TO REVIEW THE TIMING OF INTERVENTION WHICH WILL PROVIDE THE BEST OUTCOME IN HYPOTHYROIDISM IN PREGNANCY

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Abstract

The Aim of this study is to Review the timing of intervention which will provide the Best Outcome in Hypothyroidism in Pregnancy. Hypothyroid pregnant women are appropriately managed with regular antenatal checkup and thyroxine therapy during pregnancy, a good maternal and fetal outcome can be achieved and congenital cretinism and other neuro developmental sequele in the offspring can be averted.

Keywords: Intervention, Hyperthyroidism, Pregnancy & Thyroid disease.

Introduction:

Thyroid hormones have profound variation during the life span and are associated with severe adverse health impacts.¹ Pregnancy, as an important reproductive event, has a profound but reversible effect on the thyroid gland and its functions. Pregnancy is actually a state of excessive thyroid stimulation leading to an increase in thyroid size by 10% in iodide sufficient areas and 20-40% in iodide deficient regions. Furthermore following the physiological and hormonal changes caused by pregnancy and human chorionic gonadotropin (HCG) the production of thyroxin (T4) and triiodothyronine (T3) increase up to 50% leading to 50% increase in a woman’s daily iodide need, while Thyroid-stimulating hormone (TSH) levels are decreased, especially in first trimester.² In an iodide sufficient area, these thyroid adaptations during pregnancy are well tolerated, as stored inner thyroid iodide is enough; however in iodide deficient areas, these physiological adaptations lead to significant changes during pregnancy.³ Thyroid function testing in pregnancy is an area of concern for pregnant women, doctors and laboratories. Most anxiety relates to the diagnosis of hypothyroidism, the most common thyroid disease in our community and the focus of this review. Approximately 15-20% of young Australian women have thyroid autoantibodies and 2-3% have subclinical hypothyroidism in pregnancy.⁴

Material & Method:

This prospective study included 25 known, booked pregnant patients with established primary hypothyroidism (subsequent cases) and 25 matched euthyroid controls, who attended the antenatal clinic regularly at Shri Aurobindo
Institute of Medical Sciences and Post Graduate Institute, Indore for 2 years from Dec 2016 to Dec 2018.

Cases: 25 known primary hypothyroid patients (subsequent cases)

Inclusion criteria:
- Known primary hypothyroid pregnant patients and those having symptoms and signs suggestive of hypothyroidism.
- Booked patients following up regularly for antenatal checkup and who delivered.

Exclusion Criteria:
- Other medical disorders

Controls: 25 euthyroid pregnant patients. Patients were chosen randomly-every 20th patient attending the antenatal clinic in the study duration (25 patients), and fulfilling the inclusion and exclusion criteria was taken as a matched control.

Inclusion Criteria:
- No other medical disorder
- No obstetric risk factor
- Patients with a history of spontaneous abortion but with no identifiable or known cause

Exclusion Criteria:
- H/o. ISCS for non-obstetric indication

STUDY PROCEDURE:

Based on the inclusion and exclusion criteria, 25 patients in each group were selected from the Department of Obstetrics & Gynecology, Shri Aurobindo Institute of Medical Sciences and Post Graduate Institute, Indore. The nature and purpose of the study was explained to the patients.

History, examination findings on each antenatal visit, on admission and during the stay in hospital and investigations in chronological order were taken on the predesigned Performa by the Chief Investigator herself.

In the hypothyroid patients, besides the routine antenatal profile and ultrasonography, thyroid function tests served as the guiding investigations in the management of pregnancy. The TSH and FT4 levels were done in the hypothyroid patients on their first antenatal visit. According to the values, thyroxine dose was revised. Later on, in the pregnancy, TSH and FT4 levels were done every 6-8 weeks or whenever required with respect to the signs and symptoms of the patient, fetal growth parameters and any dose revision.

In the euthyroid patients, besides the routine antenatal profile and ultrasonography examination, TSH and FT4 levels were done anytime between 16-20 weeks of gestation.

Whenever the patient was admitted to the hospital, either in labour or for any complication, she was managed appropriately. The basic guidelines for management included maintaining euthyroid state of the mother (in cases) and assuring a good maternal and fetal outcome.

After delivery the cord blood samples of neonate was sent for TSH and FT4 estimation and according to the initial values, babies were given thyroxine replacement therapy and followed-up later.

Results:

### Table 1: History of Spontaneous Abortions

<table>
<thead>
<tr>
<th>Group</th>
<th>History of Abortions</th>
<th>No. History of Abortion</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Case</td>
<td>(a)</td>
<td>(b)</td>
<td>25</td>
</tr>
<tr>
<td>Control</td>
<td>(c)</td>
<td>(d)</td>
<td>25</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>n = 50</td>
</tr>
</tbody>
</table>
\[ X^2 = \frac{[(a \times b) - b \times c]^2 \times n}{(a + c) \times (b + d) \times (a + b) \times (c + d)} \]

\[ X^2 = \frac{[(8 \times 19) - (17 \times 6)]^2 \times 50}{(8 + 6) \times (17 + 19) \times (8 + 17) \times (6 + 19)} \]

= 0.3944

P = > 0.50

The difference between the two groups is not statistically significant

### Table 2: Operative Intervention

<table>
<thead>
<tr>
<th>Group</th>
<th>Operative Intervention</th>
<th>No. Operative Intervention</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Case</td>
<td>(a)</td>
<td>12</td>
<td>(b)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(c)</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(d)</td>
<td>19</td>
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<td>Control</td>
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<td></td>
<td></td>
<td></td>
<td>n = 50</td>
</tr>
</tbody>
</table>

\[ X^2 = \frac{[(a \times b) - b \times c]^2 \times n}{(a + c) \times (b + d) \times (a + b) \times (c + d)} \]

\[ X^2 = \frac{[(12 \times 19) - (13 \times 6)]^2 \times 50}{(12 + 06) \times (13 + 19) \times (12 + 13) \times (6 + 19)} \]

= 3.1

P = > 0.50

The difference between the two groups is not statistically significant

#### Discussion

The table shows that 32% of the hypothyroid patients had a history of spontaneous abortion while 24% of euthyroid patients had such history. The difference between the two groups was not statistically significant though Abalovich et al.,

and Davidson et al. have found an increased rate of spontaneous abortions in hypothyroidism. K Buckshee et al found that 32% of hypothyroid patients had history of abortion.

Alex F. Muller and Arie Berghout study Netherlands showed spontaneous pregnancy loss in 31% cases of hypothyroidism since the fetus expresses paternal MHC molecule adaptations.

There was a significant increase in the incidence of operative intervention in the hypothyroid pregnant women. While 48% of the hypothyroid patients underwent LSCS, 24% of the euthyroid patients delivered by LSCS. K Buckshee et al report operative intervention in 25.4 % cases.

#### Conclusion

Hypothyroid pregnant women are appropriately managed with regular antenatal checkup and thyroxine therapy during pregnancy, a good maternal and fetal outcome can be achieved and congenital cretinism and other neuro developmental sequelae in the offspring can be averted.

#### References

1. Ramezani Tehrani F, Aghaee M, Asefzadeh S. The comparison of thyroid function tests in cord blood following cesarean section or


