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Thyroidectomy Results Assessment for Pregnant Iraqi Women

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Abstract: This study aims to know the complications of thyroid surgery for pregnant Iraqi women and. Demographic information and data were collected from several different hospitals, where 170 women who underwent thyroid surgery were collected; they were divided into two groups (100 patients group, 70 control group). In this study, analyses were carried out to demographic data and related figures among patients by relying on the statistical analysis program IBM soft SPSS 25, as the figures depend on Microsoft Excel 2010 program. The results which found in this study of 170 patients were collected with the study period from (12-4-2020 to 11-5-2021) MEAN +SD to the age of the group of patients (29±5.6), as for the control group (31.1±4.9) In this study, the prevalence of complications was observed for 35 patients in the group of patients with 35 % and five patients in the control group with 7 %. The most common complications in this study were Hypocalcaemia for 14 patients, recurrent laryngeal nerve damage for five patients, Haemorrhage for five patients, and wound infection for 7 Patients. The rate of mortality was 2 % with the patient group, while for the control group, it was 1.4 %. Thyroidectomy can be safely performed in the second trimester of pregnancy or delayed until the postpartum period, depending on the gestational age.

Keywords: Gestational, Trimester, Thyroid, Surgery, Pregnant, IBM, BMI, Haemorrhage, Complications.

INTRODUCTION

Thyroid enlargement (Goitre) occurs in 0.5-2.5 % of all pregnancies. The frequency becomes greater when considering populations at risk (Shindo, H. *et al.*, 2014). The fetus depends on the mother's thyroid products during the early stages of pregnancy because its thyroid gland is not able to release its products until the end of the first trimester (Kung, A. W. C. *et al.*, 2002; Sahin, S. B. *et al.*, 2014). Hypothyroidism or iodine deficiency can lead to undesirable effects on the fetus during embryogenesis (Sasson, A. R. *et al.*, 2001).

Changes in thyroid function are more common in women; Some consider a ratio of 10:1 in relation to men. While subclinical hypothyroidism is prevalent in 2-5 % of pregnant women. Between 5-9 % of patients develop thyroid disease after childbirth (Pattou, F. *et al.*, 1998; Dolapçı, M. *et al.*, 2000).

Clinical hypothyroidism has been associated with pregnancy complications such as premature delivery, low birth weight, abrupt placenta accreta, and high blood pressure. Women's thyroid hormones play an important role in the development of the fetal central nervous system, (Araujo Filho, V. J. F. D. *et al.*, 2000). Especially during the first trimester, due to the inability of the fetal thyroid gland to secrete iodothyronine before the tenth week of pregnancy(Olson Jr, J. A. *et al.*, 1996).

The manifestations of hyperthyroidism during pregnancy are often hidden because its symptoms overlap with the symptoms of pregnancy (Henry, J.F. *et al.*, 1990). Both share common symptoms and signs due to hyper metabolism and hyper-dynamic cycle, responsible for heat intolerance, heart palpitations, nervousness, difficulty gaining weight despite maintaining appetite (particularly in the first trimester) and resting tachycardia (more than 90 beats per minute) (D'Avanzo, A. *et al.*, 2000; Henrichs, J. *et al.*, 2010).

Hyperthyroidism during pregnancy refers to transient gestational thyrotoxicosis, which occurs in 0.5-10 cases per 1000 pregnancies, appears more frequently in the first trimester of pregnancy, and predominates in pregnant women with twin pregnancies and more often with hyperemesis gravid arum (Hehrmann, R. 2011; Kochi, M. H.. *et al.*, 2012).

Hyperthyroidism affects the course of pregnancy and has negative consequences for the mother and fetus related to the disease itself and/or the side effects of the drugs used (Birim, Ö. *et al.*, 2005; Sosa, J. A. *et al.*, 2008).

In women, it can cause significant weight loss and immediate loss of muscle mass, atrial fibrillation, left ventricular dysfunction, congestive heart failure, palpitations, excessive sweating, nervousness, and shortness of breath (Morris, P. C.

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1998). The course of pregnancy is affected by an increased risk of miscarriage, placental abruption, premature birth, and preeclampsia.

