

## VOCAL FOLDS PARALYSIS AND CAUSES DETERMINING FACTORS: A LITERATURE REVIEW

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*Mariana Ingrid Messias Gonçalves*

IMEPAC-Araguari Mg

<http://lattes.cnpq.br/786540103853719>

*Ana Luiza de Alencar Amaral*

IMEPAC-Araguari MG

<http://lattes.cnpq.br/6858878714172570>

*Artur Humberto Pereira Guimarães*

IMEPAC-Araguari MG

<http://lattes.cnpq.br/1972091281328162>

*Stéphanie Gomides dos Santos Queiroz*

IMEPAC-Araguari MG

<http://lattes.cnpq.br/3369748168722280>

*Matheus Araujo*

IMEPAC-Araguari MG

<http://lattes.cnpq.br/6299365901998684>

*Pedro Paulo Pacheco de Sa*

IMEPAC-Araguari MG

<http://lattes.cnpq.br/9174602665452421>

*Ana Paula Oliveira Silva*

IMEPAC-Araguari MG

<http://lattes.cnpq.br/1335842566939048>

*Valdemar Antonio de Freitas Neto*

IMEPAC-Araguari MG

<http://lattes.cnpq.br/0313969403675769>

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**Ana Paula Faria de Freitas**  
IMEPAC-Araguari MG  
<http://lattes.cnpq.br/8545513184602631>

**Afonso Henrique Guimarães Rocha**  
IMEPAC-Araguari MG  
<http://lattes.cnpq.br/6612433688451245>

**Ysla Vitória Damasceno Dias**  
IMEPAC-Araguari MG  
<http://lattes.cnpq.br/4241659148541383>

**Rosane Dias da Silva**  
Evangelical University GO  
<http://lattes.cnpq.br/9588176738616274>

**Abstract:** Vocal fold paralysis (VFP) is a pathology resulting from injury to the superior and recurrent laryngeal nerves, which innervate the intrinsic muscles of the larynx. Among its usual symptoms are voice change, hoarseness and aspiration of food. The purpose of this paper is to carry out a study about the most frequent causes of this paralysis, as well as the gender and age of the most affected patients. This is a systematic review, with articles about PPV from 2014 to 2018, selecting 10 of the most relevant articles. The results observed were the equal incidence between genders, with an average of 54.3 years, and the highest prevalence resulting from iatrogenic injury in thyroidectomy surgeries. PPV is generated by injury to the superior and/or recurrent laryngeal nerves, by surgeries, tumors, intubation. Affected patients present with hoarseness, dysphonia and dyspnea. Electroneuromyography of the laryngeal muscles is a good method to elucidate such cases. Therefore, it is important to consider factors such as age and the prevalence of causes for this condition in order to reach an accurate diagnosis. Furthermore, one cannot leave out less common causes such as laryngitis, because only by considering all these efficient factors is it possible to define the most therapeutic approach.

**Keywords:** Paralysis, vocal folds, larynx.

## INTRODUCTION

The vocal folds are structures that control the production of sound and have, each one, a vocal ligament, formed by thick elastic tissue and muscle fibers vocals<sup>9</sup>. These are the intrinsic muscles of the larynx, which change the length and the tension of the vocal folds and the size and shape of the rima glottis<sup>9</sup>. Vocal fold paralysis is related to recurrent laryngeal nerve injury, what innervates the majority of those muscles of the speaks, as the lateral thyroarytenoid cricoarytenoid muscle

complex<sup>4</sup>, and the superior laryngeal nerve, which innervates the cricothyroid muscle<sup>6</sup>.

The main symptoms of this paralysis are voice change, hoarseness, impaired phonation of high tones (resulting in stridor - breathing loud noise), difficulty in lifting the larynx during swallowing, dysphagia, deviation of the tongue, aspiration of food and presence of a palpable mass in the neck<sup>6 9</sup>.

This disease is closely related to thyroid pathologies and surgeries, such as thyroidectomy, which can result in compression and/or damage to the nerves laryngeal<sup>9</sup>. Furthermore, other cause, although most rare, they are associated: displacement of the cartilage arytenoid later in intubation<sup>2</sup>, SAPHO Syndrome<sup>13</sup>, anesthesia general<sup>10</sup>, infection per cytomegalovirus human<sup>12</sup> and chondrosarcoma of arytenoid cartilage<sup>5</sup>.

The electromyography laryngeal (LEMG) is a gold pattern for confirm at denervation changes of the laryngeal muscles, and is commonly used for confirmation diagnosis and prognosis in vocal fold paralysis<sup>4</sup>. The goal intends to accomplish a study about at causes most frequency of this paralysis, as well as on the sex and age of the patients most affected by illness.

