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Post-Thyroidectomy Bilateral Recurrent Laryngeal Nerve Palsy: A Report about 8 Cases and Literature Review

Reda Hejjouji*, Jawad Lahma, Mohammed Anas Benbouzid, Abdelilah Oujilal, Leila Essakalli
ENT Department, Ibn Sina University Hospital, Mohammed V University, Rabat, Morocco

Original Research Article

***Corresponding author**
Reda Hejjouji

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Abstract: Our work reports on the management of laryngeal palsy (LP), a life-threatening complication of thyroid surgery, in our reference center (SHR, Morocco). This retrospective study includes all cases of post-thyroidectomy LP (PTLP) managed in our center during a 3-years period. 8 cases (24 to 65 years), specifically managed related to their clinical presentation and per-operative findings. The final issues were good, although transitory false tracks were reported in some instances. PTLP is a life-threatening complication that requires prompt management.
Keywords: Thyroidectomy, Laryngeal Nerve Palsy.

INTRODUCTION

Laryngeal palsy is a rare life-threatening complication of thyroid surgery, most often total thyroidectomy (PTLP) [1]. Their life-threatening process is due to airways obstruction [2]. It has been reported in the literature that the prevalence of those PTLP is higher in public hospital versus specialized centers. Because of medical expertise concentration with well-trained surgeons and the possibility to benefit for the emeritus doctors assistance, specialized centers commonly report lower rates of PTLP comparatively to public hospitals [3,4]. Our reference center, with covers Rabat, the capital of Morocco and it neighboring cities, receives all the complicated patients coming from the different neighboring public hospitals. Herein we report our experience in PTLD characterized by a high rate of emergency cases and with very poor reports about medical history.

MATERIALS & METHODOLOGY

Materials

We reviewed the medical charts of PTLD cases managed in our unit during the period running from to. As a referral center, we receive the patients coming from peripheral public hospital and who present with complications.

Method

Variables considered were as follow: Epidemiology (age, sex and history), clinic (symptoms), investigation (laryngoscopy) and therapy (interventional procedures and final issues).

RESULTS

8 cases, all of female sex, with an age ranged from 24 to 65 years, have been collected for this study. In all instances, LP was consecutive to total thyroidectomy. The first symptoms of LP were discovered during immediate post-operative period (n=4), a few months later (n=2) or after a longer period (n=2). Clinically, 3 patients presented with a respiratory distress, where dyspnea was observed in 5 cases, occurring concomitantly with dysphonia in 3 cases. Also in 3 cases, tracheotomy was required in emergency (table 2).

Because of patients' history and symptoms exhibited, the diagnosis of LP was straightforward. In laryngoscopic studies, the establishment of vocal cords palsy (n=5) or a closed LP (n=3) comforted the diagnosis.

Pre-operative evaluation was uneventful, with no particular findings. The different surgical techniques used in our patients are shown in table 4.

Table-1: patient's history

Case.	Age (ys).	Pertinent history.	Delay before postsurgical présentation.
1	60	Total thyroidectomy	- -
2	24	Total thyroidectomy	- -
3	40	Total thyroidectomy	Immediate Postoperative.
4	49	Total thyroidectomy	For 2nd laser cure (7 years).
5	55	Total thyroidectomy	1 month.
6	29	Total thyroidectomy	8 months. Post kinetic therapy for phonation.
7	38	Total thyroidectomy	Immediate postoperative.
8	65	Total thyroidectomy HBP, diabetes, HBV.	Immediate postoperative.

Table-2: clinical features

Patient.	Actual Delay.	Clinical features.
Case 1	8 months.	Laryngeal dyspnea → tracheotomy.
Case 2	4 years.	Laryngeal Dyspnea (tachypnea of 35 cycles / min ; stridor)
Case 3	2 years.	Dyspnea – dysphonia – hypo-parathyreosis → tracheotomy.
Case 4	7 years.	Dyspnea – dysphonia.
Case 5	1 month.	Dyspnea on effort – dysphonia – stridor – irritative cough
Case 6	8 months.	Chronic dysphonia (kinetic therapy) but tracheotomy in emergency. After progressive dyspnea.
Case 7	- -	Respiratory distress.
Case 8	6 months.	Respiratory distress.

