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## Incidence of Thyroid Neoplasm in Postthyroidectomy Patient in Sala-Adeen Governate

### ABSTRACT

**Background:** Thyroid tumor is relatively rare tumor but it represent the most frequent form of the endocrine gland. Thyroid neoplasm either benign or malignant. Benign is follicular adenoma. Thyroid cancer is one of the cancers that becoming a leading cause of death in many countries of the world.

**Objectives:** The study aims to determine the frequency of thyroid neoplasm in post thyroidectomy patients and to determine the most common type of thyroid carcinoma and its percentage in Sala Adeen.

**Materials and methods:** This retrospective cross-sectional study was carried out in TTH by referring to all records of patients data of one year (January 2012- January 2013). All patients who underwent different types of thyroid surgeries during this period were included in the study. All data including age, gender, relevant investigations like Ultrasonography, fine needle aspiration cytology, and final histopathology report were recorded on a standard form.

**Results :** (272) patients were operated for different thyroid lesions. Twenty one (7.7%) were malignant (17 females and 4 males) and 91 were benign. Mean age for males was  $41.35 \pm 15.52$  years compared to  $36.59 \pm 13.28$  years for females. Papillary carcinoma constituted 17(80%), while follicular carcinoma formed only 9.5 % of malignant case. Medullary thyroid carcinoma ranked third with only 4.7%. while anaplastic thyroid carcinoma was 4.7% of the cases. SNG was 127 patients, 11 case were malignant and MNG were 112 case 9 cases were malignant. Papillary carcinoma was the commonest type which was observed in MNG in our study (80%).

**Conclusions:** The results of this study are consistent with many international studies. The prevalence of thyroid cancer is not high when we compared with other region in the world, and the most common types of thyroid carcinoma were papillary thyroid carcinoma. The present study concludes also the thyroid carcinoma is more common in middle age females. Also the results indicate that the risk of malignancy in multi-nodular goiter is not as low as it was thought before and that it is quite significant.

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## Introduction:

Thyroid tumor is relatively rare tumor but it represents the most frequent form of the endocrine gland. The annual incidence is about 3.7 per 100000 of population and sex ratio is 3 female to 1 male. Tumors of the thyroid characterized by a follicular growth pattern constitute the most common type of lesion of this organ encountered by pathologists. The vast majority of such lesions do not pose difficulties for histopathologic interpretation. A subset of these tumors, however, can represent a serious challenge for diagnosis. Thyroid tumors with a follicular growth pattern include a broad range of lesions that range from benign, hyperplastic nodules to follicular adenomas to follicular carcinomas. In addition, other types of tumors belonging in separate diagnostic categories can also present histologically with a follicular growth pattern, including the follicular variant of papillary thyroid carcinoma and medullary carcinoma. <sup>(1)</sup>

Most thyroid lumps are benign, but 5% of lump are malignant and it is important to distinguish this sinister

minority. Benign thyroid lumps may include the following:

Thyroid adenoma

Thyroiditis

Thyroid cysts

Hyperplastic nodules

Most thyroid nodules are adenomatous, multiple and that is usually shown on ultrasound, radio-isotope scanning and at surgery. The nodules are usually non-functioning (cold 20 %), although may be hyper functioning toxic adenomas (hot 80 %)<sup>(1)</sup>.

They may also be a hyper functioning adenoma in a multinodular goiter. Follicular adenomas are the most common and arise from follicular epithelium. They are usually single, well-encapsulated lesions. On ultrasound, adenomas may be hyper echoic or hypo echoic solid nodules with a regular hypo echoic area surrounding ring called the halo sign.<sup>(2)</sup> (Follicular adenomas present as clinically solitary nodules and the distinction between a follicular carcinoma and an adenoma can only be made by histological examination; in

the adenoma there is no invasion of the capsule or of pericapsular blood vessels. Treatment is therefore by wide excision, i.e. lobectomy. The remaining thyroid tissue is normal so that prolonged follow-up is unnecessary. It is doubtful if there is such an entity as a papillary adenoma and all papillary tumors should be considered as malignant, even if encapsulate.<sup>(3)</sup>