## METHODOLOGY

To reach the cited goals, the methodology used consists in one revision in literature, about of the paralysis of pleats vocals, through a search bibliographic, highlighting aspects relatives The age, to sex and the factors that are determinants in causes. The systematization employee leans on in books in own collection, in addition to scientific articles in Portuguese, English and French, consulted through PubMed, BVSalud and Scielo. As a strategy for search for a bibliographic reference, the following descriptors were used: vocal, Vocal fold paralysis.

When accessing the database, 23 articles were found, related to the last four years (2014 to 2022). And, after careful reading, a book was selected and 10 articles, which consisted of case reports. The choice from articles pertinent he was determined the relevance of its content, thus excluding articles that did not enrich the discussion. Posteriorly, took place The quantification From reports in case, analyzing the variables age, sex and causal factors in order to simplify the visualization of results.

## RESULTS

No significant differences were observed in the prevalence of the disease between the sexes, since the distribution was concentrated in almost half of the cases for each gender (51.8% in women). Furthermore, it can be noted that the age group varies between 45 and 70 years, with an average age of 54.3 years, with 54.8 years mean age for men and 53.9 the mean age for women.

With Regarding the causes, a dominance of iatrogenic injuries can be noted. resulting from head and neck surgery in 33.5% of cases. Of these cases, 71% are the result of thyroidectomy. Second, there are causes idiopathic, in sudden intercurrent, with 22% of cases. Then it is found the intubation procedure and chest surgery, both with 13.8%.

## DISCUSSION

The superior laryngeal and recurrent laryngeal nerves arise from the vagus (X even). At the level of the thyrohyoid membrane, the superior laryngeal nerve divides into an internal branch, which receives sensory input from the upper larynx, and a branch external, which provides motor innervation of the cricothyroid muscle<sup>410</sup>, responsible for tension the vocal cords, and therefore fundamental in controlling the frequency of the voice<sup>6</sup>.

The recurrent laryngeal nerve divides

into two branches before reaching the border cricoid cartilage and provides motor innervation to all muscles larynx intrinsic, except the cricothyroid muscle<sup>10</sup>. injuries of those nerves generate changes at the operation from intrinsic muscles of the larynx, what provoke changes at phonation.

At causes most of these traumas are surgical interventions in the neck and chest region, tumors (from nerve compression or malignant infiltration), systemic diseases and intubation. Furthermore, in form any less common, at injuries they can to be arising of infections viral, as the caused for cytomegalovirus, at the which the process generated inflammation, with the presence of ulcers and erosions, generates ischemic effects harmful<sup>612</sup>.

How much the intubation endotracheal, the larynx It is the place most common in injury of ways airlines, standing gift in up until 71% from patients submitted the general anesthesia. It frequently generates unilateral paralysis, compromising the left vocal cord, as the endotracheal tube is fixed at the right angle of the mouth and ends up compressing and damaging the anterior branch of the recurrent laryngeal nerve, that runs medially to the thyroid cartilage<sup>10</sup>. Prolonged loss of innervation by this generates loss of laryngeal muscle tone and leads to structural changes that leave the cartilage arytenoid most susceptible the dislocations, what also are harmful to the phonation process<sup>2</sup>.

Patients with paralysis of pleats vocals manifest changes at quality vocal, as dysphonia or aphonia, hoarseness, vocal fatigue, amplitude and decreased intensity, represented by an inability to increase the volume of the voice and by a weak high-pitched sound. Nerve injuries also compromise the adequate closure of the glottis, which can generate dyspnea, with a feeling of lack in air to speak, in addition a mechanism in cough ineffective, what takes The aspiration tracheal<sup>610</sup>.

The method most used for the detection of the paralysis in the rope's vocal cords, considered the gold standard, is electroneuromyography of the larynx muscles. Such method provides a parametric measure of the degree of frequency of recruitment muscle during certain movements, such as speaking and swallowing, which serves as the basis for the comparison between healthy and paralyzed muscle groups<sup>11</sup>.

## CONCLUSION

The present literature review about vocal cord paralysis allows one analysis clear of main causes of that problem, well as of the distribution according to age. This study showed the main causes of injuries iatrogenic injuries resulting from surgeries in the head, neck and thorax, and intubations, which can cause different types of cord paralysis vocals (bilateral or bilateral).

Furthermore, were noticed infrequent causes for this problem, such as such as cytomegalovirus pharyngitis. Cases like this can serve as a reminder for clinicians and otolaryngologists about the importance of considering this type of infection in a possible differential diagnosis of patients with vocal cord paralysis or pharyngoesophageal lesions<sup>12</sup>.

In addition, from that, the material analyzed show the age as a factor risky for the development in paralysis of pleats vocals, mainly after one endotracheal intubation (age over 50 years)<sup>10</sup>. Therefore, there are important factors that must be considered in order to make a careful and accurate diagnosis. of this condition, allowing the use of the most appropriate therapeutic approach according to each case.

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