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Current Place of Surgery in the Management of Thyroid Disease: A Series of 100 Cases

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Abstract: **Original Research**

***Background*:** Thyroid disorders are among the most common endocrine diseases and predominantly affect women. Surgery plays a central role, particularly for large or compressive goitres, dysthyroidism refractory to medical treatment, and suspected malignancy. The aim of this study was to define the indications for thyroidectomy and to assess its outcomes in a Moroccan hospital series. ***Methods*:** Single-centre retrospective study of 100 patients operated on for thyroid disease in the Department of Surgery B, Ibn Sina University Hospital, Rabat, over a 15-month period (September 2021 – December 2022). Epidemiological, clinical, paraclinical, therapeutic, pathological and follow-up data were collected using a standardised data sheet and analysed in Microsoft Excel. ***Results*:** The median age was 47.5 years (range 20–77) with marked female predominance (91%, female-to-male ratio ≈ 10). Anterior cervical swelling was the leading complaint (90%); compressive signs were present in 27% of cases. Cervical ultrasound, performed in 98% of patients, showed a multinodular goitre in 71% and classified most nodules as EU-TIRADS 3 (58%). The main surgical indications were multinodular goitre (36%) and suspected malignancy (21%). Total thyroidectomy was the reference procedure (84%), with lobo-isthmectomy reserved for solitary nodules (12%). No recurrent laryngeal nerve injury and no death occurred. Postoperative hypocalcaemia, mostly biochemical and transient, occurred in 19% of cases. Histopathology revealed benign nodular hyperplasia in 55% and a malignant or borderline lesion in about 20%, papillary carcinoma being the commonest. ***Conclusion*:** Thyroidectomy, whether total or partial, remains the gold standard for surgical thyroid disease. A standardised technique with systematic identification of the recurrent laryngeal nerves and parathyroid glands achieved low morbidity and nil mortality. Postoperative follow-up, undermined by a high loss-to-follow-up rate, remains the key area to strengthen.

Keywords: Surgery, Thyroid, Thyroidectomy, Goitre, Complications.

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1. INTRODUCTION

Thyroid disorders are the second most frequent reason for endocrinology consultation after diabetes and preferentially affect women. Their management has changed substantially over recent decades, mainly thanks to the widespread use of high-resolution cervical ultrasound and fine-needle aspiration cytology, which have refined the selection of patients eligible for surgery.

Thyroid nodules are palpable in about 4% of adults, but their prevalence reaches 40 to 50% of the adult population when sought on ultrasound, with a higher frequency in women. This high prevalence makes the accuracy of surgical indications crucial, so that thyroidectomy is reserved for situations in which it provides a genuine benefit.

Surgery holds a decisive place in certain thyroid conditions, particularly cancer, large or compressive goitres, and dysthyroidism not controlled by medical treatment. Although it is a codified procedure, thyroidectomy is not free of complications, which calls for rigorous indications and full technical mastery.

Through a series of 100 thyroidectomies performed at Ibn Sina University Hospital, Rabat, and compared with the literature, this study aims to define the current place of surgery in the management of thyroid disease by analysing its indications, modalities and outcomes.

2. Materials and Methods

This was a single-centre retrospective study of 100 patients operated on for thyroid disease in the Department of Surgery B, Ibn Sina University Hospital, Rabat, over a 15-month period from September 2021 to December 2022. During this period, 107 patients were operated on; 7 incomplete or untraceable records were excluded. All patients were admitted and operated on as elective procedures.

Inclusion Criteria

- Age over 18 years;
- Patient hospitalised and then operated on for thyroid disease in the Department of Surgery B;
- Available operative report and histopathology result.

Exclusion Criteria

- Age under 18 years;
- Patient not operated on or unusable record;
- Operative report or histopathology result not available.

A standardised data sheet was used to collect, for each patient, age, sex, geographical origin, personal and family history, reason for consultation, clinical findings, biochemical work-up, imaging, cytology, treatment, intraoperative findings, histopathology, complications and outcome. Descriptive statistical analysis was performed using Microsoft Excel.

3. RESULTS

3.1. Epidemiological Data

The median age of our patients was 47.5 years, ranging from 20 to 77 years; 73% of patients were aged between 36 and 65 years. The series was largely female, with 91 women to 9 men (91%), giving a female-to-male ratio of about 10. Geographical origin, specified in 90% of patients, was urban in 74 % of cases, and 66 % of patients came from the Rabat-Salé-Kénitra region.