Prior to the 1960s X-ray treatments were often used for conditions such as acne, inflamed tonsils, adenoids, lymph nodes, or to treat enlargement of a gland in the chest called the thymus. All these treatments have been associated with an increased risk of developing thyroid cancer later in life. Even X-ray therapy used to treat serious cancers such as Hodgkin's disease (cancer of the lymph nodes) or breast cancer has been associated with an increased risk for developing thyroid cancer if the treatment included exposure to the head, neck or chest. Routine X-ray exposure such as dental X-rays, chest X-rays, mammograms have not been shown to be causing of thyroid cancer.

(4)

Thyroid carcinoma (TC) affects women more often than men, and usually occurs in people between the ages 25 to 65 years. The incidence of this malignancy has been increasing.<sup>(5)</sup> Thyroid cancer can also be caused by radioactive iodine released during nuclear disasters such as the 1986 accident at the Chernobyl power plant in Russia or the 2011 nuclear disaster in Fukushima, Japan related to the tsunami. Children are usually the most affected and often develop cancers within a few years of exposure. However, even adults exposed during these accidents develop thyroid cancer with increased frequency, sometimes as many as 40 years later.<sup>(4)</sup>

There are 4 major types of [thyroid cancer](#) (Papillary, Follicular, Medullary, and Anaplastic). Differentiated tumors (papillary or follicular) are highly treatable and usually curable. undifferentiated tumors (Medullary or anaplastic) are much less common, are aggressive, metastasize early, and have a much poorer prognosis.<sup>(5)</sup>

## Subject and Methods

### Design of the Study:

A retrospective cross-sectional study which conduct on patients had undergone a thyroidectomy in Tikrit Teaching Hospital, also some data collected from private histopathology. Over period from first January 2012 to first January 2013. so all patient with thyroid lesion (Multinodular goiter , solitary nodular and diffuse thyroid enlargement) were selected for this study.

### Statistical Analysis:

The data were represented by using tables. Chart and figures, some figures and tables had no *p* value because they are frequency tables. Computerized analysis of data and calculation of frequencies and conventional statistic technique were applied by using *SPSS* program version 7.5. most of the results are of qualitative nature.

## Results

A retrospective cross-sectional study which conducted on 272 cases of post thyroidectomy patients during period one year between (1/1/2012 -

1/1/2013). A majority of patients in their 3<sup>rd</sup> and 4<sup>th</sup> decades. Number of females was (220) and number of males (52) with striking female predominance. Female to male ratio (4.2:1). mean age for male was  $41.3 \pm 15.52$  year .and mean age for female was  $36.59 \pm 13.28$  years for the total 272 patients.

Cases were diagnosed as thyroid neoplasm (112) case (41.1%) of cases , (91) of cases were follicular adenoma (33.5%) of cases and cases were diagnosed as thyroid carcinoma (21) (7.7%). Seventeen were female (80.95%) and (4) cases were male (19.05%). with female to male ratio of 4.25:1. Mean age of all patients with (TC) was  $41.5 \pm 14.8$  years. Mean age of females was  $38.4 \pm 11.64$  years and of males was  $45.5 \pm 16.9$  years. Family history of thyroid disease was available in 9 (9.8%) cases. there was no family history of thyroid cancer in our patient's .or history of neck radiation.

