

Thyroid and Infertility Abstract

Thyroid dysfunction has been known to impact female reproduction, resulting in abnormalities ranging from alteration of the menstrual cycle to infertility. The exact mechanisms of action of thyroid hormones on ovarian physiology are not well understood, but the recent discovery of thyroid hormone receptors on granulosa cells, luteal cells, and oocytes suggest that thyroid hormone may affect not only ovarian function, but also the quality of the ovum itself.

Ovum quality can be a contributing factor in the success or failure to conceive, thus assessment of thyroid function should be considered in the evaluation of potential causes of infertility.

Since T3 is the more active hormone at the cellular level, mild decreases in this hormone may have significant impact on ovarian function. Traditional laboratory assessment of TSH and T4 levels may fail to diagnose subtle suboptimal thyroid function.

Measurement of free T4, total and free T3 levels in addition to TSH and total T4 allows for assessment of patient efficacy in the conversion of T4 to T3. Levels of free hormones in the lower quartile of normal range or below may indicate suboptimal function for an individual patient. Consideration of supplementation with a nontoxic dose of T4/T3 combination (armour thyroid or compounded thyroid) may be warranted to optimize the chances of conception.

A retrospective study of 16 infertile patients with suboptimal thyroid function who became pregnant after starting thyroid replacement was done. Initial thyroid levels were compared to post-treatment levels prior to conception. Patients were treated with compounded thyroid comprised of 80% T4 and 20% T3.

An increase in the total T3 level with a decrease in free T4 level was associated with conception. This may suggest that higher T3 levels may improve fertility, and that assessment of free thyroid hormone levels and supplementation of T4 and T3 may be an inexpensive, adjunctive treatment to current infertility protocols. Further study is warranted.