In inadequately treated patients, it can cause various changes in the fetus, such as congenital malformations, intrauterine growth retardation, low birth weight, tachycardia, and goiter.

According to a study that compared between pregnant women who underwent thyroidectomy during the first trimester of pregnancy, women who underwent it during the second trimester of pregnancy and others who underwent it in the third trimester, while others underwent the operation after childbirth, it was found that there were no significant differences in the chance of recurrence (Bondarenko, V. O. *et al.*, 2011).

MATERIALS AND METHODS

Demographic information and data were collected from several different hospitals, where 170 women who underwent thyroid surgery were collected; they were divided into two groups (100 patients group, 70 control groups).

The ages related to this study to the group of patients ranged from 22 to 40 years; as for the control group, their ages ranged between 25-37 years, and preliminary information related to height, age, weight, and the presence of comorbidities were collected.

Assessment of thyroid function results according to (max-min value of trimester)

As detected, the gestation at diagnosis parameters compared in Groups I and II were the timing of surgery, type of surgery (i.e., whether complete radical excision was performed), length of hospital stays,

In this study, analyses were carried out to demographic data and related outcomes among patients by relying on the statistical analysis program IBM soft SPSS 25, as the figures were drawn through the Microsoft Excel 2010 program.

Complications first appear in the first trimester of pregnancy. In addition to the classic symptoms associated with hyperthyroidism, inadequate treatment of hyperthyroidism in the mother may lead to serious complication like preterm labor, preeclampsia, endocrine disorders, hypocalcaemia, and recurrent laryngeal nerve damage.

Written consent was obtained from the patients, adding the required consent to conduct this study, and the study period was from (12-4-2020 to 11-5-2021)

RESULTS

Table 1- Characteristics of demographic results of patients

Variable	Patient, N=100	Control, N=70	P-value
Age (Mean±SD)	29±5.6	31.1±4.9	0.94
BMI (Mean±SD)	33±3.8	32.2±2.8	0.45
Comorbidities, N			
Hypertension	44	25	0.04
Diabetes	30	20	0.01
Heart disease	10	15	0.03
Renal failure	10	5	0.02
Other	6	5	0.99
Income $			
High	20	15	0.05
Moderate	55	40	0.001
low	25	15	0.06
Level Education			
High	18	10	0.34
Moderate	60	40	0.001
low	22	20	0.06

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Table 2- Assessment of thyroid function results according to (max-min value of trimester)

Variable	Value	control	FT	ST	THT
TSH	min	0.5	0.4	0.7	0.9
	max	4.1	5.3	3.4	3.9
t4	min	9	12	10	8
	max	25	15	14	14
t3	min	2.7	3.2	3	2.5
	max	5.6	7	5.5	5.5

