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Case Series

Surgical Treatment of Laryngeal Haemangioma Laser CO_2 Excision: Our Experience in Adult Patients

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ABSTRACT

Introduction
Haemangioma is a benign vascular tumor, of endothelial origin, that affects the head and neck region in 60% of cases. Laryngeal localization is rare.

Case Presentation
In the last 9-years, we observed three cases of laryngeal haemangioma, two females, and one male. All patients underwent to surgical excision. None of the three cases had intraoperative complications.

Discussion
The elective treatment of laryngeal haemangiomas remains controversial. In our cases, we opted for laser excision and we noticed that the risk of haemorrhages was particularly low, without no post-surgery complications.

Conclusion
We believe that due to the low morbidity and the fast-clinical recovery after treatment with definitive problem resolution, surgical treatment with laser CO_2 should be always considered for treatment of laryngeal haemangioma.

Keywords
Haemangioma; Laser CO_2; Laryngeal neoformation.

INTRODUCTION

Haemangioma is a benign vascular tumor, of endothelial origin, that affects the head and neck region in 60% of cases;[1] a laryngeal localization is rare.[2,3] It is more common during pediatric age;[4] in children it tends towards spontaneous regression and to subglottic localization,[5] whereas in adults it is infrequent and is normally observed in the glottic or supraglottic region,[5] mainly affecting the male sex.[4] Clinical symptoms are often absent;[1] in fact, a diagnosis of supraglottic haemangioma is generally due to an occasional endoscopic finding.[6,7] The detection of cutaneous head and neck haemangioma seems to be a risk factor because of the simultaneous presence of a laryngeal haemangioma;[8] which happens in 50% of infantile haemangiomas, but only seldom in the adult variant.[9] From a histologic viewpoint, it is mainly of cavernous type or mixed with a thin and friable mucosa covering the vascular stroma.[10] Potential complications consist of growth along with alteration of the laryngeal functionality; in the most advanced cases, it might even give rise to obstructive symptoms of the respiratory tracts and to hemorrhage.[11] We should bear in mind that it is not a progressive tumor, hence in some instances clinical observation is the preferable treatment;[12] given, however, the risk of hemorrhage, an aggressive type of treatment is instead opted for.[5] The therapeutic options envisage endoscopic removal with CO_2 laser, use of systemic steroids, interferon, and intralesional corticosteroid injections with short-term intubation.[11]

CASE SERIES

The study has been conducted by respecting the role of Helsinki declaration for human right and it was authorized by the institutional review board (IRB) committee of the Silvestrini University

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Hospital, without releasing an identification number. At Perugia's Otorhinolaryngology and Cervical-Facial Surgery Clinic, between August 2008 and February 2017, we observed 3 cases of laryngeal haemangioma, two females and one male, age ranging between 45 and 70-years. The female patient, aged forty-five, did not exhibit any symptom; as for the second case, a 56-year-old man, he had shown an episode of hemoptysis one month earlier; whereas the third patient (a woman), seventy years old, asymptomatic, underwent examination by an otolaryngologist to assess laryngeal motility in anticipation of a total thyroidectomy operation. All the patients underwent an ear nose throat (ENT) visit, magnetic resonance imaging (MRI) and fiber-optic laryngoscopy that highlighted: in the first case, as an occasional finding, a red-bluish lesion, lobate and mulberry-shaped, of approximately 11x13 mm, with an elastic texture at the level of the right aryepiglottic fold, an extremely rare localization (Figures 1 and 2); in the second case, there was a bluish sessile neoformation, localized at the level of the upper edge of the epiglottis; in the third case, there was a clear neoformation of the left vestibular fold about 0.8 mm in diameter. All the patients were surgically treated by CO_2 laser. The surgical intervention was carried out under general anesthesia. We used an operations mikroskop (OPMI) Sensera/S7-type Carl Zeiss microscope with 415 mm focal lenses, associated with a Sharplan CO_2 Laser System. The Laser was set in the pulsed emission mode (0.05 sec) and with an intensity variability between 2 and 5 watts; during the coagulation procedure, the laser intensity was reduced to 1-2 watts. The histological examination, in all the instances, attested a venous malformation with thrombosed and organized areas.