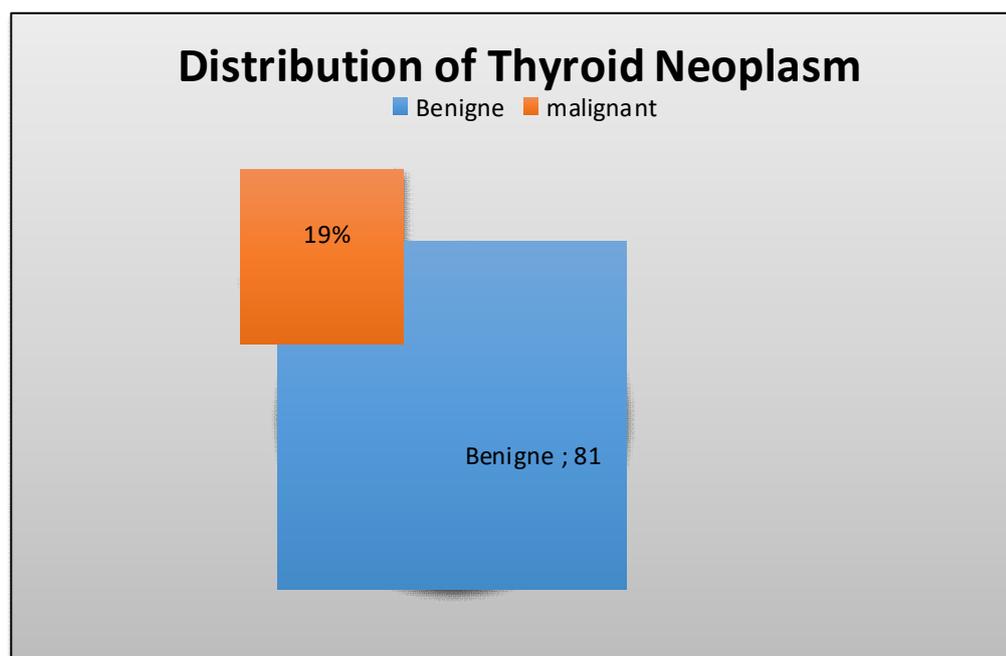
Table (1) shows the histological types of thyroid neoplasm in all post thyroidectomy patients and it's percentage. That revealed follicular adenoma is (91) case(33.5%) and

number of cases with thyroid carcinoma (PTC) .(2)cases were (FTC) .(1)case was 21 case (7.7%) ,(17) of cases were was (MTC) and (1)case was (ATC) .

**Table (1) Histological Types of Thyroid Neoplasm**

Thyroid neoplasm	No	%
Follicular adenoma	91	33.5%
Carcinomas	21	7.7%
PTC	17	80.9%
FTC	2	9.5%
MTC	1	4.7%
Anaplastic	1	4.7%
TOTAL	112	41.2%

Figure (1) shows distribution of thyroid neoplasm which revealed the percentage of benign thyroid tumor (81%) and percentage of thyroid carcinoma was (19%)



**Figure (1) Distribution of Thyroid Neoplasm**

Table(2) shows distribution of malignancy in benign thyroid lesion .Which revealed number of thyroid nodules with (PTC) were 11cases,(FTC) (1)case,(MTC) (1) and (1)case of (ATC).this table revealed Hashimoto's thyroiditis associated with (2) (PTC) and (1)case with (FTC) .One case of diffuse goiter associated with (PTC).this table also revealed (2)cases of nodular goiter with adenoma associated (PTC).And 1 case of

adenoma with Hashimoto's thyroiditis associated with (1) case of (PTC).

**Table2. Distribution of Malignancy in Benign Thyroid Lesions**

Thyroid lesions	Thyroid carcinoma				Total
	PTC	FTC	MTC	ATC	
Thyroid nodules	11	1	1	1	14
Hashimoto's	2	1			3
Diffuse goiter	1				1
Nodular goiter with adenoma	2				2
Adenoma with Hashimoto's thyroiditis	1				1
<b>Total</b>	<b>17</b>	<b>2</b>	<b>1</b>	<b>1</b>	<b>21</b>

Table (3): shows distribution of (TC) in both genders in post thyroidectomy patients for each type of (TC) and its percentage. Which revealed, (PTC) was the commonest type [17] case 80.9% of (TC), (14) of cases were female 82.35% and [3] cases were male (17.65%). (FTC) was the second type of (TC) [2] cases 9.5% of (TC). (MTC) was [1] cases female of (TC). (ATC) 1 cases 4.7 % of TC.

