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Short Communication

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Angled telescopic surgery, an approach for laryngeal diagnosis and surgery without suspension

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ABSTRACT

Context: Many methods have been used successfully for the diagnosis and treatment of laryngeal diseases. Microscopic and, recently, telescopic surgery represent the state of the art in endoscopic laryngeal surgery but drawbacks are possible during their application. To keep the suspension apparatus adequately positioned, excessive force is sometimes placed on the upper teeth and tongue with the laryngoscope tube causing damage. Complications in relation to the pharynx, larynx and cardiovascular system have also been reported.

Objective: In order to reduce complications resulting from the manipulation or stimulation of the upper aerodigestive tract and from torque forces on the upper teeth. We present a method of larynx surgery in which laryngeal suspension is not required.

Design: Technical report.

Techniques: We have devised a fiber-optic telescope with its 40mm distal portion deviated 60 degrees from the direction of the proximal portion. This angle was taken by measuring patients immediately before standard microlaryngeal surgery was performed. The surgical instruments have the same angle as the telescope, in order to work on the larynx. This technique provides an image that is not limited by the distal aperture of the laryngoscope and has an advantage in that magnification and illumination may be provided by changing the distance of the lesion from the tip of the instrument. we have operated on four patients with laryngeal diseases and have had no complications as a result of this approach. We feel that this technique gives us the freedom to view the lesions better and helps to minimize the drawbacks caused by laryngeal suspension.

Key words: Endoscopy. Larynx surgery. Angled telescope. Head and Neck.

INTRODUCTION

There has been great progress in endoscopic larynx procedures since Babington's first presentation of his laryngoscope over a hundred years ago.[1] The use of operating microscopes and telescopes in laryngeal surgery represents one of the most exciting advances in clinical otolaryngology in recent years since both systems provide good illumination, magnification and relative case of operation.

Microlaryngeal surgery using telescopes or microscopes requires the use of some type of suspension apparatus or laryngoscope holder to maintain the laryngoscope in place. Due to anatomical difficulties the procedure may not be possible in cases where the surgeon is not able to look along a straight line from the upper teeth to the epiglottis when the suspension technique is employed.[2]

Another important problem encountered using common laryngoscope holders has been the amount of pressure on the upper teeth, tongue and glottis from the suspension system. Figure 1 depicts resultant forces when using a laryngoscope holder supported on the patient's chest or on a Mayo stand. F1: force applied to the long lever arm, F2: force within the larynx and tongue and

F3: force directed onto the upper alveolus or teeth.

In a study of 800 patients submitted to suspension laryngoscopy, Heiden et al[3] reported complications ranging from mild mucosal edema to problems that may compromise the cardiovascular system. The authors also stated that patients should be informed preoperatively concerning tooth damage and intubation lesions.

Yanagisawa et al,[4] comparing patients submitted to endoscopic laryngeal procedures with the Kantor-Berci video microlaryngoscope and laryngoscopy using the Dedo laryngoscope, reported that the insertion of the first was not possible in 12.5% of the patients (3/24). The same procedure was considered difficult in 16.6% (4/24). Technical problems with the size of the laryngoscope and unfavorable patient anatomy were considered the main concerns. The standard technique with the Dedo laryngoscope proved impossible in 4.16% (1/24) and difficult in another 4.16% (1/24).

The difficulties and complications related to suspension laryngoscopy have been documented amply in otolaryngology literature since the description of the suspension apparatus by Killian almost one hundred years ago. Considering the problems with this technique we have developed an angled approach to laryngeal examination and surgery. This procedure is carried out with the patient in the normal supine position without flexion or extension of the cervical column and does not require suspension to distend and support the laryngeal structures.

TECHNIQUES

We have devised a fiber-optic telescope (Figure 2) with its 40mm distal portion deviated 60 degrees from the direction of the proximal portion. This angle was taken by measuring patients immediately before standard microlaryngeal surgery was performed. The surgical instruments have the same angle as the telescope, in order to work on the larynx. This technique provides an image that is not limited by the distal aperture of the laryngoscope and has an advantage in that magnification and illumination may be provided by changing the distance of the lesion from the tip of the instrument.

