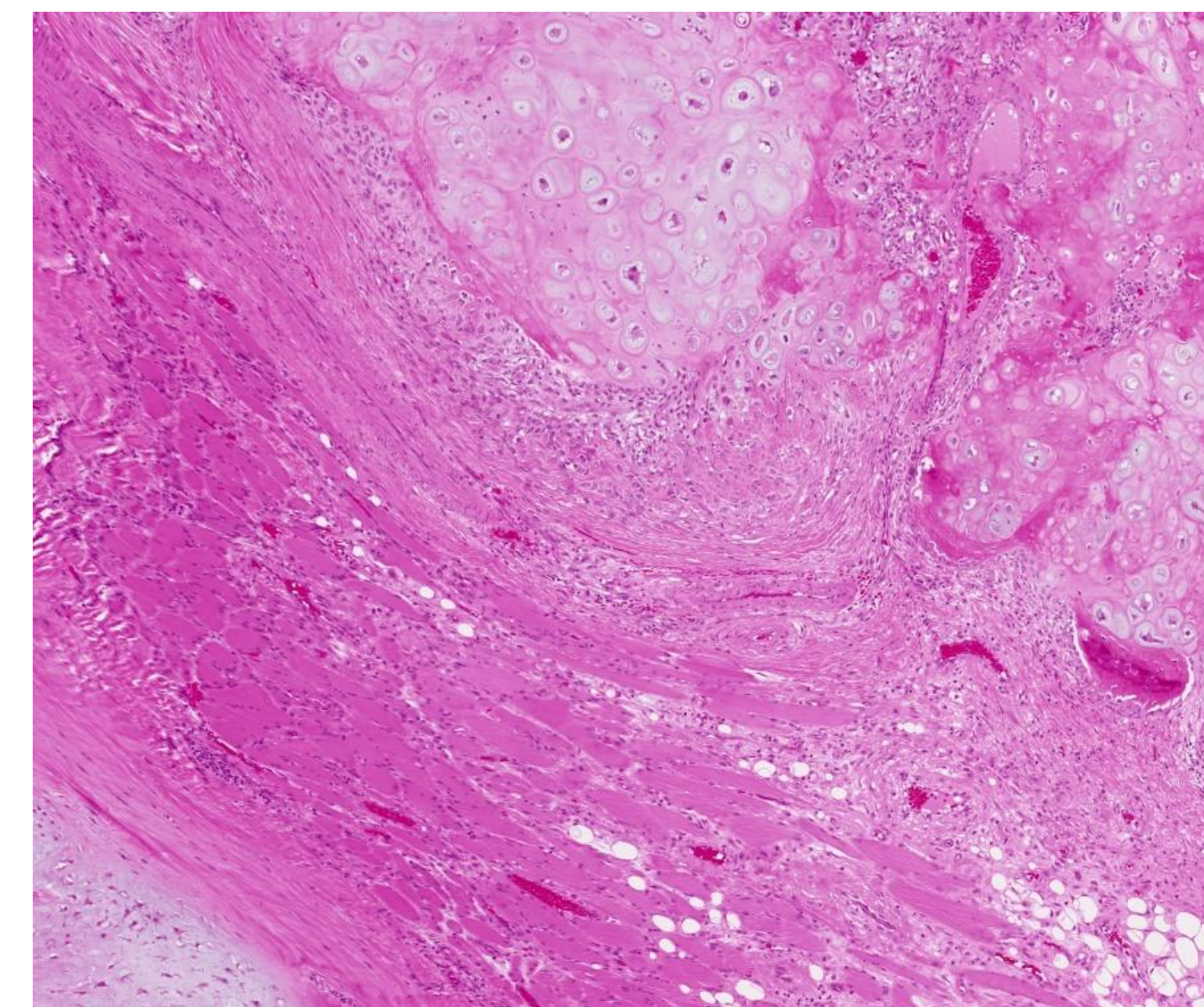


Figure 5: Invasion of mass into perilaryngeal soft tissue

MICROSCOPIC EXAMINATION

Histopathological evaluation confirmed the mass to be a chondrosarcoma 4.0 cm in greatest dimension arising from the cricoid cartilage.

The chondrosarcoma was predominantly grade 1 with focal areas of grade 2 (Figure 4). Invasion of laryngeal submucosa, perilaryngeal soft tissue, and bone and marrow space was identified. (Figure 5) The mass was present 0.5 mm from the inked perilaryngeal soft tissue resection margin.

Lymphovascular and perineural invasion was not identified. The glottic and supraglottic regions were unremarkable, and the pharyngeal mucosa and tracheal margins were found to be negative for malignancy.

DISCUSSION

Chondrosarcomas of the larynx are uncommon but have an excellent prognosis⁴. The patient presented in this case study fits the demographic and presentation of previously reported cases.

Laryngectomy specimens are often sectioned sagittally, allowing for visualization of tumor spread to landmarks used to designate staging such as the vocal cords and ventricles. For cases in which the mass of the larynx is posteriorly located, transverse sectioning is advantageous as it provides good visualization as well as accurate evaluation of invasion of perilaryngeal tissue and anterior and posterior soft tissue margin status⁵. Since chondrosarcomas of the larynx are most often seen arising from the cricoid cartilage³, transverse sectioning of the larynx should be considered for cases in which the mass is suspected to be cartilaginous.

Chondrosarcomas of the larynx are most often treated via surgery. Hemilaryngectomy is often performed in an effort to spare vocal function for the patient; however, chondrosarcomas of the larynx have a frequency to recur, so incomplete excision risks the need for additional resection that may increase patient burden³. In this case, the mass was obliterating the cricoid cartilage, a structure necessary for laryngeal support, so total laryngectomy was selected.

REFERENCES

³Alexander J, Wakely PE Jr. Primary laryngeal clear cell chondrosarcoma: report of a case and literature review. *Head Neck Pathol.* 2014;8(3):307-10. doi: 10.1007/s12105-014-0542-8. Epub 2014 Apr 9. PMID: 24715432; PMCID: PMC4126919.

⁴Baatenburg de Jong RJ, van Lent S, Hogendoorn PC. Chondroma and chondrosarcoma of the larynx. *Curr Opin Otolaryngol Head Neck Surg.* 2004 Apr;12(2):98-105. doi: 10.1097/00020840-200404000-00008. PMID: 15167045.

⁵American Association of Pathologists' Assistants. "Protocol for the Examination of Specimens from Patients with Primary Carcinoma of the Larynx." *AAPA Macroscopic Examination Guidelines: Utilization of the CAP Cancer Protocols at the Surgical Gross Bench*, Edition: 3.0, May 2022, pp. 9