🔓 OPEN ACCESS

Management of Benign Goitres in Surgery Department "A" of Point-G Chu

Sacko Oumar[1*], Soumare Lamine Sambou[1], Traore Mamadou Salia[1], Koumare Sekou[1], Traore Issa[2], Soumare Ganda[3], Dianessy Yely[4*], Keita Sidiki[1], Sissoko Moussa[1], Mamadou Coulibaly[1], Coulibaly Bruno Soulemane[1], Adama Famoussa Traore[1], Traore Siaka[1], Keita Soumaila[1]

[1]Point-G University Hospital Center (Surgery Department "A"), Bamako, Mali
[2]Kati University Hospital Center (Surgery Department), Bamako, Mali
[3]Point-G University Hospital Center (Medical Department), Bamako, Mali
[4]Hospital of District Commune IV
[5]Point G University Center (Gynecology Department)

*Corresponding author: Sacko Oumar
Point-G University Hospital Center (Surgery Department "A"), Bamako, Mali

| Abstract | Original Research Article |

Goiter is a diffuse enlargement of the thyroid, due to hyperplasia of follicular cells. It is a very common condition throughout the world. This is a pathology found in more than 10% of the population, affecting women 3 times more often than men and whose prevalence increases with age. Surgery plays an important role in the management of balanced hyperthyroid goiter. Post-thyroidectomy complications are not rare. We carried out a retrospective and descriptive study on the surgical management of goiters in the "A" surgery department of Point G University Hospital. It took place from January 2007 to December 2016, a period of 10 years. Goiters represented 3.52% of all surgical consultations. The sex ratio was 7.18 in favor of women and more than half of our patients underwent subtotal thyroidectomy.
Keywords: Goiter, Thyroidectomy, Surgery A.

INTRODUCTION

Goiter corresponds to diffuse or localized hypertrophy of the thyroid [1]. When the thyroid gland contains one or more nodules, it is called a nodular goiter. It can be benign or malignant. It can be euthyroid, hyper or hypothyroid. It is usually cervical, but can develop intrathoracically, going beyond the upper orifice of the thorax and descending more or less towards the mediastinum, thus defining plunging goiter. A common condition, goiter is the most widespread endocrine pathology in the world [2]. Its frequency varies depending on the country, so in France around 50,000 thyroidectomies are carried out each year [3]. In the United States (Philadelphia) 110,889 patients underwent thyroidectomy in 11 years (January 2000 to December 2010), including 5,525 endothoracic goiters and 105,564 non-endothoracic goiters [4]. In Africa in Senegal, 402 patients underwent a thyroidectomy in 10 years (January 2000-December 2009) in the department of general surgery [5]. In Mali, 1762 consultations were carried out for goiter in surgery department B of the Point-G University Hospital, 1025 underwent surgery in a study carried out between January 1980 and December 2004, a

period of 25 years [6]. Surgery plays an important role in the management of balanced hyperthyroid goiter. Post-thyroidectomy complications are not rare and are marked by recurrent lesions, hemorrhages, and hypocalcemia. Their frequency varies depending on the series. Thyroidectomy, whether total or partial, has always been considered the major intervention in cervical surgery. Currently, the risks specific to the surgical procedure have been greatly reduced thanks to precise codification of the technique and operative indications [2]. We conducted this study to determine the modalities of surgical management of this condition with the aim of: studying the aspects epidemiological, clinical and therapeutic.

METHODOLOGY

We carried out a retrospective and descriptive study on the surgical management of goiters in the surgical department "A" of the Point-G University Hospital. It took place from January 2007 to December 2016, a period of 10 years. All patients received and operated on for goiter were included in the study. Patients operated on for a thyroglossal tract cyst, cervical abscesses, and

Citation: Sacko Oumar *et al*. Management of Benign Goitres in Surgery Department "A" of Point-G Chu. SAS J Surg, 2024 Jul 10(7): 878-883.

878

neck trauma were not included. The cases of hyperthyroidism were first treated medically with synthetic antithyroid drugs to have normal free T3 and ultrasensitive THS levels. The inclusion criteria allowed us to collect 409 files during this period. We used patient files for data collection (consultation registers and operating report books). Word processing and tables were carried out with Microsoft WORD 2010 software. Data analysis was carried out with SPSS 21 software. The statistical test used was the Chi2 test. A value of p<0.05 was considered statistically significant.