A personal history of thyroid surgery was found in 7 patients (4 lobo-isthmectomies, 2 total thyroidectomies, 1 enucleation), one patient having been operated on twice. A family history of thyroid disease was noted in 17 cases. The main general comorbidities were arterial hypertension (28 cases) and diabetes (10 cases).

3.2. Clinical data

Low anterior cervical swelling was the main reason for consultation, present in 90% of patients. Compressive signs (dyspnoea, dysphagia, dysphonia) were found in 27% of cases. Signs of dysthyroidism were present in 34 cases, mostly hyperthyroidism (29 cases). Seven patients presented with exophthalmos and seven with recurrence; the finding was incidental on ultrasound in 4 cases. The median duration of disease was 2 years (range: 1 month to 20 years).

On examination, the swelling was bilateral in 66% of cases. A clinically plunging goitre was noted in 12 cases and satellite lymphadenopathy in 6 cases. The main clinical findings are summarised in Table 1.

Table 1: Distribution of patients according to clinical findings (* percentage of the 77 patients in whom the site was specified)

Clinical finding	n	%
Cervical swelling	90	90
Compressive signs	27	27
Signs of hyperthyroidism	29	29
Signs of hypothyroidism	5	5
Exophthalmos	7	7
Recurrence	7	7
Bilateral goitre	51	66*
Clinically plunging goitre	12	12
Satellite lymphadenopathy	6	6

3.3. Paraclinical data

A thyroid work-up (TSH, T3, T4) was performed in all patients: 78 were euthyroid, 15 hyperthyroid and 2 hypothyroid. Calcitonin measurement, performed in 3 patients, was normal.

Cervical ultrasound, performed in 98 % of patients, showed a multinodular goitre in 71 cases, a solitary nodule in 18 cases and features of Graves' disease in 6 cases. Most nodules were classified as EU-TIRADS 3 (58%), followed by stage 4 (29%). Chest radiography, performed routinely, showed signs of mediastinal or tracheal involvement in a few cases. Technetium-99m scintigraphy, performed in 12 patients, showed a hot nodule in 9 cases. Fine-needle aspiration, performed in 11 cases, showed a benign lesion (Bethesda II) in 5 cases and a lesion suspicious for papillary carcinoma (Bethesda V) in 3 cases. The ultrasound findings are detailed in Table 2.

Table 2: Main thyroid ultrasound findings (* of the 88 measured nodules)

Ultrasound finding	n	%
Multinodular goitre	71	71
Solitary nodule	18	18
Graves' disease	6	6
EU-TIRADS 2	—	8
EU-TIRADS 3	—	58
EU-TIRADS 4	—	29
EU-TIRADS 5	—	5
Largest nodule > 3 cm	35	40*

3.4. Treatment

Before surgery, all patients underwent a pre-anaesthetic consultation and preoperative preparation; 22 patients (22%) were on medical treatment, most often an antithyroid drug combined with a beta-blocker. All patients were approached through a low horizontal cervicotomy.

The surgical indication was dominated by multinodular goitre (36%) and suspected malignancy (21%). Total thyroidectomy was the reference procedure (84%), with lobo-isthmectomy reserved mainly for solitary nodules larger than 3 cm (12%). Lymph node dissection was associated in 3 cases. Surgical indications are presented in Table 3.

Table 3: Distribution of patients according to the surgical indication

Surgical indication	n	%
Multinodular goitre	36	36
Suspected malignancy	21	21
Plunging goitre	15	15
Graves' disease	10	10
Nodule > 3 cm	6	6
Toxic goitre	5	5
Recurrence	5	5
Completion thyroidectomy	2	2

3.5. Intraoperative findings and complications

The recurrent laryngeal nerves were identified and dissected in all patients (100%), and the parathyroid glands were preserved in all cases. Intraoperative complications were rare: 2 episodes of intraoperative bleeding and one 6-mm tracheal wound, sutured uneventfully.

3.6. Postoperative outcomes

Hospital stay ranged from 1 to 4 days. Postoperative complications were observed in 23 cases. Hypocalcaemia, screened systematically on day 1, was the most frequent (19 cases): most often biochemical and transient, it was moderately symptomatic in 5 cases and severe in 1 case, requiring intravenous supplementation. A compressive haematoma required reoperation for drainage. No recurrent laryngeal nerve palsy, no wound infection and no death occurred. Postoperative complications are summarised in Table 4.

