

# Plunging Goiters 120 Cases Report

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## To cite this article

Mountassir Moujahid, Karim Nadour, Hicham Iraqui, Mohamed Rhari, Issam Serghini, Khalid Chekoura, Moulay Hassan Tahiri.  
Plunging Goiters 120 Cases Report. *Open Science Journal of Clinical Medicine*. Vol. 3, No. 2, 2015, pp. 55-58.

## Abstract

**Objective:** The aim of this retrospective study was to study the epidemiological characteristic and diagnostic, and to report the results of the surgical treatment in a series of 120 patients operated on for substernal goiters. Patients and method: From 1995 to 2013, 120 patients with substernal goiters, including 85% of women, with an average age of 50. The clinical symptom was done of compressive sign (dyspnoea 50% of cases). The sign of dysthyroidism was finding in 25% of cases. The positive diagnosis bases on mediastinal compress and the existence of a palpable goiter in all our patients. The medical image has permitted the confirmation of the diagnosis. The treatment of these goiters was exclusively surgical. **Results:** The following were simples, outside of a recurrent paralysis in 4 cases and the hypo parathyroidism in seven patients. **Conclusion:** CT scan is the best explorations to evaluate intra thoracic extension of sub sternal goiters. Thyroidectomy was performed via a cervical incision in 113 patients and associated with a sternotomy in seven patients. Removal of the substernal portion was facilitated by the discovery of the recurrent nerve at its entering into the larynx and a downward dissection of the tracheal attachments of the lobe.

## Keywords

Substernal Goiter, Scanner, Thyroidectomy

## 1. Introduction

The plunging goiter is any goiter that the lower limit of which is not tangible in surgical position. It raises enormous diagnostic and especially therapeutic problems. The purpose of our work which is a retrospective study concerning 120 cases is to study the epidemiological and clinical characteristics of the plunging goiters, to underline the importance of the imaging to estimate one or several endothoracic repercussions and finally to specify the surgical difficulties.

## 2. Patients and Methods

We report a retrospective study concerning 120 cases of goiters diving (multi-heteronodular bilateral and plunging)

operated in our formation over a period of 18 years (1995-2013). The criterion of inclusion in our study was the impossibility to feel the lower pole of these goiters in position of operating extension. For every patient we established an index card containing the identity, the age, the sex, history pathological, the functional signs, then the results of the clinical examination (characteristics of the goiter, the search for adenopathy, the general examination looking for signs in favour of a dysthyroidie, at the Supple naso fiberscopy verifying the mobility of vocal cords.

Concerning the examinations, we asked for a radiography of the thorax, for a cervical echograph, a scanner cervico thoracic, a biological balance sheet as well as a preoperative balance sheet. The cervicotomy was programmed in every case. The surveillance of the sick was rigorous and we raised the various complications observed as well as their coverage.

### 3. Results

The plunging goiter represent 8 % of all the goiter operated in our formation during this period of 18 years, the age of our patients varied between 30 - 80 years with an average in 50ans. We noticed a clear feminine ascendancy (85 %) with one sex-ratio in 0,17 (102 women and 18 men). The deadline of consultation has varied 5 in 40 years. Only 10 patients (10 %) were totally asymptomatic and the plunging goiter was discovered by chance. The motive for consultation was especially the appearance of a mass previous basi cervical (80 % of the cases), increasing gradually by size (figure 1) and often engendering compressif signs, represented essentially by the dyspnoea (70 %), the dysphagy (50 %) and the dysphony (13 %). The lower pole was never got with exactly. Besides Twenty five of our patients (30 %) had clinical signs of hyperthyroïdy made especially by tachycardia and by palpitation.



Figure 1. Voluminous thyroid plunging goiter

All the patients had a fibroscopy control of the laryngeal mobility: vocal cords were of normal mobility at 105 patients, and decreased mobility but with a normal aspect at 15 patients.



Figure 2. Superior mediastinum opacity with tracheal deviation to the right.