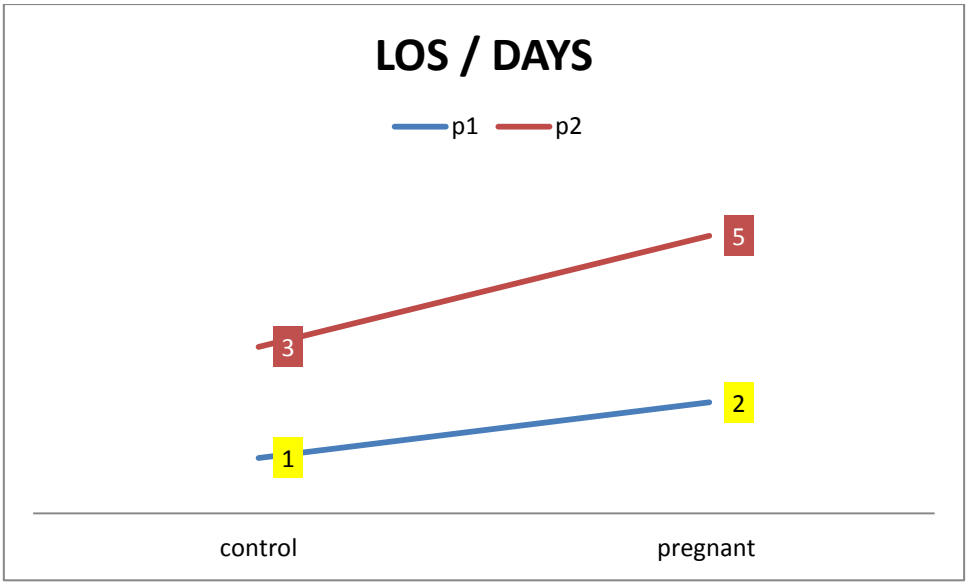

Fig 1- Results of patients according to length of stay (median value) unit/days

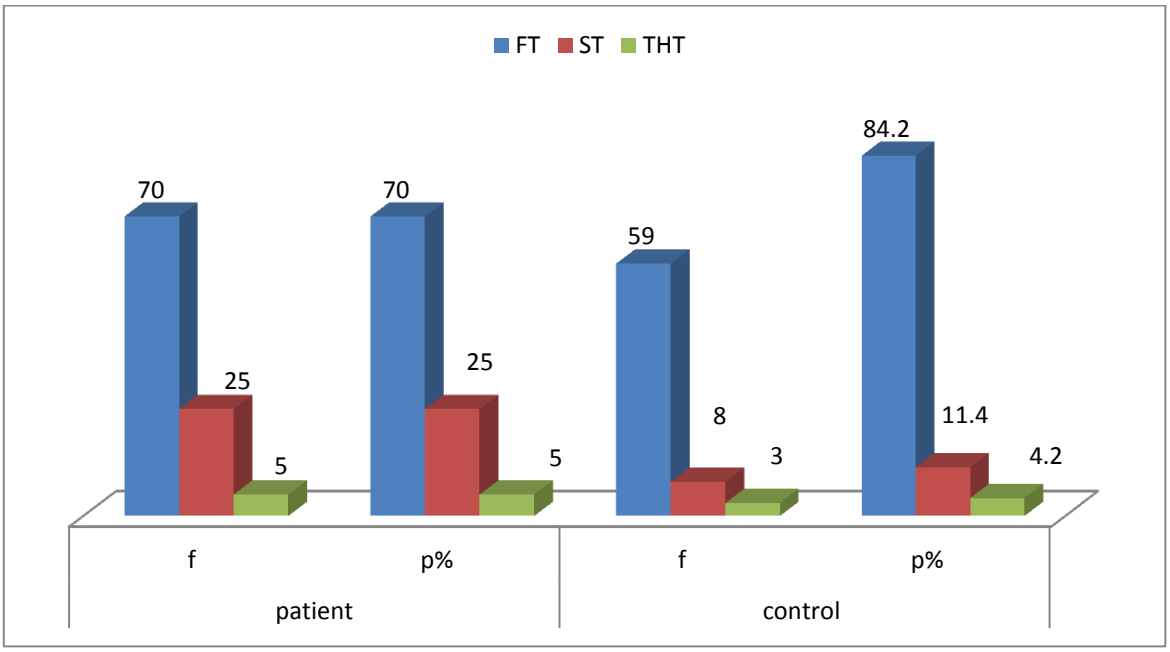

Fig 2- Distribution of patients according to Gestation at diagnosis

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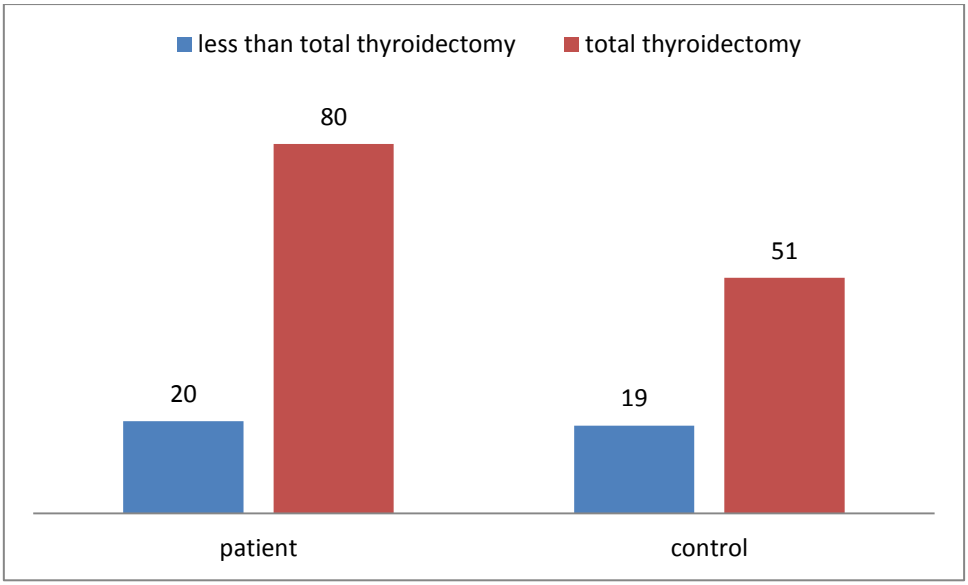

