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The Impact of Thyroid Disorders on Women's Reproductive Health

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Abstract: Thyroid disorders can affect women's reproductive health before conception, during pregnancy, and after childbirth. Hypothyroidism and hyperthyroidism may contribute to menstrual disturbances, impaired fertility, and adverse pregnancy outcomes. However, the reproductive implications of overt thyroid disease differ from those of mild biochemical abnormalities or thyroid autoantibodies in women with normal thyroid function. This narrative overview discusses these distinctions and examines the importance of appropriate assessment, preconception care, and individualized treatment. Effective management requires coordination between endocrinology, gynecology, and obstetric services.

Keywords: thyroid disorders, hypothyroidism, hyperthyroidism, female fertility, pregnancy, thyroid autoimmunity.

Introduction

Thyroid hormones regulate energy metabolism and influence the function of many organs. In women, disturbances in thyroid function can also affect menstrual health and fertility. Hypothyroidism occurs when thyroid hormone production is insufficient, whereas hyperthyroidism involves excessive hormone production. Both conditions require attention during the reproductive years, particularly when pregnancy is planned.

The relationship between thyroid function and reproduction is clinically important but requires careful interpretation. Established thyroid disease should be distinguished from minor laboratory abnormalities. Similarly, the presence of thyroid antibodies does not necessarily indicate inadequate thyroid hormone production or a need for medication.

Hypothyroidism and Reproductive Function

Hypothyroidism can present with fatigue, weight gain, cold intolerance, dry skin, and heavy or irregular menstrual periods. These symptoms may develop gradually and overlap with other conditions, making laboratory assessment important when thyroid dysfunction is suspected. Fertility problems may also occur, although hypothyroidism is only one of several possible explanations for difficulty conceiving.

Overt hypothyroidism can disrupt reproductive function through interacting metabolic, endocrine, and menstrual changes. Ovulatory disturbances may reduce opportunities for conception. Nevertheless, a diagnosis of hypothyroidism does not imply permanent infertility. The American Thyroid Association's 2026 guideline reports that women with pre-existing hypothyroidism who achieve normal thyroid function with levothyroxine have fertility outcomes comparable to those of

women without hypothyroidism. This supports the importance of adequate treatment before conception.

Hyperthyroidism and Reproductive Health

Hyperthyroidism can also cause menstrual cycle and fertility problems. Associated symptoms include palpitations, heat intolerance, tremor, anxiety, sleep disturbances, and weight loss despite increased appetite. Because these manifestations are not specific to thyroid disease, symptoms alone cannot establish the diagnosis.

Management depends on the underlying cause, disease severity, and reproductive circumstances. For women planning pregnancy, reviewing treatment in advance allows clinicians to consider disease control alongside the suitability of available therapies.

Thyroid Disorders During Pregnancy

Pregnancy creates additional demands on thyroid hormone production. Adequate maternal thyroid hormone availability is particularly important during early fetal development. Untreated hypothyroidism, especially when severe, is associated with miscarriage, preeclampsia, low birthweight, and developmental concerns.

Poorly controlled hyperthyroidism can also increase the risks of miscarriage, premature birth, low birthweight, and maternal complications. In Graves' disease, thyroid-stimulating antibodies may cross the placenta and affect fetal thyroid function. This can remain relevant even after the mother has received definitive treatment for Graves' disease.

These risks emphasize the value of monitoring and appropriate therapy. Women with well-managed thyroid disease can have healthy pregnancies.

Subclinical Hypothyroidism: An Area of Uncertainty

Subclinical hypothyroidism generally refers to an elevated thyroid-stimulating hormone concentration with a normal free thyroxine level. Its implications differ from those of overt hypothyroidism, and professional recommendations vary according to the population and clinical circumstances.

The 2024 American Society for Reproductive Medicine guideline did not recommend routine levothyroxine treatment for subclinical hypothyroidism solely to improve pregnancy or live-birth outcomes. The 2026 American Thyroid Association guideline describes a more individualized approach in infertility care, including confirmation of persistent abnormalities before considering treatment. These differences highlight the need to interpret results using appropriate reference ranges and the relevant clinical context.

Thyroid Autoimmunity and Fertility

Thyroid autoantibodies can be present in women whose thyroid function remains normal, a state known as euthyroidism. Antibody positivity and thyroid hormone deficiency should therefore be evaluated separately.

The TABLET randomized trial examined levothyroxine in euthyroid women with thyroid peroxidase antibodies and a history of miscarriage or infertility. Treatment started before conception did not increase the live-birth rate compared with placebo. This finding shows why an

association between antibody positivity and reproductive difficulties does not automatically establish that thyroid hormone treatment will improve outcomes.

Assessment and Management

Assessment should consider menstrual history, symptoms, previous thyroid disease, fertility history, and pregnancy status. Thyroid-stimulating hormone and free thyroxine testing help characterize thyroid function. Antibody testing may provide additional information in selected circumstances. Targeted assessment is particularly relevant when symptoms, irregular menstrual cycles, or established risk factors are present.

For women with established hypothyroidism, levothyroxine treatment should be reviewed before pregnancy and monitored during gestation. Medication requirements frequently change during pregnancy. Continued follow-up helps maintain appropriate hormone replacement while avoiding under-treatment or over-treatment.

Postpartum Thyroid Health

Thyroid dysfunction may also develop after childbirth. Postpartum thyroiditis can involve a thyrotoxic phase, a hypothyroid phase, or both. Symptoms such as anxiety, palpitations, fatigue, constipation, and low mood may be attributed to the demands of caring for a newborn. Recognizing persistent or disproportionate symptoms can support timely evaluation and follow-up.

Conclusion

Thyroid disorders can influence menstrual function, fertility, pregnancy outcomes, and postpartum health. Appropriate treatment of overt disease is important, while mild biochemical abnormalities and antibody positivity require careful interpretation. Individualized assessment and coordinated care can support reproductive health and help women with thyroid disorders prepare for and maintain healthy pregnancies.

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