

Impact of Intralesional Steroid Injections in a Case of Postintubation Subglottic Granuloma

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Received on: 07 July 2023; Accepted on: 15 December 2023; Published on: xxxx

ABSTRACT

Subglottic granuloma is a rare but life-threatening complication of long-term tracheal intubation. Here, we report a case of an adult female who presented with difficulty breathing. The patient had a history of intubation in the past, and on video laryngoscopy, it was diagnosed as subglottic granuloma and managed with microlaryngeal surgical excision with intralesional steroids. Postoperative systemic and inhaled steroids with prompt anti-reflux medications were advised. Recurrence of the granuloma was treated on outpatient department (OPD)—based procedure of intralesional steroid injections and followed up with no evidence of any lesion for a period of 10 months.

Keywords: Case report, Granuloma, Intralesional injection, Laryngeal granuloma, Postintubation granuloma, Steroid injection, Steroids, Subglottic granuloma.

International Journal of Phonosurgery & Laryngology (2023): 10.5005/jp-journals-10023-1247

INTRODUCTION

Subglottic granuloma is most commonly seen in patients with prolonged intubation with endotracheal tube.¹ The microscopic abrasions due to the large size of the tubes or forced tube insertion can trigger formation of the granuloma at that site and result in breathing difficulty with airway compromise.¹ Treatment options for the management of such airway granulomas include operative correction, endoscopic excision, several dilatation procedures, surgical tracheostomy, stenting, or steroid regimes.² Inhaled steroids and anti-reflux medications proved to give good results in laryngeal granuloma with laryngopharyngeal reflux, while surgical correction is mostly needed in the postintubation granulomas.³ We emphasize on the surgical removal of the granuloma followed by intralesional steroid injection regime for recurrent granuloma on follow-up visits. This avoids the need for a tracheostomy and also further complications like tracheal stenosis.

CLINICAL DESCRIPTION

An adult female, aged 36 years, presented with a complaint of breathing difficulty. She had a history of intubation 1 month back for viral pneumonia followed by type-I respiratory failure and, hence, intubated for 12 days. She gave no history of trauma, tracheostomy, or any neck surgery in the past. Computed tomography (CT) imaging showed a tracheal mass causing narrowing of the tracheal lumen. Bronchoscopy showed granulation over posterior wall of subglottis, causing 80% luminal narrowing with another small granulation tissue over the anterior wall of the trachea around 3 cm from the vocal cords as seen in Figure 1. The patient underwent microlaryngeal surgery with KTP laser-assisted excision of the granulation tissue. Intraoperative triamcinolone was injected locally over the granulation site. Symptoms were relieved significantly for the patient postoperatively. She was discharged with inhalational and systemic steroids and anti-reflux medications. The histopathology report revealed ulcerated squamous epithelium with underlying chronic inflammation. The aerobic tissue culture report indicated

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How to cite this article: Bhowmick N, Bansode S, Jadhao H, et al. Impact of Intralesional Steroid Injections in a Case of Postintubation Subglottic Granuloma. *Int J Phonosurg Laryngol* 2023;https://doi.org/10.5005/jp-journals-10023-1247.

Source of support: Nil

Conflict of interest: None

Pseudomonas aeruginosa with sensitivity to fluoroquinolones and calcofluor stain was negative. The patient was started with antibiotic therapy with oral ciprofloxacin for 2 weeks following sensitivity reports.

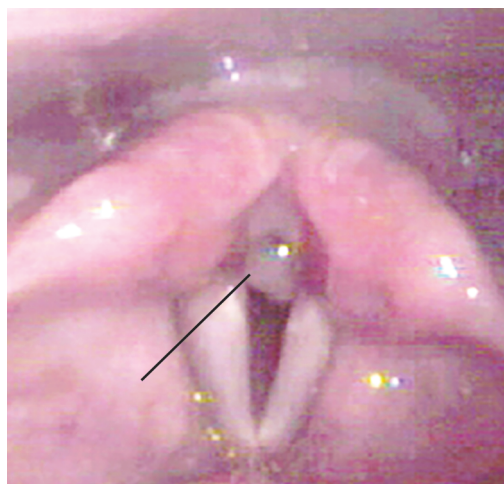


Fig. 1: Preoperative—granuloma noted in the subglottis



Fig. 2: Steroid injected in the granuloma through the spinal needle



Fig. 3: Reduced size of granuloma with multiple steroid injections

Follow-up video laryngoscopy with airway evaluation was done at 2, 4, 6, and 8 weeks postoperatively. Granulation tissue was observed over the posterior wall of trachea at the same site in the first follow-up video laryngoscopy. Patient also complained of mild breathing difficulty. Hence, the patient underwent surgical removal with cold steel instruments, and intralesional dexamethasone was injected. Patient had improved breathing postoperatively.

Intralesional injections were given in every follow-up visit on an outpatient department (OPD) basis as the patient had no significant breathing difficulty. Also, the size of the granulation tissue was observed to reduce progressively with each steroid injection.

The intralesional injection was given as an OPD procedure after obtaining due consent. In a sitting position, topical 10% lignocaine (two puffs) was sprayed in the nose and in the throat. Also, 2 mL of 4% lidocaine was sprayed topically over the glottic inlet and trachea by flexible video laryngoscopy. After local anesthesia over the skin and subcutaneous tissue, fiberoptic endoscopically guided trachea and subglottis were sprayed with local 4% lidocaine. Then, the granuloma site was injected with dexamethasone by passing the needle through skin and observed in subglottis with fiberoptic endoscopy, as seen in [Figure 2](#). Post-procedure, patient was observed for 2 hours in OPD for any distress or spasm.