RESULTS

During the study period from 2007 to 2017, whether10 years, goiters represented 3.52% of all surgical consultations (676\19,200) i.e. an annual frequency of 67.6 cases at the same period, thyroidectomy was represented 5.9% of surgical activity (409\6962). The average age of the patients was 42.29 years with extremes of 5 years and 82 years. The sex ratio was 7.18 in favor of women. As a method of recruitment, 51.30% of patients (n=210) were seen for surgical consultation, and 199 patients, or 48.70% of cases, were referred by a health worker. The duration of progression was greater than 12 months in 380 patients or 92.8% of cases. A notion of taking goitrogenic foods (cabbage and cassava) was found in 18 patients (4.4% of cases).

5 patients, or 1.20% of cases, consulted for cervical pain and 404 patients, or 98.8%, consulted for antero-cervical swelling. Clinical characteristics are summarized in Table I

Table I: Distribution of patients according to clinical signs

Clinical signs	effective	percentage
Presence of Thrill	17	4,2
Cervical lymphadenopathy	7	1,70
Soft cervical swelling	182	44 ,50
Firm cervical swelling	212	52,80
Hard cervical swelling	15	3,70
dyspnea	16	3,81
dysphagia	8	2

When measured, the average size of the goiter was 7.62 cm. Ultrasound was requested in all patients and the heterogeneous appearance of the gland represented 54.50% of cases (n=223). Hypertopia involved the lobes (left and right) in 63 cases (15%), the isthmus and the left lobe 39 cases (9.5%), the isthmus and the right lobe 106 cases (26%) and whole gland 201 cases (49%). Frontal and lateral cervical radiography was requested in all patients, it revealed images of tracheal compression in 2.4% of cases (n=10), and tracheal deviation in 39.60% of cases. (n=162). The measurement of thyroid hormones (ultrasensitive TSH, T3, T4) was systematic in all patients. An ENT consultation was requested before the operation in 10 patients due to the volume of their goiter. The preoperative ultrasound diagnosis and the surgical procedure used are reported in tables 2, 3 and 4.

Table II: Ultrasound appearance of the goiter on ultrasound

Aspect	Number	Percentage
nodular	24	6
multinodular	261	64
diffuse	124	30
total	409	100

Table III: Distribution of patients according to the preoperative diagnosis retained.

Preoperative diagnosis	Number	Percentage
goiter in euthyroidism	285	69,70
balanced hyperthyroid goiter	124	30,30
total	409	100

Table IV: Distribution of patients according to type of surgery

Type of chirurgie	Number	Percentage
lobectomy	24	5,86
ishmolobectomy	146	35,45
subtotal thyroidectomy	226	55,25
Total thyroïdectomy	14	3,40
total	409	100

Table V: Distribution of patients according to operative morbidity.

Type of morbidity	Number	percentage
reaching the recurrent	3	0,73
postoperative hemorrhage	9	2,20
tracheal injury	1	0,24
total	13	3,17

La mortalité opératoire a été de 1,71% (n=7). 89 patients soit 21,80% ont été admis dans le service de réanimation pour surveillance postopératoire. Une hypocalcémie a été diagnostiquée chez 7 malades (1,71%). L'examen anatomopathologique a conclu à 8 cas de carcinome (1,95%) dont 3 vésiculaire (0,73%) et 5 papillaire (1,22%).

Image N°1: Large, multi-nodular goiter.
Source: Surgery Archive A
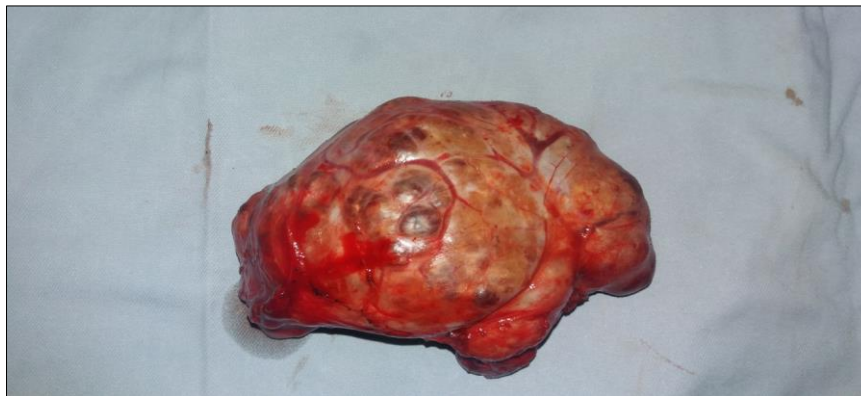
Image N°2: Subtotal thyroidectomy piece.
Source: Surgery Archive A.