**Table (3): Distribution of (TC) Types in Post-Thyroidectomy Patients in both Genders**

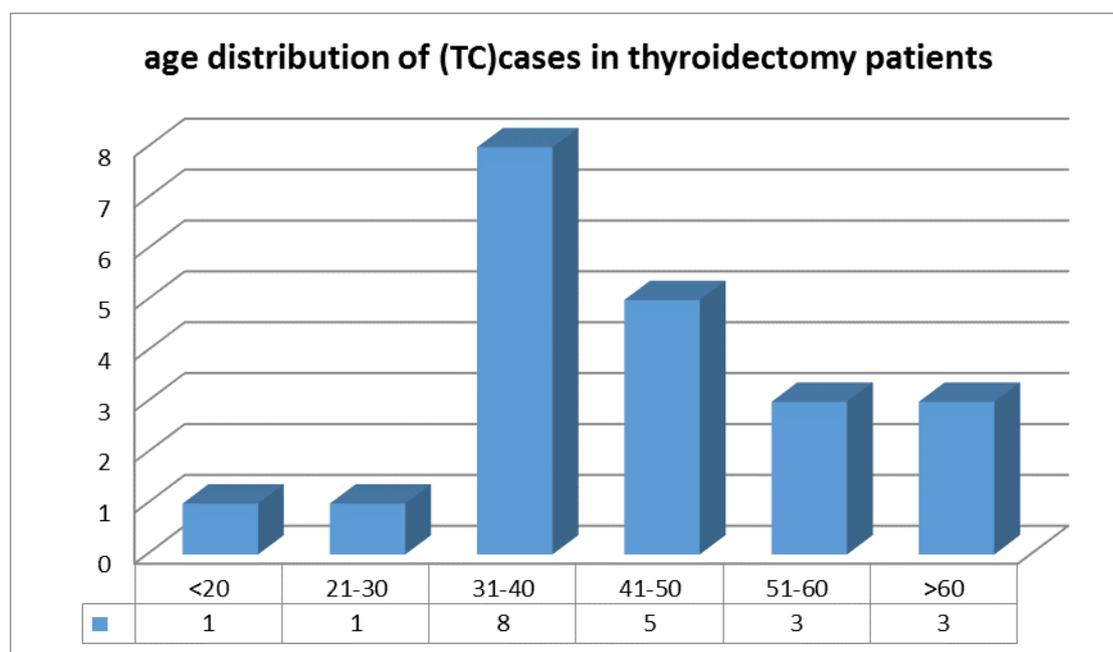
Gender		Thyroid Carcinoma				
		PTC	FTC	MTC	ATC	TOTAL
Female	No	14	2	1		17
	%	66.65%	9.5%	4.7%		
Male	No	3			1	4
	%	14.45%			4.7%	
<b>TOTAL</b>		<b>17</b>	<b>2</b>	<b>1</b>	<b>1</b>	<b>21</b>

Table (4) .Shows distribution of (TC) according to Gender in all post thyroidectomy patients which revealed the number of female with (TC) [17] case 6.25%,and the number of female with benign thyroid lesion without carcinoma were [231] case 84.92%. Also this table revealed the total number of male with (TC) [4] case 1.45% and the total numbers of male with benign thyroid lesion without carcinoma were 20 cases 7.35%.