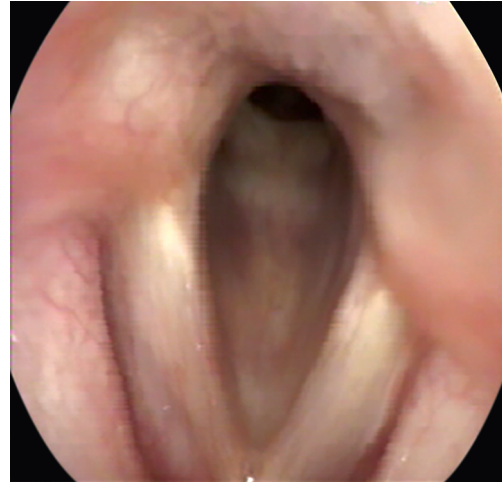


Fig. 4: No granuloma noted after 6 months

On subsequent follow-up visits, the size of the granuloma reduced with each dexamethasone injection, as seen in [Figure 3](#). Patient has been on regular follow-up for 10 months and is asymptomatic with no evidence of granuloma in airway on video laryngoscopy, as shown in [Figure 4](#).

DISCUSSION

Laryngeal granulomas can be late complications of endotracheal intubation. Rapidly growing subglottic and tracheal granulomas are rare but serious complications. It can compromise the airway and cause death if not treated promptly.

Studies have reported that females are more susceptible to laryngeal granulomas owing to the laryngeal anatomy.⁴ Worsening of dyspnea about 7 days after intubation should raise a suspicion of laryngeal granuloma.⁵ Also, patients may present with difficulty in clearing out secretions with notable wheezing.

Steroids, when injected into the granuloma site, have anti-inflammatory effects and thus can slow down the inflammatory process of the granuloma formation.^{6,7} We used dexamethasone in our patient. Dexamethasone is a potent glucocorticoid with very minimal mineralocorticoid action.

Also, studies suggest that the laryngeal granulomas can be prevented by the use of single-lumen endotracheal tubes with an endobronchial blocker tube for high-risk patients.⁸ Our patient had a history of intubation for 12 days, and the details of the tube used were not available with the patient.

Topical inhaled steroids have been used for intubation of granuloma and have given great results, avoiding surgery as well as systemic side effects of steroids.⁹ We used inhaled steroids and anti-reflux medications in our patient for better control of the local edema and acid reflux, respectively, which would initiate the granuloma formation.

CONCLUSION

Surgical correction can give immediate results by improving breathing significantly. Recurrence of the tracheal granuloma can be diagnosed early with regular follow-up with video laryngoscopy, even if the patient is asymptomatic. Intralesional steroid injection can be performed as an outpatient procedure, thus reducing the cost of overall treatment. Also, systemic side effects of the steroids are avoided. Additionally, anti-reflux medications help reduce acid reflux, which can enhance

granulation formation. Overall, the above treatment regime reduces the need for tracheostomy and helps give the patient a better quality of life.

REFERENCES

1. Barton RT. Observation on the pathogenesis of laryngeal granuloma due to endotracheal anesthesia. *N Engl J Med* 1953;248(26):1097–1099. DOI: 10.1056/NEJM195306252482604
2. Nakashima K, Naito T, Endo M, et al. Tracheal granuloma 7 years after extubation. *Respirol Case Rep* 2017;5(5):e00252. DOI: 10.1002/rcr2.252
3. Martins RHG, Dias NH, Soares CSP, et al. Treatment of laryngeal granulomas. *Int Arch Otorhinolaryngol* 2019;23(3):e322–e324. DOI: 10.1055/s-0039-1688456
4. Tonkin JP, Harrison GA. The effect on the larynx of prolonged endotracheal intubation. *Med J Aust* 1966;2(13):581–587. DOI: 10.5694/j.1326-5377.1966.tb97363.x
5. Sugita M, Sagawa M, Sado T, et al. Subglottic granuloma after lung resection: an emergent cause of near-complete airway obstruction. *J Cardiothorac Vasc Anesth* 2004;18(4):479–481. DOI: 10.1053/j.jvca.2004.05.008
6. Zhang R, Li J, Nie Q, et al. Short-term outcome of transcutaneous glucocorticoid injection for laryngeal contact granuloma in females. *Eur Arch Otorhinolaryngol* 2021;278:1499–1504. DOI: 10.1007/s00405-020-06595-3
7. Rhen T, Cidlowski JA. Antiinflammatory action of glucocorticoids—new mechanisms for old drugs. *N Engl J Med* 2005;353(16):1711–1723. DOI: 10.1056/NEJMra050541
8. Smith RO, Hemenway WG, English GM, et al. Post-intubation subglottic granulation tissue: review of the problem and evaluation of radiotherapy. *Laryngoscope* 1969;79(7):1227–1251. DOI: 10.1288/00005537-196907000-00003
9. Roh HJ, Goh EK, Chon KM, et al. Topical inhalant steroid (budesonide, Pulmicort nasal) therapy in intubation granuloma. *J Laryngol Otol* 1999;113(5):427–432. DOI: 10.1017/s0022215100144147