The radiography of the thorax realized at all the patients showed a superior mediastinal opacity diverting the tracheal

in 60 % of the cases (figure 2). All our patients benefited from an echograph and from a scanning cervical who confirmed the plunging character. The size of these goiters varied between 5cm at 35 cms. (figure 3, 4). The scintigraphy in the iodine 131 had highlighted a heteros multi- nodular goiter in 90 % of the cases, it also objectified a fixation intra thoracicof the radioactive tracer to 30 % of the patients.

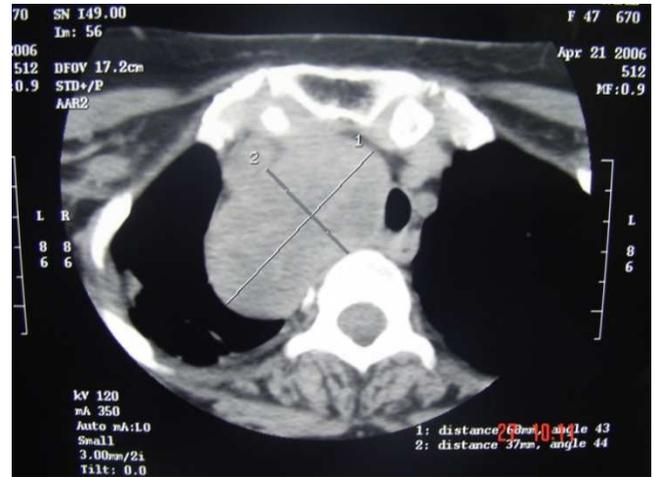


Figure 3. Cervico thoracic scan in axial section showing a plunging goiter which deviation the tracheal



Figure 4. Cervico thoracic scan in coronal section showing the lower limits of a plunging goiter.

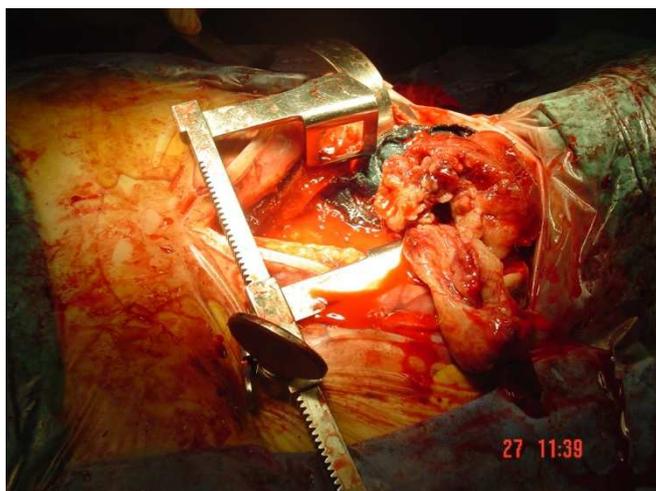
The hormonal balance sheet was perturbed at 24 % of the patients with a decrease of the usTSH in every case (100 %) and a rise of T3et T4 in 12 cases (14,4 %).

The treatment was exclusively surgical for all our sick consisting of a cervicotomy simple. An associated sternotomie (figure 5) was realized at seven patient's (8,4 %), required by the very important volume of the goiter and especially its relations with the vascular axes.

The post-operative consequences were simple outside:

- Two patients presented a hematoma evacuated as a matter of urgency (2,4 %).
- A recurrentielle paralysis at 4 sick (4,8 %)
- A hypoparathyroidy at 7 sick (8,4 %).

- A death post myocardial infarction installed in the 2nd post-operative day



**Figure 5.** Goiter endo-thoracic removed by a cervicotomy associated with a sternotomy

#### 4. Discussion

The definition of the plunging character of a goiter remains controversial. Indeed, several definitions were proposed. For Moron and al (1) and Shen and al (2), a plunging goiter is the one among which 50 % of the total mass is situated below the upper opening of the thorax. Makeieff M and al (3) puts three criteria to define the plunging goiter:

- Seat except the cervical region in operating position.
- A lower continuation in more than two faults of fingers under the manubrium sternal.
- Necessity of particular laborers of extraction.

As for Moumen M and al (4), defines the plunging goiters qualitatively: cervical goiters having migrated in the thorax, but which are always bound with the thyroid body by a glandular parenchyma and quantitatively: goiter of which the pole inferior comes down to more than two faults of fingers below the upper opening of the thorax in operating position. Concerning our study one attributed the character diving in any goiter the lower pole of which we do not perceive in position of operating extension (5).