Table 4: Postoperative morbidity and mortality

Postoperative complication	n	%
Hypocalcaemia (biochemical/clinical)	19	19
Laryngeal dyspnoea	2	2
Compressive haematoma	1	1
Dysphonia + high dysphagia	1	1
Permanent recurrent nerve palsy	0	0
Wound infection	0	0
Mortality	0	0

3.7. Histopathology

Frozen-section examination, performed in a single case, concluded to papillary carcinoma. Definitive examination of the fixed specimen revealed benign nodular hyperplasia in 55 patients. A malignant or borderline lesion was found in about 20% of cases, dominated by papillary carcinoma (14 cases); there were also 16 adenomas and 3 non-invasive follicular neoplasms with papillary-like nuclear features (NIFTP). The distribution is detailed in Table 5.

Table 5: Distribution according to the definitive histopathology results

Histopathological type	n	%
Benign nodular hyperplasia	55	55
Adenoma	16	16
Papillary carcinoma	14	14
Vesicular / mixed / follicular carcinoma	4	4
Non-invasive follicular neoplasm (NIFTP)	3	3
Thyroiditis (lymphocytic/granulomatous)	3	3
Basedowified goitre	2	2
Other (cyst, normal parenchyma)	2	2

3.8. Adjuvant treatment and outcome

Patients with carcinoma were placed on suppressive therapy and referred for radioactive iodine therapy. Postoperative follow-up, however, proved very difficult to maintain, as almost all patients were lost to follow-up after surgery, which limited the assessment of long-term outcome.

4. DISCUSSION

Our series illustrates the classic features of surgical thyroid disease: marked female predominance, mean age around the fifth decade, and a presentation dominated by cervical swelling. These data are consistent with the literature, where the female-to-male ratio and the predominance of multinodular goitres are regularly reported.

The diagnostic approach now rests on the ultrasound–cytology pairing. Cervical ultrasound, performed in 98% of our patients, characterises nodules and stratifies the risk of malignancy; standardised systems such as EU-TIRADS improve the reproducibility of this assessment and the selection of nodules to aspirate. Fine-needle aspiration, interpreted according to the Bethesda system, guides the surgical indication and determines the extent of resection. In our series, the use of fine-needle aspiration remained limited (11 cases), which represents an area for improvement to reduce the proportion of thyroidectomies performed for ultimately benign lesions.

Therapeutically, total thyroidectomy emerged as the reference procedure (84%), reflecting the international trend to favour complete resection for bilateral multinodular goitre or suspected malignancy, in order to prevent recurrence and facilitate subsequent surveillance. Lobo-isthmectomy retains a legitimate place for an isolated unilateral nodule. This strategy is consistent with current guidelines, which emphasise tailoring the extent of resection to the risk of malignancy and the glandular volume.

The morbidity of our series is comparable to that in the literature. Postoperative hypocalcaemia, the most frequent complication (19%), was in the great majority of cases biochemical and transient; the absence of permanent recurrent nerve palsy and the nil mortality reflect the quality of the operative technique, in particular the systematic identification of the recurrent nerves and the preservation of the parathyroid glands. The reduction in complications observed over the past two decades is largely due to this technical rigour and to detailed knowledge of cervical anatomy.

The main limitation of this work is its retrospective, single-centre nature, a source of sometimes incomplete clinical data. Above all, postoperative follow-up proved very difficult to ensure: the almost systematic loss to follow-up after surgery prevented any reliable assessment of long-term outcome, particularly in patients with carcinoma who should receive

radioactive iodine therapy and prolonged surveillance. This finding underlines the need to structure follow-up pathways and to make patients aware of the importance of long-term monitoring.

Finally, thyroid surgery is undergoing notable technical developments — minimally invasive approaches, transoral endoscopic thyroidectomy, robotic surgery and radiofrequency thermal ablation for selected indications — which could, in time, broaden the therapeutic range while reducing the scar burden, provided their indications are rigorously evaluated.

5. CONCLUSION

Thyroid disorders are common endocrine diseases with marked female predominance. Thyroidectomy, total or partial, remains the gold standard for surgical forms. In our series of 100 cases, total thyroidectomy was the most frequent procedure, performed to prevent recurrence, with a complication rate comparable to the literature and nil mortality — a result attributable to standardisation of the technique and systematic identification of the structures at risk. Postoperative follow-up, undermined by a high loss-to-follow-up rate, is the key area to strengthen: patients should be made aware of the value of prolonged surveillance for the timely detection and treatment of complications and recurrences.

Declarations

Conflicts of interest: The authors declare that they have no conflict of interest related to this article.

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Ethical Considerations: A retrospective study conducted with respect for patient data confidentiality, in accordance with the principles of the Declaration of Helsinki.

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