**Table (4): Distribution of (TC) according to Gender among all Post-Thyroidectomy Patients**

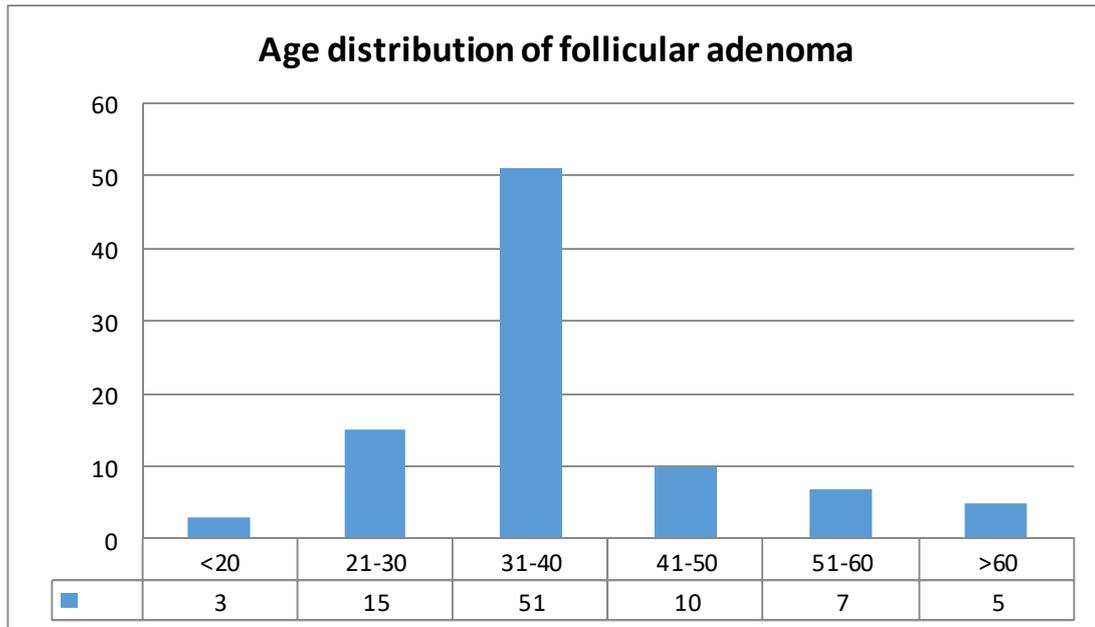
Gender	Malignant Lesion		Benign Lesion		TOTAL	
	<u>No.</u>	<u>%</u>	<u>No.</u>	<u>%</u>	<u>No</u>	<u>%</u>
Female	17	6.25%	231	84.92%	248	91.2 %
Male	4	1.45%	20	7.35%	24	8.8 %
<b>TOTAL</b>	<b>21</b>	<b>7.7%</b>	<b>251</b>	<b>92.3%</b>	<b>272</b>	<b>100%</b>

Figure (2) shows age distribution of (TC) in thyroidectomy patient in (TTH). This revealed the age group for the presentation of (TC) as follow: The 1<sup>st</sup> age group was less than 20 years [1] case of (TC). The second age group 21-30 year were [3] cases. Third age group was (31-40) year [9] case of (TC).fourth age group (41-50) years was [4] cases. The fifth age group (51-60) years were [3] cases. The last age group was 61-70 years [1] case.



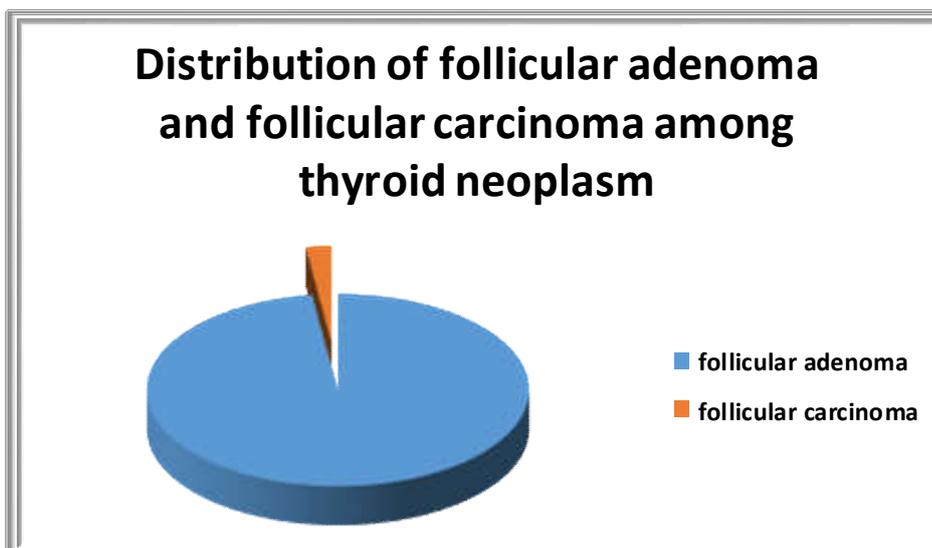
**Figure (2) Age Distribution of (TC) Cases in Thyroidectomy Patients**

