

Table 1. Incidence of hoarseness in surgical procedures beyond thyroidectomy

Procedure	Author	Incidence of hoarseness	Mechanism of injury	Method of identification of hoarseness	Study category
Carotid endarterectomy	AbuRahma et al ⁵⁹ Ballotta et al ⁶⁰ Schauber et al ⁶¹ Morris ⁶⁴	7% 2-10% in restenosis surgery	Local trauma to the nerve by means of retraction, stretching, clamping and transection. However, most of the clinical injuries occur during retraction	Clinical examination and direct laryngoscopy	Prospective LOE II-2
Open heart surgery	Hamdan et al ⁵⁸	1-2%	Several mechanisms	Direct laryngoscopy	Review article LOE III
Lung cancer	Filaire et al ⁵² Zhao et al ³⁶	31%	Surgical injury, tumor invasion	Fiber optic laryngeal examination	Prospective LOE II-2
Esophagectomy	Isono et al ⁵³ Nishimaki et al ⁵⁵ Pertl et al ⁵⁴	45-80%	Cervical access and lymphadenectomy	Clinical examination and direct laryngoscopy	Prospective LOE II-2
Cervical spine surgery	Jung et al ^{49,50}	1,3-25%	Endotracheal cuff pressure, retraction	Indirect laryngoscopy	Prospective LOE II-2
Intubation or extubation	Kambic et al ⁴² Zimmert et al ²⁹ Mencke et al ^{35,36} Echternach et al ²⁶	6.2-31%	Arytenoid trauma, surgical trauma, modification of the vascular supply and venous drainage of the larynx, etc.	Videoendoscopy and videostrobolaryngoscopy	Randomized controlled trial LOE I
Mediastinoscopy	Roberts et al ⁴⁰	1-6%	Traction in the anterior mediastinum	Intraoperative neuromonitoring	Prospective LOE II-2

LOE= Level of evidence according to US Preventive Services Task Force (USPSTF).