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ORIGINAL CLINICAL RESEARCH

Thyroplasty for unilateral vocal fold paralysis using an adjustable implant in porous titanium

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KEYWORDS
Vocal fold paralysis;
Titanium;
Dysphonia

Summary
Objectives: The aim of this study was to describe a new porous titanium thyroplasty implant that can be adjusted with a screw.
Material and methods: Retrospective study of 15 patients with unilateral vocal fold paralysis undergoing type I thyroplasty under local anaesthesia. Each patient's dysphonia and swallowing disorders were evaluated both objectively and subjectively before and 3 months after thyroplasty.
Results: Speech and swallowing disorders were improved in all the cases, except when the patients were suffering from severe associated neurological disorders ($n = 3$). The postoperative complications were minor including a laryngeal edema treated by corticotherapy per os ($n = 1$) and a superficial cervical haematoma ($n = 1$).
Conclusions: This implant is easy to insert and the results show high tolerance of the biomaterial and above all the improvement of functions comparable to other laryngeal implants.

Introduction

Unilateral vocal fold paralysis is most often responsible for deficient glottic closure stemming from a defect in vocal fold closure. The paralyzed vocal fold placed in abduction or in an intermediary position results in dysphonia, swallowing disorders, reduced coughing effectiveness, or even shortness of breath, which may have a major effect on the patient's quality of life.

Medialization of the vocal fold with a thyroid implant is one of the most widely employed surgical techniques for treating glottic insufficiency. Isshiki et al. [1] described and developed it beginning in 1974. The intervention consists in a cervicotomy placing an implant in the paraglottic space, after creating a cartilaginous window in the thyroid wing (type I thyroplasty). The vocal fold and the arytenoid process are thus medialized, which allows better vocal fold closure and reduction of deficient glottic closure.

Several implants have been described, each with its own advantages and disadvantages [2—7]. Based on our experience in the use of porous titanium in cervical surgery, we found it useful to develop a single-model implant that could easily be directly adjusted in the patient including during surgical revision.

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Table 1 Description of patients.

Patient	Sex	Age	Side	Etiology	Symptoms		Time to 1st thyroplasty symptoms (months)	Associated nerve involvement	Previous treatment	Complications	
					Voice	Swallowing					
1	M	72	Left	Parapharyngeal surgery for schwannoma	Dysphonia	Aspiration of saliva	9.0		_	_	
2	M	62	Left	Carotid surgery (endarterectomy)	Dysphonia	Aspiration of liquids and solids	3.0	IX, XI	_	_	
3	M	76	Left	Surgery for malignant tumor of the pontocerebellar angle	Dysphonia	Aspiration of liquids and solids	48.0	VII	_	_	
4	M	54	Left	Petrosectomy for chondrosarcoma	Dysphonia		96.0	VII, XII	_	_	
5	F	74	Left	Idiopathic	Dysphonia	Chronic cough: aspiration of saliva	12.0	_	_	_	
6	F	73	Left	Amyloses	Dysphonia		60.0	_	_	_	
7	M	82	Right	Carotid surgery (endarterectomy)	Aphonia	Aspiration of liquids and solids	3.0		_	_	
8	M	66	Left	Mediastinal curettage for bronchopulmonary carcinoma	Dysphonia	Aspiration of sparkling liquids	8.0	_	_	Superficial hematoma	Review at 7 months to tighten implant
9	M	65	Left	Mediastinal curettage for bronchopulmonary carcinoma	Dysphonia	Aspiration of liquids	0.23	_	_	_	