DISCUSSION

We conducted a retrospective and descriptive study on the surgical management of goiters in the surgery department "A" of the Point-G University Hospital. It extended over a period of 10 years, the retrospective nature was conferred a certain number of limitations on our study, postoperative follow-up was not carried out in all patients. The frequency of thyroidectomy varies depending on the country, in our series in 10 years 19,200 consultations were carried out, 676 were goiters or (3.52%). Thyroidectomy represented 5.9% (409 cases) out of 6962 cases of surgical interventions performed. In Spain, Rios [7] reported 672 cases of thyroidectomies performed over 30 years, while in England Allahabadia *et al*., [8], had 813 cases over 15 years. Touré A [9], reported 192 cases of thyroidectomies performed over 5 years in Guinea. These data from the literature show the significant frequency of goiter in the different series and thyroidectomy occupies an important place in the surgical activity of the various authors. The average age was 42.29 years in our series, it corresponds to the average age reported by several African authors [5, 6]. Goiter appears to be a pathology of young adults. The female gender was the most represented in this study with a ratio of 7.18. This trend has been found by several authors nationally and internationally [5-9]. The female gender is a risk factor for thyroid pathology.

The strong female predominance is probably due to the action of estrogens during puberty. The thyroid has receptors for these female hormones which reduce

the penetration of iodine into the gland. The role of pregnancies is also mentioned, the thyroid cells of the fetus causing, once the pregnancy is over, an autoimmune reaction in the gland. In our study, 92.9% of patients consulted more than 12 months from the start of their illness. This delay in consultation is particularly common in our context where patients consult at an advanced stage of their pathology. This is particularly valid for goiter. Patients only consult when it is accompanied by signs of hyperthyroidism, compression or when it becomes large, it therefore rarely motivates a medical consultation. The prolonged duration of the disease would favor a significant increase in the volume of the goiter, nodulogenesis, and the formation thyroid cysts as well as the occurrence of hyperthyroidism. In fact, a sudden increase in thyroid volume usually indicates intranodular bleeding (hematocele). This duration is still important to specify because the rapid evolution of a goiter can be suspicious for malignancy. Asymptomatic, neglected, goiter is rarely a cause for concern. The most common reason encountered in our series was the increase in volume, i.e. in 98.8% of cases this was reported by most of the authors [9], some of our patients presented signs of compression such as dyspnea 3.81% (n=16 cases) and dysphagia 2% (n=8 cases) these clinical manifestations observed in this study can be explained by the fact that we receive a lot of cases of large goiter contrary to European authors [10].

During the clinical examination, palpation makes it possible to evaluate the size of the goiter, its consistency (soft, firm, cardboardy, stony), its vascular nature confirmed by an auscultatory murmur, its homogeneity (presence or absence of nodules) and its symmetry. We also look for possible signs of compression (tracheal deviation, dyspnea, dysphagia, dysphonia) and cervical discomfort. At the same time, the patient is asked about ethnic origins, family history of dysthyroidism, treatments followed and iodine intake. This questioning in the case of Mali can have a diagnostic orientation because there are goiter endemic areas where more than 12% of the population carries goiter [11]. The positive diagnosis, whether it is diffuse goiter or nodule is based on biological, morphological and functional examinations. Biological diagnosis, by measuring TSH, free T4 and T3, is essential. Allowing the diagnosis of hyperthyroidism or hypothyroidism, in our series as in all series in the literature these thyroid hormones were measured. As the thyroid antibody dosages depend on the clinical orientation, they are only requested in the event of a TSH abnormality. The 24-hour iodine will be measured if iodine deficiency is suspected. Some authors recommend a single measurement of Calcitonin in order to formally rule out medullary thyroid carcinoma. These histological lesions represent only 5% of malignant nodules. Ultrasound constitutes the reference morphological examination its first objective is to measure the dimensions of each thyroid lobe, the second objective is to analyze the structure of the gland, it has been requested by most

