
Surgery of Solitary Thyroid Nodule Our Experience with 1350 Cases

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Abstract:

Background: Solitary thyroid nodule are one of the common presentations of goiter, most patients are euthyroid and present with a painless mass in the thyroid gland, patient with solitary thyroid nodule sometimes raises fears about malignant pathology, however in most of the cases it is usually benign lesion.

Objective: The aim of this study is to determine the symptomatology of solitary thyroid nodule, to assess the accuracy of preoperative investigations in comparison to the intraoperative and postoperative findings, and to evaluate the best surgical procedure for the treatment of solitary thyroid nodule.

Patients and Methods: A retrospective study of the medical records of 1350 of patients operated for solitary thyroid nodule from the period 1-1-1990 to 30-12-2008. History and physical examination are recorded, the preoperative preparation studied and the operative and postoperative results were assessed.

Results: The total number of patients were 1350, 115 males and 1195 females, the age ranged from 19 to 72 years old, all of the cases presented with solitary thyroid nodule, 67 % in the left side, FNAC done for most of the cases. 1110 underwent lobectomy and 240 subtotal thyroidectomy, with 5 to 8 years follow up 5 cases show recurrence in the same side and 37 in the other side.

Conclusion: Solitary thyroid nodule is a common presentation of neck mass, it is more common in females usually in the left side. In most of the cases the underlying pathology is benign and Lobectomy or subtotal thyroidectomy is the best treatment for this disease.

Key words: Solitary thyroid nodule, Benign nodule, FNA cytology, Lobectomy.

Background:

Solitary thyroid nodules are a common problem. they are more common in women than in men. They found in 4%–8% of adults by palpation¹⁻³ and in 13%–67% when ultrasound detection is used.² In autopsy studies, they have a prevalence of approximately 50%.⁴ The Prevalence increases with age, with spontaneous nodules occurring at a rate of 0.08% per year beginning early in life and extending into the eighth decade. it is one of the common presentations of goiter, most patients are euthyroid and present with a painless mass in the thyroid gland. Most of Solitary thyroid nodules are benign hyperplastic lesions, but 5-20% of thyroid nodules are true neoplasms.³ One of the major goals in the evaluation of the solitary thyroid nodule is the differentiation of hyperplasia from true neoplasms. Furthermore, the histological criteria used to distinguish benign from malignant neoplasms can be subtle. Evaluation of solitary thyroid nodules requires the collaboration of the primary care physician, endocrinologist, pathologist, radiologist, and

head and neck surgeon to provide comprehensive and appropriate management of this clinical entity. Medical history and physical examination of the patient adds significantly to the determination of the nature of the thyroid nodule. Physical characteristics of a thyroid nodule are poor predictors of malignancy. Both malignant and benign solitary thyroid nodules can be soft or firm, smooth or irregular upon examination. However, increased size of a thyroid nodule correlates with increased risk of malignancy. Moreover, size is used in tumor staging and is highly predictive of outcome. Fixation to or invasion of surrounding structures and the presence of palpable lymph nodes in the neck are also highly suggestive of malignancy. Vocal cord paralysis is not a reliable indicator of malignancy because it can also occur in benign disorders.³ Currently, a variety of serologic and cytogenetic tests, diagnostic imaging studies, and histopathological techniques exist for the evaluation of a thyroid

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Nodule.⁵ Of these methods, fine-needle aspiration cytology has become the most important tool in the assessment of solitary thyroid nodule. The challenge remains in the management of nodules that fall under the "indeterminate" category. These may be subject to more surgical intervention than is required because histological examination is the only way in which a malignancy can be excluded. Surgery followed by radioactive iodine ablation is the mainstay of treatment for malignant thyroid nodules.

Objective:

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Patients and Methods:

A retrospective study of the medical records of 1350 patients operated for solitary thyroid nodule from the period 1-1-1990 to 30-12-2008.

History and physical examination are recorded, the preoperative preparation studied and the operative and postoperative results were assessed. Unilocular multinodular goiter and cystic nodule which not recurred after aspiration not included in our study.

Results:

The total number of patients was 1350.