Figure 1: *Endoscopic View of a Red-Bluish Lesion on the Right Aryepiglottic Fold*

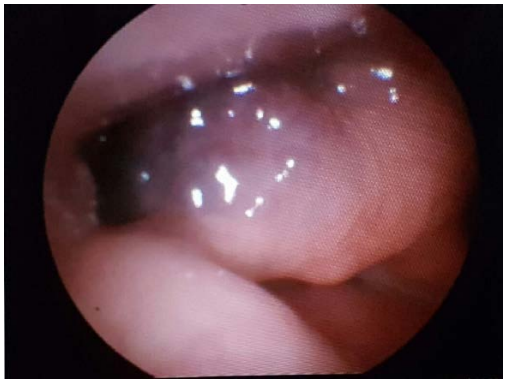
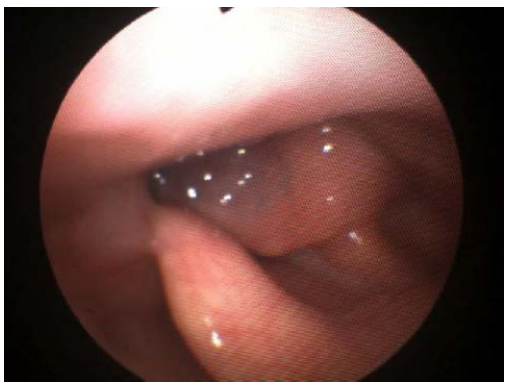
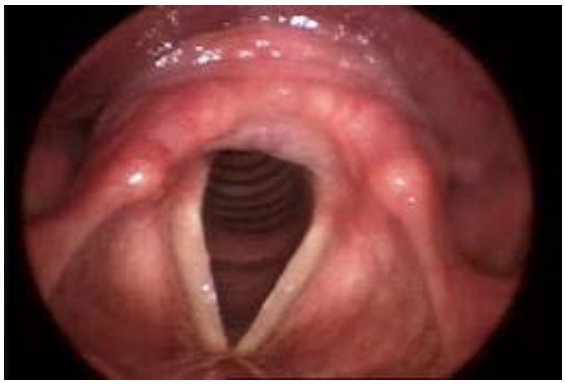


Figure 2: *Endoscopic View of a Red-Bluish Lesion on the Right Aryepiglottic Fold*



None of the three cases showed intraoperative complications. The excision has been easily finalized, thanks to excellent control of bleeding carried out by the combination of laser and bipolar tweezers. Thanks to the setting of CO_2 at the intensity of 1-2 watts during the coagulation procedure, we did not observe significative intraoperative bleeding. The patients were discharged after 48 hours following surgery. The follow-up was conducted 15 to 30-days after the intervention, and subsequently on a quarterly basis for the first year and then after 18 and 24-months from the excision. A temporary form of dysphonia was observed in patients 2 and 3, the symptom regressive spontaneously and it wasn't observed at the second follow-up in both patients. We speculate that dysphonia was secondary to the inflammation and edema of the surrounding tissue after CO_2 treatment; subcutaneous edema may be diffused until the glottic plane by inhibiting the normal vocal folds function. No functional post-surgery alterations were detected (Figure 3). In the second case, we detected the presence of a small bluish lesion at the level of the upper edge of the epiglottis after 24-months.

Figure 3: *Laser CO_2 Removal Results*



DISCUSSION

Laryngeal haemangioma in adults is an infrequent tumor, and it is rarer especially in the female population.[4,5] In our case series, we report two women affected from this pathology *versus* a single man only, and thus the strength of our paper is due to the rarity of the haemangioma in the female. There are a few clinical pieces of evidence in the literature, especially in the arytenoid localization, in support of rarity of this pathology. The election treatment of laryngeal haemangiomas remains still unclear.[5] Silent from a clinical viewpoint, it may manifest with dysphagia, dyspnea in the event of very bulky neoformations, or hemorrhage in case of breakage.[6, 7] In our case, detection of the neoformation was a occasional, and execution of the MRI has proven to be useful to confirm the nature and extent of the neoformation. Due to the high risk of hemorrhage, execution of a biopsy and cold excision is not recommended;[6,7,13,14] in agreement with other authors, we believe, although from a histopathological point view it exhibits some benign characteristics, the first choice treatment of laryngeal haemangioma is excision.

We think that our choice to not perform a tracheostomy

before CO_2 may explain the reduced time of recovery in our case series, in addition, to limit the inflammation and edema intraoperatory cortisone was administered. We did not perform a temporary tracheotomy before laser CO_2 excision and this reduced the time of recovery of our patients that was in all of the cases 2 day.

The intraoperative bleeding was not significative in any patients. The optimal surgical approach to these lesions is still controversial given the limited case studies. Leaving aside such surgical approaches as pharyngotomy and laryngofissure, suitable for very bulky and/or very extensive neoformations, we recall that some authors believe that excision by CO_2 laser is not recommended for laryngeal haemangioma in adults.[15] On the other hand, Steiner and Ambrosch take the stance that this type of haemangioma might be successfully treated by CO_2 laser if it is pedunculated or circumscribed.[16]

CONCLUSION

In our cases, we opted for laser excision and we noticed that the risk of hemorrhages was particularly low, while no post-surgery complications arose. Thanks to the CO_2 laser technique, excision of the neoformation was, for all the patients, complete and free from any relapses months later. The limited morbidity of this technique and the fast clinical recovery with a permanent solution of symptoms makes us believe that the surgical approach through CO_2 laser is an effective one in treating this type of disease.

CONFLICTS OF INTEREST

The authors declare that they have no conflicts of interest.

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