Fig 3- Clinicopathological Characteristics according to Thyroid surgery

Table 3- Final results related to complications

Variable	**Patients, N=35**	**Control, N=6**
Hypocalcaemia	14	2
Recurrent laryngeal nerve damage	5	---
Haemorrhage	5	2
wound infection	7	1
Mortality	2	1

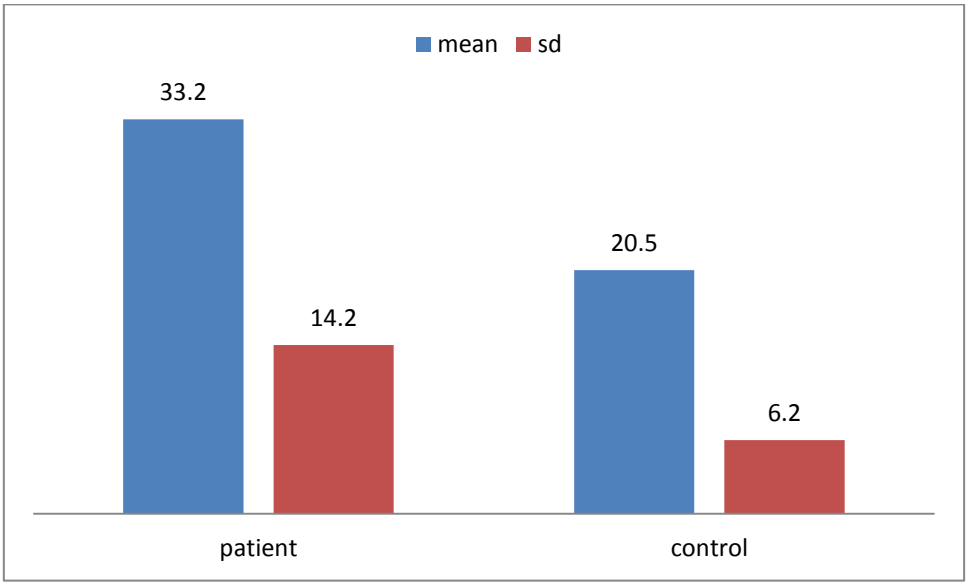

Fig 4- Rate of Bleeding dimension (maximum diameter mm)

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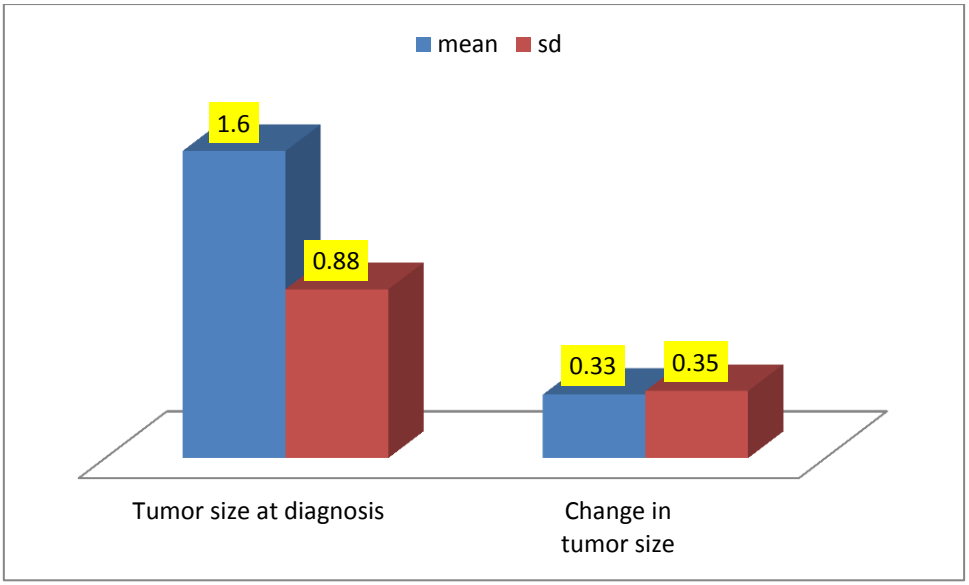