Four patients, two male and two female, ages ranging from 29 to 50 years old were

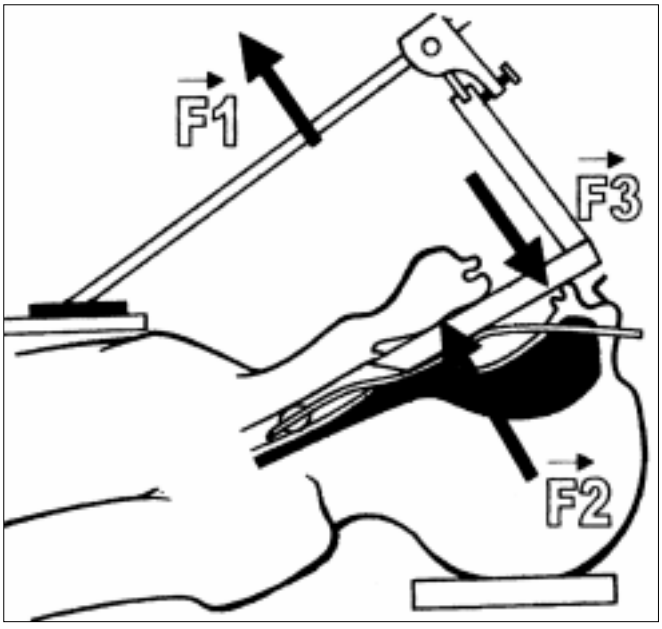

Figure 1 - Vectorial forces applied to the patient by the standard laryngoscope holder.
F1: Force applied to the long lever arm
F2: Force within the larynx and tongue
F3: Force directed onto the upper alveolus or teeth

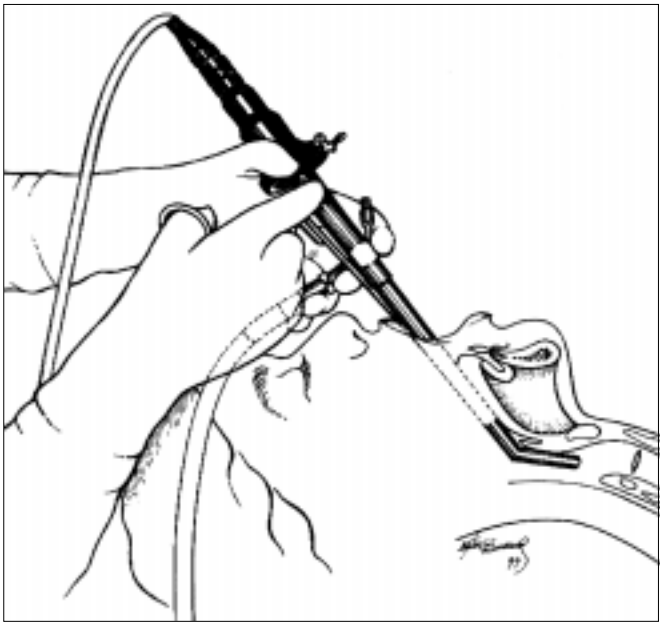

Figure 2 - Angled telescope positioned for laringoscopy without suspension.

operated on using this technique. One of the patients presented a polyp on the right true vocal cord that was fully removed with grasp forceps. The remaining three patients were submitted to biopsy of their glottic lesions.

Use of angled telescope and instruments enables the laryngologist to readily expose the larynx including the subglottic area and anterior commissure. Trauma to the teeth and the "difficult patient", a constant preoccupation when performing surgery with common laryngoscopes and suspension, are now a minor concern. We believe that this technique may help in larynx surgery especially in patients that cannot be submitted to the common endoscopic laryngeal approach with suspension.

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RESUMO

Contexto: Muitos métodos têm sido utilizados com sucesso no diagnóstico e tratamento das doenças da laringe. A cirurgia microscópica e, mais recentemente, a cirurgia telescópica, representam o maior desenvolvimento conseguido até hoje na cirurgia endoscópica laríngea, porém, complicações podem ocorrer durante a realização das mesmas. Para se posicionar adequadamente o aparelho de suspensão laríngea, muita força pode ser exercida nos dentes incisivos superiores e na língua pelo tubo do laringoscópio causando lesões nestes. Existem ainda relatos de complicações na faringe, laringe e ao sistema cardiovascular. **Objetivo:** Na tentativa de reduzir as complicações resultantes da manipulação e estimulação do trato aereodigestivo superior e de forças de apoio nos dentes superiores, apresentamos um método de cirurgia laríngea onde não se emprega o sistema de suspensão. **Tipo de Estudo:** Nota técnica. **Técnica:** Desenvolvemos um telescópio angulado de fibras ópticas e instrumentos angulados a sessenta graus para a abordagem das doenças da laringe. Quatro pacientes portadores de lesões na região glótica foram submetidos a cirurgia por esta técnica, não apresentando nenhuma complicação devido a utilização da mesma. Esta abordagem oferece ao cirurgião a imagem do campo operatório de maneira dinâmica, não restrita à abertura distal do laringoscópio, sendo os procedimentos realizados seguindo as curvaturas fisiológicas do paciente na posição supina, evitando assim as complicações causadas pela laringosuspensão.

Palavras-chave: Endoscopia. Cirurgia laríngea. Telescópio angulado. Cabeça e pescoço.