A neurofibroma of the right ary-epiglottic fold caused postoperative laryngeal obstruction in a 6-year-old boy. The neurofibroma was responsible for intermittent attacks of stridor but the tumour had not been detected during intubation. The mobility of the tumour was probably responsible for its occult nature.

Case Report

In August 1965 a 6-year-old boy weighing 42 lb. (19.1 kg) was admitted for paroxysmal inspiratory stridor. The stridor had been present since infancy but it had not previously worried the child or his parents. The stridor was increased when the patient was asleep in the supine position, when he was also subject to attacks of coughing. However, the attacks of coughing and stridor were relieved when the patient turned on his face. During the previous 12 months, attacks of dyspnoea were present as well, and the patient sought admission and treatment for one of these attacks. There has been no history of cyanosis.

On admission the patient was dyspnoeic and this was accompanied by stridor. The temperature was 101.4°F. The tonsils and adenoids were enlarged and the left cervical lymph nodes were palpable. There was no pigmentation of the skin. He had no visible naevi or neurofibromata. Crepitations were heard in both lung fields. Bronchoscopy was performed and a normal bronchial tree was seen. Tracheostomy was performed on the same day and antibiotic therapy was started. The temperature fell and the dyspnoea was relieved. When the tracheostomy tube was removed the stridor reappeared and this was attributed to the enlarged tonsils and adenoids.

The site of the tracheostomy wound showed keloid changes and subsequently needed plastic repair in May 1966. When the repair was undertaken the tonsils and adenoids were still enlarged and the stridor was still apparent. However, the child was generally in good health and was considered fit for anaesthesia.

Premedication consisted of atropine 0.6 mg injected intramuscularly 1 hour before operation. Anaesthesia was induced with thiopentone 150 mg and suxamethonium chloride 25 mg, followed by pulmonary ventilation with nitrous oxide and oxygen. Intubation was performed with a Magill size 3 endotracheal tube without difficulty; the larynx was visualized but nothing abnormal was noticed. Anaesthesia was maintained with nitrous oxide, oxygen and ether, with the addition of a little halothane just after intubation. At the end of the surgical procedure the patient breathed oxygen alone and was then extubated. On extubation, respiratory difficulty was noticed. There was inspiratory stridor at this time with dilatation of the alae nasi and intercostal retraction. A facepiece delivering oxygen was applied and the jaw held up, but the child became cyanosed. Laryngeal spasm was diagnosed and the larynx visualized but there was no spasm of the cords. However, at this time, a mobile mass was noticed on the right aspect of the inlet of the larynx, this mass being partially sucked in with each inspiration and obscuring the inlet of the larynx (fig. 1). The mass was in the right ary-epiglottic fold and extending posteriorly to the right arytenoid cartilage, whilst anteriorly it involved diffusely the right side of the epiglottis. Medially it covered the right vocal cord and part of the left vocal cord. It was a smooth rounded swelling with no ulceration, haemorrhage or bruising on its surface. The mucous membrane was normal. The consistency of the tumour was firm.

![Diagram of inlet of larynx showing site of tumour](https://example.com/diagram.png)
The present crisis could have been overcome by re-intubating the child, immediately performing a tracheostomy, or by performing some simple manoeuvre to dislodge the tumour, such as turning the patient over into the prone posture. This procedure was not feasible at this stage. Stretching the laryngeal inlet sagittally by lifting the base of the epiglottis with the laryngoscope blade was found to displace the tumour posteriorly and laterally, thus relieving the obstruction. When this was done the tumour mass was rendered less obvious and, indeed, might have been missed had one not known of its existence.

The inlet of the larynx was thus kept patent until the patient began to gag, when the laryngoscope was removed and the patient was turned on his left side. No further cyanosis was encountered. The patient was then referred to an E.N.T. surgeon who performed a preliminary tracheostomy with a view to excision of the mass. However, excision of the mass was thought to be unwise as it was so diffuse, there were no incapacitating symptoms, and because the operative procedure itself may have been harmful. Biopsy of the tumour revealed a typical neurofibroma (fig. 2).

**DISCUSSION**

In the case presented here, obstruction of the larynx was caused by a large, solitary neurofibroma arising in the right ary-epiglottic fold. Although the presence of inspiratory stridor should have directed attention to the possibility of obstruction at the level of or above the cords (Lee and Atkinson, 1964) this tumour was unsuspected in spite of visualization of the larynx on two separate occasions. It is likely that the occult nature of this tumour was accounted for by its extreme mobility. Since the tumour was mobile, the patient when awake was probably able to keep the tumour away from the laryngeal inlet by adopting particular postures and perhaps also with the help of the weak arytenoid muscles. However, while he was asleep in the supine position, or under anaesthesia, the tumour "flopped" into the inlet of the larynx, thereby causing respiratory embarrassment. Visualization of the larynx did not reveal the tumour, as stretching the ary-epiglottic fold probably displaced the tumour laterally and posteriorly. Suspension laryngoscopy, which is the commonest manoeuvre used to expose laryngeal tumours, in fact obscured the tumour in this case. The tumour arose in the ary-epiglottic fold which behaved like a "mesentery", allowing the tumour to move only in a medial or lateral direction.

Although several different types of tumour at the laryngeal inlet, including lipomata (Maconie, 1951; Som and Wolff, 1952), fibrolipoma (New, 1916), papilloma, chondroma and haemangioma (Hoover, 1940), neurofibroma (Hoover, 1940; Figi and Stark, 1953; Dixon, 1959; Kragh, Soule and Masson, 1960) have been reported, only a few of the recorded cases (Hoover, 1940) had any similarity with the case presented here. Hoover records the case of a neurofibroma with a broad pedicle attached to the ary-epiglottic fold and which was "overlying the upper aperture of the larynx, with only a small air space on the left side of the tumour".

An additional feature of the tumour reported in this communication is its diffuse involvement...
RESPIRATORY OBSTRUCTION FOLLOWING ANAESTHESIA

of the ary-epiglottic fold and epiglottis. It was on account of this feature that operative removal was deemed unwise. Figi and Stark (1953) and Hoover (1940) have similarly advised against operative removal of such diffuse tumours.

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REFERENCES


UN CAS INHABITUEL D'OBSTRUCTION RESPIRATOIRE APRES ANESTHESIE:
RAPPORT D'UN CAS

SOMMAIRE

Un neurofibrome du repli aryéno-épiglottique droit était à l'origine d'une obstruction laryngée post-opératoire chez un garçon âgé de six ans. Le neurofibrome était responsable de crises intermittentes de stridor, mais la tumeur n'avait pas été détectée pendant l'intubation. La mobilité de la tumeur était probablement la cause de son caractère occulte.

ZUSAMMENFASSUNG

Bei einem sechsjährigen Jungen verursachte ein Neurofibrom im Bereich der rechten aryepiglottischen Falte postoperativ einen Kehlkopfverschluß. Obwohl das Neurofibrom für intermittierende Stridoranfälle verantwortlich war, war der Tumor während der Intubation nicht entdeckt worden. Daß der Tumor verborgen geblieben war, war wahrscheinlich seiner Beweglichkeit zuzuschreiben.