Fig 5- MEAN ±SD Compare changes in tumor size

DISCUSSION

In this study, 170 patients were collected and distributed into two groups, and it was relied on the statistical analysis program IBM soft SPSS. It was MEAN +SD to the age of the group of patients (29±5.6), as for the control group (31.1±4.9), and it was noted that a significant increase in body mass index for the group of patients (33 ± 3.8) as for the control group (32.2 ± 2.8).

Comorbidities were recorded for both groups, and the most frequent diseases in this study were hypertension for 44 patients and diabetes for 30 patients, heart disease for ten patients, and renal failure for ten patients, as shown in Table 1.

In Table 2 was the assessment of thyroid function results according to (the max-min value of the trimester), and it was noted that there were disorders and imbalances in the values of t4, t3, and TSH.

Pregnancy has a significant impact on the anatomy and function of the thyroid gland; for example, there is an increase in the size of the thyroid gland, 10 % in countries with sufficient iodine intake and 20-40 % in areas with iodine deficiency. The production of the thyroid hormones T3 and T4 increases by about 50 %, as does the daily requirement for iodine by 50 % (1, 2).

During the first trimester of pregnancy, hormonal changes modulate the function of the thyroid gland. Thus, the amount of human chorionic gonadotropin, whose structure is similar to the α-subunit of TSH, increases, which increases the production of free T4 and T3 and decreases the levels of TSH. On the other hand, total T3 and T4 levels also increase as the levels of thyroxin-binding globulin are increased due to its synthesis by the action of estrogen (Pelizzo, M. R. *et al.*, 1998).

In a study conducted at the Parkland Hospital of Dallas (Texas), they compared hypothyroid patients with those with subclinical hypothyroidism and found differences: patients with subclinical hypothyroidism were three times more likely to be discontinued compared to the healthy population and what Nearly double the risk of preterm delivery, greater difficulty breathing and admission of the newborn to intensive care. No statistical differences were found in the incidence of gestational hypertension and severe pre-eclampsia (Henry, J. F. 1988).

Thyroid enlargement (goitre) is not an indication for termination of pregnancy; total or partial thyroidectomy is the primary treatment for these conditions. Given the prognosis of follicular-type cancer, it is essential to consider surgery during pregnancy. In cases of differentiated tumors, it is advised to postpone surgery until after delivery. If treatment is postponed, ultrasound examinations are necessary every three months. If tumor size does not change, treatment should be performed to maintain TSH values between 0.1 and 1.5 mU/L (Hemmerling, T. M *et al.*, 2001).

In cases of rapid tumour growth in early pregnancy, the presence of lymph node metastases, histological signs of malignancy, or compressive symptoms, surgery can be performed in the second trimester of pregnancy, as it is safe for both mother

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and Fetus. Surgery during pregnancy is associated with an increased risk of postoperative complications. In retrospective studies in pregnant women who underwent thyroidectomy, surgical (11 % vs. 4 %) and endocrine complications (16 % vs. 8 %) were higher in pregnant women than in non-pregnant women. Endocrine complications include maternal hypoparathyroidism and hypocalcaemia. Surgical complications depend on the experience of the surgeon. Because of the increased risk of preterm delivery and changes in fetal well-being during the procedure, diagnosis during the second trimester of pregnancy should delay surgery until the postpartum period.

CONCLUSION

Thyroid enlargement (goitre) affects pregnancy, as women with it may find it difficult to get pregnant, and performing a thyroidectomy during pregnancy entails a number of complications compared to non-pregnant women, including the need to stay in hospital for a longer period and the occurrence of endocrine disorders, and high rates General complications

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