Table-3: laryngoscopic results

Patient.	Laryngoscopy.
Case 1	Immobility of the 2 vocal cords and the right arytenoide (± in the left).
Case 2	Closed bilateral laryngeal palsy (discrete intercordal split).
Case 3	Closing bilateral laryngeal paralysis (right immobile ++)
Case 4	Bilateral paralysis of the 2 vocal cords (small mobility)
Case 5	Closing Bilateral Laryngeal palsy, with intermediate split.
Case 6	Closing bilateral laryngeal palsy (split largely opened).
Case 7	Closing vocal cords paralysis.
Case 8	In adduction bilateral paralysis.

Posterior cordectomy alone (n=4) or combined with arytenoidectomy (n=3) was done in the great majority of cases. All surgical procedures were made on visual inspection coupled with per-operative monitoring.

Table-4: treatment

Patient.	Treatment.
Case 1	Anterior arytenoidectomy + posterior cordectomy.
Case 2	Right posterior cordectomy.
Case 3	Total arytenoidectomy + right CO2 laser posterior cordectomy.
Case 4	Vaporization of the 2 vocal cords in theirs half posteriors.
Case 5	Right posterior cordectomy.
Case 6	Posterior total laser Cordectomy.
Case 7	Total arytenoidectomy + right co2 laser posterior cordectomy.
Case 8	Left posterior cordectomy.

Post-operative course was uneventful, characterized by the release of all symptoms, although transitory false ways have been reported in 3 cases. After kinetic and phonation therapies, the voice quality

was evaluated to be satisfactory, being between 60 and 85 % after 1 year in post-operative course. Laryngoscopic studies exhibited normal in 70 %. The follow-up period ranged between 18 months and 4 years.

DISCUSSION

Although their frequency has diminished during the last decade, PTLP are unpredictable and worse complications of thyroid surgery, particularly total thyroidectomy. Their incidence is rare [1], comprised between 0.2 and 0.6 % [5, 6]. But the complication is the most frequent cause of bilateral paralysis of these nerves [6]. Many etiological factors are now recognized: the complexity of the surgery intervention considering the narrow relationship between the nerve and the organ, the possibility of anatomic variants, the implication of different clinical entities.

Surgery of the thyroid gland is now well codified but it remains complex and has to manage a large spectrum of different diseases including cancers, hyperthyreosis and reoperations. So, laryngeal nerve injuries rates remain significant [2].

Among the advocated measures in order to reduce this complication, a good anatomic prerequisite (figure 1), peroperative monitoring and particularly visual inspection have the favors of the practitioners [7-9]. Intermittent peroperative monitoring is particularly useful in the conditions of a reoperation in order to make a clear distinction between scar tissue and nerve branches but also to minimize bleeding [8, 9].

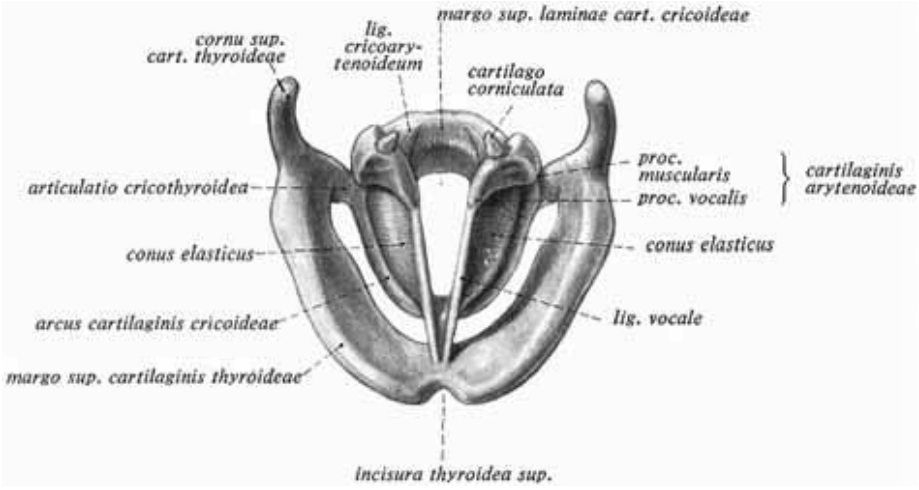

Fig-1: Laryngeal cartilages and elastic cone [7]