Hospitals:

- 1 - 7th October 905 cases
- 2 - Alquefia and private 195 cases
- 3 - 7th April 250 cases

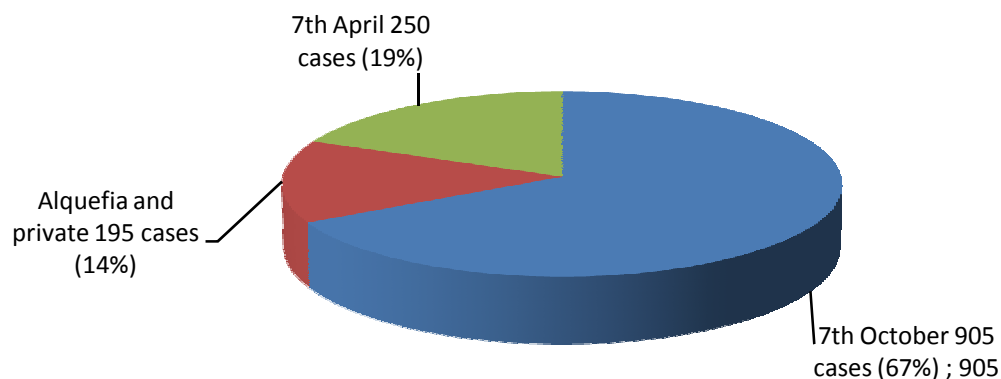


Fig. 1: Shows the distribution of cases in different hospitals.

The gender: 1195 females and 115 males.

The age: range from 19 to 72 years old.

All of the cases presented with solitary thyroid nodule.

(80 % painless mass, 20 % painful mass)

(45 % with pressure symptoms)

All cases are EUTHYROID
(Clinically and laboratory)

ultrasound neck done for all cases

126 cystic

others solid

67 % in the left side

33 % in the right side

FNAC done for 675 patients (50 % of cases)

70 cases malignant

82 cases suspicious

Others benign

Surgery depend upon intraoperative findings.

Solitary thyroid nodule in one lobe **1110 (82.5%)**

55 % in the left side

27.5 % in the right side

In 240 (17.5 %) there were another nodule in the other lobe.

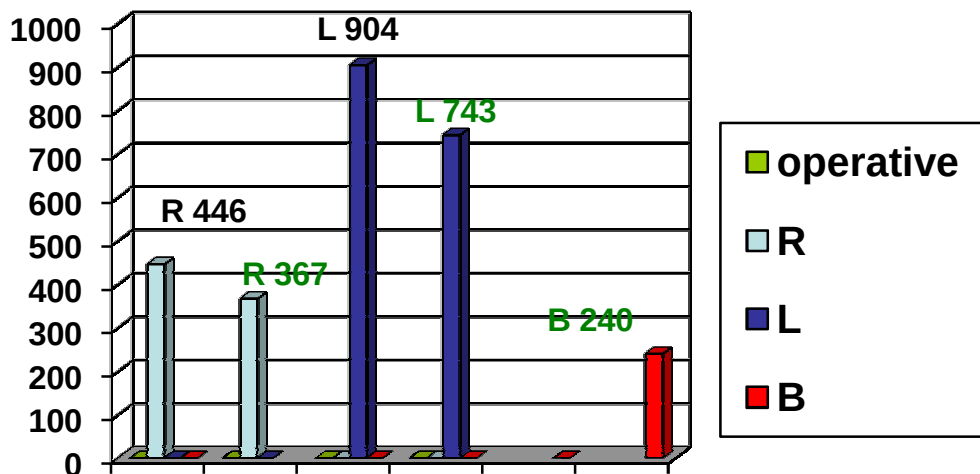


Fig. 2: Shows Comparison between the ultrasound and operative findings.

1110 underwent lobectomy with or without Isthmectomy.
240 subtotal, near total or total thyroidectomy, according to the result of FNAC and the intraoperative findings.
Intraoperative frozen sections not done.