authors as a primary morphological examination. Intention. We do not perform total thyroidectomy for benign goiter and we perform thyroidectomy subtotal (46.1%), in developed countries where some propose subtotal thyroidectomy, or even systematic total thyroidectomy for any benign goiter, to avoid recurrences and to detect small cancers [5, 6]. In the case of total thyroidectomies, hormonal therapy is systematic and lifelong. Our context does not allow us to make such decisions when faced with a benign pathology, especially in a country where geographic and economic access to thyroid hormone is not as easy as in developed countries; once the surgical choice has been made, it remains to define the type of excision. Currently two strategies confront each other: - total thyroidectomy has been used by most authors. They put forward the following arguments: The risk of cancerization on the thyroid stump is prevented; the recurrence of hyperthyroidism becomes zero; all signs of thyrotoxicosis are definitively and immediately eliminated; the certainty of hypothyroidism immediate postoperative treatment, easily compensated by opotomy replacement therapy, is preferable to the risk of recurrence or that of ignoring the subsequent occurrence of thyroid insufficiency in a patient likely to be lost to follow-up. Subtotal thyroidectomy: it is most often proposed. It poses the problem of finding the right balance between the risk of persistent or recurrent hyperthyroidism in the event of insufficient excision, and the risk of permanent hypothyroidism in the event of too large an excision. In Mali, as in many other African countries [9], it is difficult to prescribe lifelong hormonal treatment, which is why the practice of subtotal thyroidectomies is constant.

Thus in 10 years, 223 subtotal thyroidectomies or 55.25% were performed. Our results are comparable to those of African authors [6-9]. On the other hand, there is a significant difference between our results and those reported by the European-American and Asian authors). In China Lin [11], performed 17 subtotal thyroidectomies compared to 53 total thyroidectomies, Rios [7], in Spain performed 6 subtotal thyroidectomies compared to 95 total thyroidectomies. The frequency of postoperative complications is very different depending on the authors; there are multiple hypotheses to explain these differences apart from the technical experience of the surgical team. Early postoperative hypoparathyroidism is more common in cases of bilateral total isthmolobectomy (called total thyroidectomy) or in cases of unilateral total isthmolobectomy combined with contralateral subtotal isthmolobectomy (called subtotal thyroidectomy) or in cases of Bilateral subtotal isthmolobectomy (also called subtotal thyroidectomy) this hypocalcemia rarely appears in the event of unilateral intervention. The definition of hypocalcemia can be based solely on clinical signs (a single objective sign or at least 2 objective signs), or solely on biological signs (taking into account or not the pre and postoperative serum calcium level), or a association of clinical and biological signs.

Our frequency of postoperative hypocalcemia was low, perhaps because of elective vascular ligations, and/or our restrictive definition of hypocalcemia (Chvostek sign and or Trousseau sign associated with a drop in postoperative serum calcium compared to to the preoperative serum calcium, and the normal level of the laboratory which carried out the dosage). The frequencies of postoperative hypocalcemia vary between 20% or even 35-37% and are probably based on completely different criteria depending on the authors. The recurrent lesion (or lesion of the lower laryngeal nerve) must be established according to the number of lower laryngeal nerves at risk and not according to the number of people operated on [12]. In fact, 2 nerves are at risk in the event of bilateral intervention, but only one nerve is at risk in the event of unilateral intervention. It is therefore difficult to compare the frequencies of postoperative recurrent lesions from different authors who do not have the same definitions of the denominator. In our study, we eliminated thyroid cancers, because in these cases many of our patients arrived with thyroid tumors invading the recurrent nerve; the recurrent lesion is not then an intraoperative accident, but a necessity of oncological surgery. Some of our patients with benign goiter arrived with signs of compression, in particular immobility of the vocal cord which has not regressed. After the operation, although the recurrent nerve was seen, released and preserved. We did not count these cases among postoperative complications. It is therefore difficult to compare the frequencies of postoperative recurrent lesions according to the authors, in the absence of precision on the 3 points mentioned above:

The risk of compressive postoperative hematoma requiring reoperation increases in cases of very large goiters. Our study did not allow us to verify this hypothesis, but the frequency of postoperative hematoma observed is one of the highest in the literature [5]. Our study did not allow us to highlight the link between the volume of the goiter and the risk of postoperative infection, but our frequency of postoperative infection is one of the highest in the literature. We can say that there is no significant difference between the authors with regard to persistent recurrent lesions (0.5 to 1.0% according to the authors) or persistent hypoparathyroidism (0.4 to 2.6 % according to the authors), because these complications often resolve with postoperative follow-up. We had few postoperative recurrences (2.4%) after 10 years of follow-up. This low frequency of recurrence was obtained despite the absence of systematic prescription of thyroid hormone postoperatively. But the recurrence rates are difficult to compare from one author to another because of: the extent of the excision at the start (unilateral isthmolobectomy, or unilateral total isthmolobectomy associated with a contralateral subtotal isthmolobectomy, or systematic total thyroidectomy) ; differences in the definition of a recurrence (one or more clinical signs, one or more biological signs based on free T4 or ultrasensitive TSH, or combination of clinic and biology); differences in follow-up time (recurrence most often occurs between 1 and 2 years but it can occur after 10 years especially in the case of Graves' disease) differences in benign pathology at the start (euthyroid goiter, or balanced hyperthyroid goiter, or disease of Graves balanced) For the same reasons cited above, the frequencies of postoperative hypothyroidism of the different authors are difficult to compare: either the team decides on a thyroidectomy systematic total treatment (to detect small cancers, or to avoid any risk of recurrence), in this case postoperative hypothyroidism (which is not a complication) is systematically prevented by lifelong hormone therapy; or the team (like ours in Mali) decides to avoid as much as possible total thyroidectomy for a benign goiter (despite the absence of extemporaneous pathological anatomy examination) because of the economic and/or geographical difficulties of access to thyroid hormones; in this case hypothyroidism can be considered as a postoperative complication, but the frequency of this complication does not seem to justify preventive treatment for life, because our results and those of the literature show that after subtotal thyroidectomy, less than 10% of patients require thyroid hormone therapy.

