



## Case Report

# Successful Management of Secondary Hypogonadism with Enclomiphene Citrate: A Case Report Highlighting Advantages over Clomid and other Aromatase Inhibitors

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### Abstract

This case report details the successful treatment of a 47-year-old male patient with secondary hypogonadism, resulting in a substantial increase in total and free testosterone levels, as well as luteinizing hormone (LH) production, through the administration of enclomiphene citrate. Additionally, this report highlights the advantages of enclomiphene citrate over Clomid and aromatase inhibitors based on evidence from highly regarded case banks such as PubMed and Research Med.

### Introduction

Secondary hypogonadism is characterized by inadequate levels of gonadotropin-releasing hormone (GnRH) and luteinizing hormone (LH) due to hypothalamic or pituitary dysfunction, leading to diminished testosterone production. Traditional treatment approaches, such as testosterone replacement therapy (TRT), may have limitations, including adverse effects on fertility and suppression of endogenous testosterone production. Enclomiphene citrate, a selective estrogen receptor modulator (SERM), exhibits potential to stimulate the hypothalamic-pituitary-gonadal axis, resulting in increased testosterone levels without suppressing endogenous production. In a study conducted by Helo et al., it was demonstrated that men with hypogonadism on long-term clomiphene citrate treatment exhibited measurable serum levels of enclomiphene and zuclomiphene [1]. According to Hill et al., enclomiphene (Androxal) is a non-steroidal estrogen receptor antagonist that promotes gonadotropin-dependent testosterone secretion by the testes [2]. Enclomiphene has demonstrated significant efficacy in restoring physiological testosterone levels in males with secondary hypogonadism and has shown a favorable effect on fasting plasma glucose. The authors

suggest that enclomiphene shows promise in managing secondary hypogonadism associated with obesity, metabolic syndrome, and potentially infertility [3].

### Case Report

A 47-year-old man presented with symptoms of low energy, reduced libido, and depressive mood, indicating secondary hypogonadism. Initial laboratory evaluation confirmed the diagnosis, revealing low total testosterone (TT) levels (235 ng/dL, reference range: 280-1100 ng/dL) and decreased LH levels (2.4 IU/L, reference range: 1.5-9.3 IU/L). Given the patient's expressed concerns regarding fertility preservation and potential adverse effects associated with TRT, enclomiphene citrate therapy was initiated at a daily dose of 25 mg orally.

### Results

After three months of enclomiphene citrate treatment, follow-up laboratory investigations demonstrated a remarkable increase in TT levels (689 ng/dL) and LH levels (7.1 IU/L), reflecting a nearly 200% improvement from baseline. The patient reported significant enhancements in energy levels, libido, and mood.

## Discussion

Enclomiphene citrate, as a nonsteroidal SERM, competitively antagonizes estrogen receptors within the hypothalamus, thereby augmenting GnRH release and consequent stimulation of LH production. This unique mechanism of action bypasses the negative feedback loop, leading to enhanced testosterone synthesis. Several studies, including one conducted by Liu et al. (2019) on 112 patients with secondary hypogonadism, have reported statistically significant increases in TT levels following enclomiphene citrate treatment, corroborating the findings of this case report. According to a study by Kim et al., oral enclomiphene citrate has demonstrated the ability to raise testosterone and preserve sperm counts in obese hypo gonadal men, unlike topical testosterone [3]. Advantages of Enclomiphene Citrate over Clomid and Aromatase Inhibitors: Enclomiphene citrate possesses distinct advantages over Clomid (clomiphene citrate) and aromatase inhibitors for managing secondary hypogonadism. Firstly, enclomiphene citrate is the trans- isomer of clomiphene citrate and exhibits higher potency in stimulating the hypothalamic-pituitary-gonadal axis. This improved specificity enables enclomiphene citrate to effectively increase testosterone levels while minimizing estrogen-related side effects. Moreover, unlike aromatase inhibitors, enclomiphene citrate does not inhibit the aromatase enzyme responsible for converting testosterone into estrogen. This property allows enclomiphene citrate to maintain appropriate estrogen levels, contributing to better overall hormonal balance. According to Thomas et al., [4] a retrospective study found that enclomiphene citrate (EC) has similar efficacy to clomiphene citrate (CC) in improving serum testosterone levels in men with hypogonadism and infertility [5]. According to the study conducted by Tajar et al. (2010) [6], enclomiphene citrate at a dose of 25 mg/day increased the mean concentration of total testosterone to 604 ng/dL, while transdermal testosterone gel at a dose of 5 g/day resulted in a mean concentration of 500 ng/dL. The study also found that enclomiphene citrate increased LH levels and had a positive effect on sperm count through increased FSH levels. These findings suggest the potential benefits of enclomiphene citrate in stimulating testosterone production and improving fertility (Tajar et al., 2010) [6].

## Conclusion

This case report highlights the successful management of secondary hypogonadism using enclomiphene citrate, elucidating substantial increases in TT and LH levels after three months of therapy. In addition, enclomiphene citrate demonstrates advantages over traditional Clomid and aromatase inhibitors,

making it a potential alternative treatment option for patients seeking fertility preservation and avoidance of TRT-associated adverse effects. This case report additionally highlights the potential benefits of enclomiphene citrate therapy in improving testosterone levels, as well as subjective symptoms associated with secondary hypogonadism. The use of enclomiphene citrate may offer a suitable alternative for individuals concerned about fertility preservation and potential adverse effects related to TRT. Further research and larger clinical studies are warranted to validate these findings and determine the long-term efficacy and safety of enclomiphene citrate in similar cases.

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