Currently, the known mechanisms of laryngeal nerve lesion during thyroid surgery are stretching, warming, dévascularisation but most often section. Those mechanisms can induce a neurapraxy, the most frequent complication and also axononotmesis or neurometsis [3]. So, a good knowledge of the pathology of bilateral palsy allows highlighting the need to avoid maneuvers susceptible to raise the risks like stretching, tension or compression of the nerves. It has been shown that these recommendations were more often followed in teaching hospitals.

When a strict methodology is lacking, the lesion can remain unnoticed. But more often, the first signs as dyspnea, dysphonia and even respiratory distress, appear in the early postoperative period or during the first 24 to 48 hours. The prompt recognition of the trouble by the surgeon is the first important step in the management. IV or oral steroid corticoids can help to reduce perineuritus [3].

Bilateral palsy classically generates combined dyspnea and dysphonia. The immobility of the vocal cord can be complete or partial whereas the nervous lesion is variable, from neurapraxie to complete section. Also, the position of the vocal cord is included in a large spectrum, from paramedian to lateral. In the case of bilateral palsy with the 2 vocal cords in a narrow position, a tracheotomy in emergency is usually needed [3, 10].

The prognosis, in other words the chances of recovery, is very difficult to establish because of 3 main reasons. Firstly, the recovery of laryngeal mobility did not traduce implicitly by a functional recovery with the same magnitude, essentially the recovery of the voice. Secondly, even a complete paralysis is able to recovery. Finally, there is no medical investigation capable to give reliable information about the recovery [3].

First, we need to highlight the fact that the management of bilateral palsy is always difficult, because the procedures which tend to improve respiration also tend to degrade the voice quality. The opposite is also true. Surgical treatment of bilateral palsy is classically done between 6 months and 1 year after occurrence of the paralysis, in the absence of a spontaneous recovery. In order to do not significantly

degrade the voice quality, all the procedures are made in one side [3, 11].

Numerous surgical techniques are available: endoscopic lateralization, laser endoscopic cordectomy, co2 laser endoscopic arytenoidectomy. Some authors have reported that this last procedure can be followed by an intense scarification process. The contraction of the scar can then induce a new laryngeal stenosis [3, 8]. The proofs currently existing relative to the management of PTLP favor early lateral fixation when the palsy induce dyspnea and the combination of laser arytenoidectomy and posterior cordectomy after 12 months [3, 11].

10 studies in the literature comfort the superiority of lateral fixation when compared to tracheotomy. However this technique involves some risks. It is commonly admitted that the presence of temporary laryngeal paresis / palsy or that of permanent paralysis is the reflection of preservation or damages severity, respectively. Also, a recent meta-analysis has shown by logistic regression that an early intervention generates a treatment of palsies that is more effective. The reported general results are good, notwithstanding transitory false ways and/or embarrassments in the early postoperative period [2, 3, 11].

Among the irreversible techniques, the cordectomy procedure has some risks whereas the combination of arytenoidectomy with posterior cordectomy offers the best opening of the airways [3]. Partial recovery of the voice as high as 60 to 88% one year after intervention can be obtained in classical good evolutions. In the same time, a near-to-normal laryngoscopic aspect becomes effective in a great percentage of cases [12].

An international classification of the recurrent laryngeal nerve has been adopted by emeritus anatomists coming from all parts of the world. We hoped that it would concretize the optimization of the anatomic prerequisite.

CONCLUSION

Although a significant lowering of complications during thyroid gland surgery has been achieved, surgeons should always consider their possibility, specifically laryngeal palsies, which have well-proven and relatively high morbidity rates but also mortality rates that are not null. Our small series, although with no fatality, is fairly illustrative of the condition. Laryngeal palsy must always be promptly identified and be followed by a complete and fast neuro-laryngeal exam. The current management relies firstly on posterior cordectomy and arytenoidectomy procedures. Postoperative reeducation helps to optimize the clinical issues.

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