CONCLUSION

Benign goiter is a common condition, to minimize the complications linked to its surgery a systematic intraoperative identification of the recurrent one with a view to its preservation; identification and preservation of parathyroid vascularization are necessary. In a developing country where the geographic and/or economic accessibility of thyroid hormone is not easy, we suggest: preserving as much as possible an upper pole of a thyroid lobe in the event of benign pathology to avoid the systematic prescription of thyroid hormone after subtotal thyroidectomy.

REFERENCES

1. Duron, F., & Dubosclard, E. (2000). Goitres simples: Encycl Méd Chir, *Endocrinologie-Nutrition, Paris, 10*, 07-10.
2. Cannoni, M., & Demard, F. (2002). Les nodules thyroïdiens, du diagnostic à la chirurgie: rapport à la société française d'oto-rhinolaryngologie et de pathologie cervico-faciale: *Ann chir, 127*, 68-721.
3. Kang, A. S., Grant, C. S., Thompson, G. B., & van Heerden, J. A. (2002). Current treatment of nodular goiter with hyperthyroidism (Plummer's disease): surgery versus radioiodine. *Surgery*, *132*(6), 916-923.
4. Moten, A. S., Thibault, D. P., Willis, A. W., & Willis, A. I. (2016). Demographics, disparities, and outcomes in substernal goiters in the United States. *The American Journal of Surgery*, *211*(4), 703-709.
5. Dieng, M., Cissé, M., Ndour, M. D., Konaté, I., Touré, A. O., Ka, O., ... & Touré, C. T. (2010). Indications et résultats des thyroïdectomies réalisées

au sein d'un service de chirurgie générale. A propos de 402 patients opérés. *Revue Africaine de Chirurgie et Spécialités*, *4*(9), 24-27.

6. Keita Ingré. Les goitres nodulaires hyperthyroïdiens dans le service de chirurgie B du CHU du Point G : 274 cas. Thèse Med, Bamako 08M227.

7. Ríos, A., Rodríguez, J. M., Balsalobre, M. D., Torregrosa, N. M., Tebar, F. J., & Parrilla, P. (2005). Results of surgery for toxic multinodular goiter. *Surgery today*, *35*, 901-906.

8. Allahabadia, A., Daykin, J., Sheppard, M. C., Gough, S. C., & Franklyn, J. A. (2001). Radioiodine treatment of hyperthyroidism—prognostic factors for outcome. *The Journal of Clinical Endocrinology & Metabolism*, *86*(8), 3611-3617.

9. Camara, L. M., Camara, N. D., Diallo, A. T., Toure, A., & Toure, F. B. (2006). La chirurgie thyroïdienne: Expérience du service de chirurgie générale du CHU Ignace DEEN de Conakry. *Mali medical*, 23-27.

10. Lin, Y. S., Wu, H. Y., Lee, C. W., Hsu, C. C., Chao, T. C., & Yu, M. C. (2016). Surgical management of substernal goitres at a tertiary referral centre: A retrospective cohort study of 2,104 patients. *International Journal of Surgery*, *27*, 46-52.

11. TOGO, A. (2007). Le goitre bénin hyperthyroïdien dans le service de chirurgie générale du CHU Gabriel Touré. *Mémoire de chirurgie générale*, Mali 2007.

12. Koumare, A. K., Sissoko, F., & Ongoiba, N. (2002). Goitres bénins en chirurgie au Mali (à propos de 815 cas). *E-mémoires de l'Académie Nationale de Chirurgie*, *1*, 1-6.