Postoperative histopathology results:

215 case malignant

185 Papillary Ca
25 Follicular Ca
3 Anaplastic Ca
2 Mixed tumor

1135 case benign

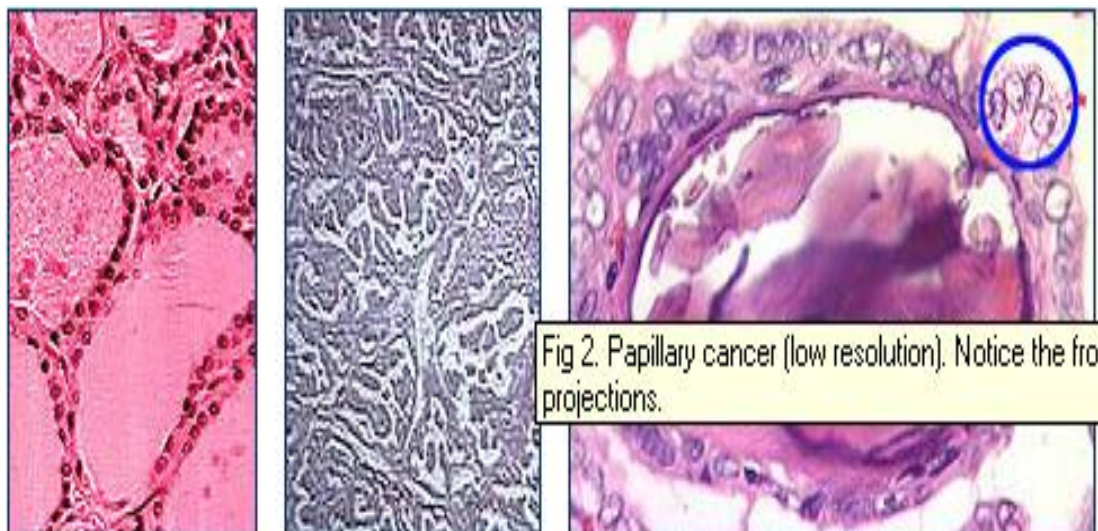


Fig 2. Papillary cancer (low resolution). Notice the fror projections.

Figure 3: shows microscopic views of normal thyroid tissue versus papillary thyroid cancer

Normal thyroid tissue papillary cancer
psammoma body within a papillary cancer
(optically clear nuclei are circulied in blue)

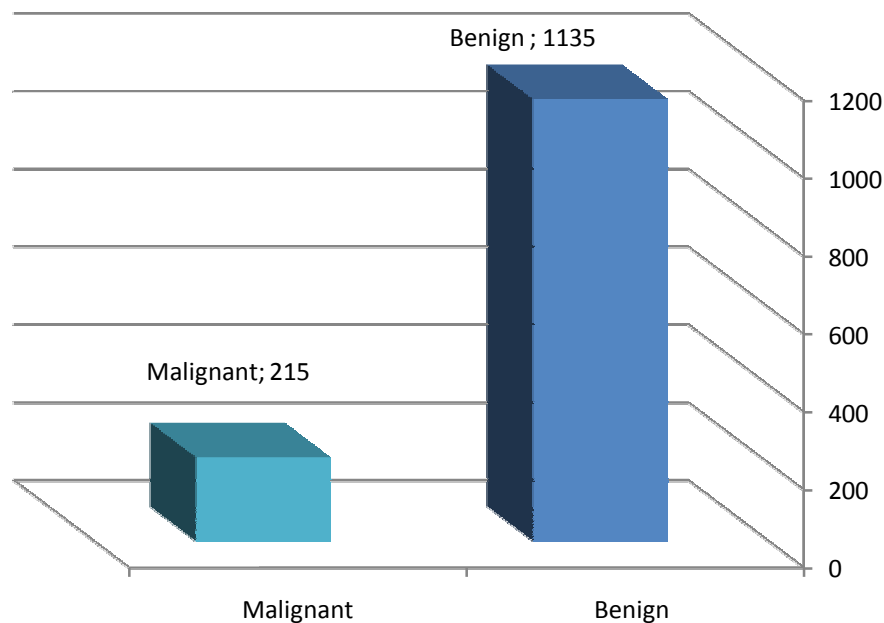


Figure 4: shows the number of benign and malignant cases.

Postoperative complications:

Heamatoma, seroma, wound infection 18 cases.
 Postoperative bleeding 1 case.
 Temporal hypocalciemia 2 cases.
 Hoarseness of voice 1 case.
 Hypothyroidism 402 cases.
 Wide scar 20 cases.