Figure (3) shows age distribution of follicular adenoma .which revealed the number of patient had follicular adenoma in age group less than 20 years 3 cases. in age group from 21-30 years (15) case ,the number of cases increased in age group from 31-40 to reach 51 case .10 cases in age group 41-50 years.7 cases in age group from 51-60 years and 5 cases in the age group more than 60years



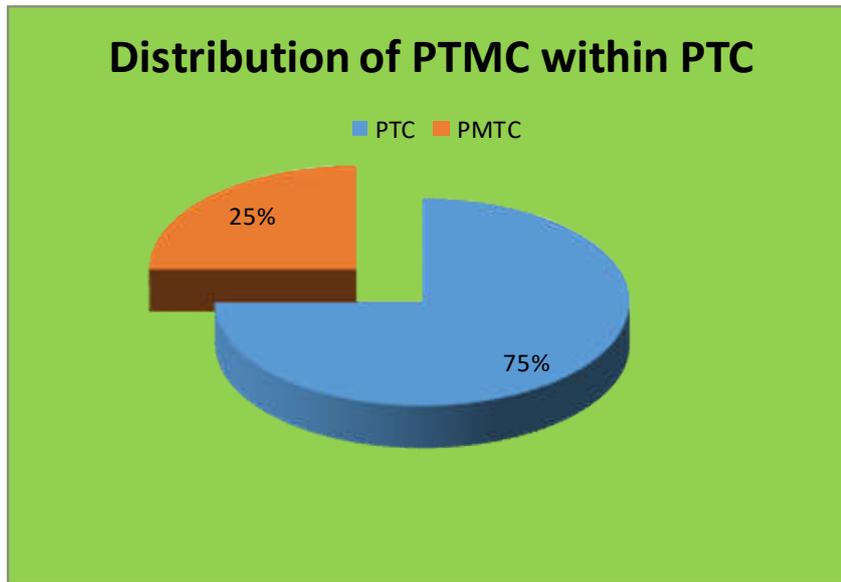
**Figure ( 3 )Age Distribution of Follicular Adenoma**

**Figure (4) shows the percentage of follicular adenoma and follicular carcinoma 81.25% and 1.78% respectively among thyroid neoplasm.**



**Figure ( 4 ) Distribution of Follicular Adenoma and Carcinoma among Thyroid Neoplasm.**

**Figure (5):** shows of micro carcinoma within (PTC). Which revealed the number of micro papillary carcinoma cases <1cm were [5]25% of (PTC) and carcinoma more than 1 cm was [12] case 75%.



**Figure(5)Distribution of Micro-carcinoma within (PTC)**

Table (5) shows distribution of (TC) in post thyroidectomy patients. Which revealed Solitary nodules were found in 11 case (52.3%) of cases of (TC) followed by multi-nodular goiter 9 (43.1 %) and diffuse thyroid enlargement 1 cases (4.6%).