The previous or posterior extension with regard to the venous innominate trunk allows distinguishing goiters meadow vascular of the vascular retro goiters. The majority of goiters are situated in the previous mediastinum (6). The posterior goiters represent only 10 to 15 % of the cases (3, 6).

The frequency of these goiters among a population presenting multi nodular goiters varies between 20 and 31 % (7). It is 25 % in our series. The feminine ascendancy is of rule (85 % of our series), in the literature as in our study the average age is situated in surrounding of about fifty, The age of discovery is the one of the advanced adult been understandable by the long evolution of an untidy cervical goiter. The majority of the patients present a cervical goiter.

These plunging goiters are often of considerable dimensions often pulling signs of compression of the anatomical elements of the upper mediastinum which establish a frequent mode of revelation (3, 7). There are dominated by the often occasional dyspnoea, sometimes of effort even an orthopny (8). The evolution of this dyspnoea is sometimes unpredictable being able to commit the prognosis for survival by a compression or a stenosis of the tracheal, this stenosis is often engendered by a bleeding glandular intra (6), this compression can also be responsible of dysphagia and for dysphonic. Vascular accidents can also enamel the evolution of these goiters, it is necessary to think to it in front of a syndrome cave superior also a passing cerebral vascular accident by carotid compression can arise (3, 9).

Finally, as any thyroid pathology, the hyperthyroidy can be the first appearance. Its prevalence varies between 9.4 % and 13.8 % (3, 10). It was 30 % in our series. The clinical examination is not always easy and does not allow to analyze the lower pole of the thyroid, the reason why we have resorts to the complementary examinations especially in the medical imaging basing itself essentially on the radiography of the thorax, irreplaceable examination which shows an opacity occupying the top of the mediastinum, associated often with a tracheal deviation. The echograph confirms the thyroid nature of the cervical tumefaction, but she does not allow an evaluation of the thoracic repercussions. The scanning is of a big contribution especially to estimate the thoracic repercussions of the goiter and its dimensions size, to study reports with the big vessels and finally to inform in preoperative about the possible surgical difficulties and the ways at first necessary. Most of the authors report in their series an optimal sensibility for this examination (6, 11, 12).

The magnetic resonance imaging has the advantage to supply frontal cups which visualize better reports with the brachio cephalic trunk and the report of the lower continuation with the butt of the aorta (6). Because of the evolutionary risk of the compressive phenomena, all the plunging goiters are an indication absolved in a surgical excision, this after a careful medical preparation especially in front of the existence of the signs of hyperthyroidy.

This preparation basing itself essentially on the antithyroid of synthesis or the lugol which has the advantage to make decrease the volume of the goiter. These last years a short-term medical preparation was tried with lugol 60 goutts a day during ten days, corticoids and beta-blockers during five last ones days, countered interesting with satisfactory results in our current practice of the surgery of the multi toxic nodular goiters (13).

The treatment is surgical basing itself essentially on the least invasive possible total thyroïdectomy and in the best conditions, to avoid second nodular offenses and the reappearance of the hyperthyroidy in case of toxic goiter.

The cervicotomy countered sufficient in the majority of the cases (3, 6, 14), but it is always necessary to plan a possible sternotomy and to adapt the operative field to this eventuality. Decision to set in front of a difficulty of extraction of goiter

by cervical way.

The morbidity of the surgery of the plunging goiters differs not at all from that of the simple cervical goiter. The recurrentielle infringement varies between 5 et 10%des case. The risk of a hypoparathyroidy is of the order of 5 % (15, 16). The mortality of the surgery of the plunging goiters is almost nil.

## 5. Conclusion

The plunging goiter can expose to accidents of compression, to phenomena of reorganization, and to infections and malignant transformations, justifying the operating indication of the plunging goiters this surgery which is the base of the treatment is more delicate than that of the mild cervical goiter. Nevertheless, the cervicotomy is often sufficient for the excision of these goiters without resorting to the sternotomy. Except cancers and except rare complications per-or post-operative, the surgical gesture realized in the best conditions only guarantees excellent results.

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