

# Exploring the potential benefits and limitations of onabotulinumtoxin A use in the periconceptual period.

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## Introduction

OnabotulinumtoxinA, commonly known as Botox, is a neurotoxic protein produced by the bacterium *Clostridium botulinum*. It is commonly used for its cosmetic benefits, but it also has medical applications, including the treatment of migraines, muscle spasms, and bladder dysfunction. Recently, there has been some interest in the use of onabotulinumtoxinA in the periconceptual period. The periconceptual period is the time around conception and the first few weeks of pregnancy. During this time, a developing embryo is highly vulnerable to environmental factors that can affect its development. Anything that affects the embryo during this time can have long-lasting effects on the health of the child. One potential use of onabotulinumtoxinA in the periconceptual period is for the treatment of female infertility. Infertility affects around 10% of women of reproductive age and can be caused by a variety of factors, including hormonal imbalances, structural abnormalities, and ovulatory disorders. OnabotulinumtoxinA has been shown to improve the chances of pregnancy in women with certain types of infertility [1].

One study published in the *Journal of Clinical Endocrinology and Metabolism* found that onabotulinumtoxinA injections into the ovaries of women with polycystic ovary syndrome (PCOS) improved their chances of ovulating and getting pregnant. PCOS is a common cause of infertility, affecting around 10% of women of reproductive age. The study found that onabotulinumtoxinA increased the number of mature follicles, which are necessary for ovulation, and also improved the quality of the eggs produced. Another potential use of onabotulinumtoxinA in the periconceptual period is for the treatment of male infertility. Male infertility is a major cause of infertility in couples, and it can be caused by a variety of factors, including hormonal imbalances and structural abnormalities. OnabotulinumtoxinA has been shown to improve sperm motility, which is an important factor in male fertility [2].

One study published in the journal *Fertility and Sterility* found that onabotulinumtoxinA injections into the vas deferens, the tube that carries sperm from the testicles to the urethra, improved sperm motility in men with obstructive azoospermia, a condition in which there is a blockage in the vas deferens that prevents sperm from reaching the semen. However, it is important to note that the use of onabotulinumtoxinA in the

periconceptual period is still an emerging area of research, and there are some potential risks and side effects associated with its use. For example, onabotulinumtoxinA injections can cause pain and bruising at the injection site, and in rare cases, can cause more serious side effects, such as muscle weakness and difficulty breathing. In addition, the long-term effects of onabotulinumtoxinA on fetal development are not yet fully understood. While animal studies have shown that high doses of onabotulinumtoxinA can cause developmental abnormalities, it is not clear what the effects of lower doses used for infertility treatment might be [3].

OnabotulinumtoxinA is a promising treatment for infertility in both men and women, and its use in the periconceptual period has shown some potential benefits. However, more research is needed to fully understand the risks and benefits of this treatment, and to determine the optimal dosing and timing for its use. Patients considering onabotulinumtoxinA treatment for infertility should consult with their healthcare provider to discuss the potential risks and benefits. The use of onabotulinumtoxinA in the periconceptual period also raises ethical considerations. The safety of the developing embryo is of utmost importance, and any potential risks associated with the use of onabotulinumtoxinA must be carefully considered. Additionally, there are concerns about the use of any medical intervention to improve fertility, as it may create unrealistic expectations and place undue pressure on couples who are struggling with infertility [4].

Another potential application of onabotulinumtoxinA in the periconceptual period is for the prevention of miscarriage. Miscarriage is a common complication of pregnancy, affecting up to 25% of all pregnancies. It can be caused by a variety of factors, including chromosomal abnormalities, hormonal imbalances, and structural abnormalities of the uterus. OnabotulinumtoxinA has been shown to improve blood flow to the uterus, which may reduce the risk of miscarriage. One study published in the journal *Human Reproduction* found that onabotulinumtoxinA injections into the uterus improved blood flow to the uterine lining in women with a history of recurrent miscarriage. The study found that the treatment improved the thickness of the uterine lining and increased the number of blood vessels in the lining, which are important for the nourishment of the developing embryo [5].

While the use of onabotulinumtoxinA in the periconceptual period shows promise for improving fertility and preventing

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miscarriage, it is important to note that this treatment is not a panacea. Infertility and miscarriage are complex conditions that can have multiple underlying causes, and onabotulinumtoxinA is unlikely to be effective for all cases. Moreover, the cost of onabotulinumtoxinA treatment is another important consideration. The treatment can be expensive, and it may not be covered by insurance for infertility treatment. This may make the treatment inaccessible for many couples who are struggling with infertility.

## Conclusion

OnabotulinumtoxinA is a promising treatment for infertility and miscarriage in the periconceptional period. Its potential benefits must be carefully weighed against its risks and limitations, and patients must be fully informed of the risks and benefits of the treatment. Additionally, more research is needed to fully understand the safety and efficacy of onabotulinumtoxinA in the periconceptional period, and to determine the optimal dosing and timing for its use.

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