**Table (5): Distribution of Thyroid Carcinoma in Thyroid Nodules in Male and Female Patients**

Type of thyroid Nodules	Malignant Thyroid lesion	%	Benign Thyroid Lesion	%	Total
Solitary Goiter	11	8.66%	116	91.44%	127
MNG	9	8.03%	103	91.97%	112
Diffuse Thyroid Enlargement	1	3.03%	32	96.97%	33
<b>TOTAL</b>	<b>21</b>		<b>251</b>		<b>272</b>

**Discussion**

The results of the study showed that the patients who suffered from thyroid

lesion are mainly females aged 21–60 years, and the gender difference for this age group was especially significant,

which proves that the thyroid lesion usually presented in young and middle-aged females. This is consistent in Chen *et al*, study which conducted in China observed the majority of patients with thyroid lesion were female.<sup>(6)</sup> This also consistent with other studies in India by Hanumanthappa.M.B.*et al*.<sup>(7)</sup> and in Pakistan by Waseem Memon *et al*, .which proves that the thyroid lesion usually presented in young and middle age female.<sup>(8)</sup>

This study shows the thyroid carcinoma more common in young and middle age female from age (31-50) years. The number of female with the (TC) 17 case 80.95% of cases .and the number of males 4 cases this agree by many studies all these studies show (TC) more common in young and middle age female and the percentage of female with (TC) reach to 85%.<sup>(6, 7, 8)</sup> This result disagree with the retrospective review of 3,629 Taiwanese subjects who underwent thyroid surgery, thyroid cancer revealed two peaks in age, one in patients aged 20 to 29 years and the second in patients over 65 years of age. <sup>(9)</sup>

However, Coburn and Waneboo suggested that the prognostic importance of age of thyroid cancer may be due to the greater prevalence of pathological factors in older patients. Higher incidence of lymph nodes and distant metastases were encountered in older patients. <sup>(10)</sup> In present study pathology of cancer, Follicular, Medullary and ATC, were commoner in the older than 41-years age group. This result agree by Qari, F.A. in Saudi Arabia which reported that high incidence of these types of (TC) are commoner in older age.<sup>(11)</sup>

In this study the percentage of male/female ratio 1/7 in follicular adenoma and percentage of follicular adenoma / follicular carcinoma from thyroid lesion was 81.25/1.87 while a study in Japan the results were male/female ratio 1/14 and follicular carcinoma / follicular adenoma from thyroid lesion was 3/17 made by Nagashima *et al*<sup>(12)</sup> . Also a study done by Baloch *et al* the findings are similar to those of who found that, of 13 excised nodules with a prior indeterminate diagnosis, 9 nodules

(69%) were benign, and 4 nodules (31%) were malignant. In the latter study, 8 of the benign lesions (61%) were nodular goiters, and only 1 benign lesion (8%) was a follicular adenoma<sup>(13)</sup>. In contrast, it was found that 36 nodules (39%) were goiters, and 25 nodules (26%) were follicular adenomas. The results indicates the prevalence of thyroid cancers in thyroid nodules (8.3%) this result consistent by a study in Saudi Arabia by *Abdullah A. Refeidi* reported the prevalence of (TC) in thyroid nodules about (5–10%).<sup>(14)</sup> and disagree with study in the china by *Chen et al* .which reported the prevalence of (TC) in thyroid nodule reach to (18.46%).<sup>(6)</sup> In this study, papillary carcinoma was the most common thyroid cancer observed in about 80.95% (17/21) of the thyroid cancer. This is consistent with observations made in most of the international studies, which show the prevalence of (PTC) is most common type of (TC) between (70-90%) of cases .Also reported by previous workers.<sup>(8,15)</sup>

## Conclusions

1-The current study conclude that

thyroid cancer is one of the more important endocrine cancers.

2-The frequency of thyroid lesion are more common in female than male.

3- The incidence of malignant tumors in patients with single nodule does not differ from those with MNG

4- The more frequent type of thyroid carcinoma was (PTC)

5-Histological types of thyroid carcinoma (FTC)(MTC)(ATC)) and (LYMPHOMA) are more common in old age

6- We conclude that the risk of malignancy in multi-nodular goiter is not as low as it was thought before and that it is quite significant.

7-Due to the risk of occult malignancy, all the patients with goiter who have been treated conservatively need a close follow up for malignancy.

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