Follow up for 1 to 8 years:

Recurrence 42 cases(all are benign)
 (recurrence rate 3 %)
 5 cases in the same side
 37 in the other side

Discussion:

Thyroid gland diseases represent significant number of the cases which is admitted in our hospitals Figure (1). Regardless of the way in which thyroid nodules are discovered, a detailed patient history is requested. Information that needs to be ascertained includes: the presence of symptoms, a change in nodule size, previous head/neck radiation exposure, and a family history of thyroid or endocrine diseases. In our study the most common presentation was a painless single thyroid nodule and all of these patients were clinically euthyroid. Few patients have associated pressure symptoms. By physical examination and ultrasounography the solitary nodule was present in 67 % in the left side and

in 33 % in the right side, however during surgery there were another nodule in the other lobe In 240 cases (17.5%) Figure (2).

Accurate imaging characterization of a solitary thyroid nodule has been clearly problematic⁶. The other nodules which were not identified on palpation were less than 1 cm in diameter.⁸ Occult (impalpable) thyroid nodules which are not considered clinically important; they do not warrant further evaluation unless ultrasonographic features suggest malignancy or the nodule increases in size⁸.

During preoperative evaluation, unfortunately FNAC done for 675 patients only (50 % of cases) this is because of many factors like unavailability of this procedure that time in our city and some refuse to do this procedure because it is expensive or because of its invasiveness. By FNAC there were 70 cases malignant. However the postoperative histopathology results show 215 case malignant in the group of patients in which FNAC was done Figure (4).

Since the Intranuclear "holes" (pseudo inclusions) and Psammoma bodies are the most important diagnostic features of papillary carcinoma of the thyroid gland. Figure (3) this finding was not detected by FNAC, it could be

because of the unavailability of the special stain in the laboratory technique, in a comprehensive review of 28 series in which FNAC was performed on 10,872 patients with thyroid nodules, cytology was found to be benign in 53-90%, indeterminate or suspicious in 5-23%, malignant in 1-10%, and nondiagnostic in 2-21% of patients. Overall sensitivity, specificity, and accuracy of the FNAC technique have been reported to be 83%, 92%, and 95%, respectively.³

The effectiveness of FNAC of solitary thyroid nodules may be improved with the use of ultrasound guidance rather than simple palpation.⁶ As reported in many literatures as well as in our study, the most common malignancy was papillary carcinoma. In our series the decision of the type of the surgery was according to the intraoperative findings, in 1110 lobectomy with or without Isthmectomy was done, and in 240 subtotal, near total or total thyroidectomy was done. Intraoperative frozen sections was not considered in our study, because it was not available in our hospitals that time. Although there was no hot nodule in our study, there are various techniques for managing the hot nodule. Nonsurgical methods may be effective, but can result in persistent nodularity and iatrogenic squeal. Excision had no morbidity in this series and was effective in providing immediate relief of the problems.⁷

However, there were no significant postoperative complications, but after follow up for 8 years, there was recurrence of 42 benign cases (recurrence rate 3%)

Conclusions:

Thyroid gland diseases represent significant number of the cases admitted in our hospitals

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at the surgical department. One of the common presentations of thyroid diseases is Solitary thyroid nodule and proper history and clinical evaluation is very important for the diagnosis of this lesion. STN common in the females and more common in the left side, and the reason for this still not well known. Almost all cases with STN are euthyroid, the proper investigations which is needed preoperatively is Ultrasound neck and FNAC.

However, Ultrasound neck may miss other pathology in the other lobe and experienced radiologist is needed for the right diagnosis, fine-needle aspiration cytology has become the diagnostic tool of choice for the initial evaluation of solitary thyroid nodule because of its accuracy, safety, and cost effectiveness.

Acute Transient and Symmetric Goiter after Fine-Needle Aspiration of a Solitary Thyroid Nodule is one of the rare complications of FNAC.¹⁰ Intraoperative exploration of the other lobe is mandatory to exclude another pathology and intraoperative evaluation is the most important point in the management of STN. On the other hand, intraoperative frozen sections some time needed in suspicious cases and it is use as routine is controversial issue.

Meanwhile lobectomy with or without isthmectomy is the best treatment for benign unilateral lesion and near total or subtotal thyroidectomy is the appropriate treatment for lateral benign lesion and total thyroidectomy for malignant cases.⁹

Worthwhile the major challenge in the management of the solitary thyroid nodule remains the assessment as to which nodules require surgical excision and which can be followed conservatively.

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