

## Contraception and Diabetes

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### Abstract

Contraception for women with diabetes mellitus is an important issue mainly as the pregnancy outcome depends on glycaemic control before conception among women with diabetes. Type of diabetes as type 1 or type 2 Diabetes, women with history of gestational diabetes and breast feeding diabetic mothers may be a consideration in selecting a contraceptive. On the other hand presence of diabetic complications is a significant determinant. Different methods of contraception as oral, injectable, implant, intrauterine devices are available. Patient's choice and health issues both should be considered while prescribing a contraceptive to a woman with diabetes. Emergency contraception is sometimes required in situations where there is chance of contraceptive failure. This review article highlights different contraceptive methods, their use and limitations and will guide to make a rational choice for a woman with diabetes.

**Keywords:** Contraception, Diabetes mellitus, Gestational diabetes mellitus.

### Introduction

With the rising incidence of Diabetes, the prevalence of the metabolic disorder among women of reproductive age, is also increasing. Their reproductive health and contraception need careful consideration as unintended pregnancy with poor glycaemic control at the time of conception, increases the risk of adverse pregnancy outcomes including stillbirth, congenital abnormalities, and perinatal mortality. In order to minimize complications, safe and effective contraception is of great importance for all women with DM.<sup>1</sup>

Contraception for women with diabetes mellitus is an important factor as the pregnancy outcome depends on glycaemic control starting from before conception to delivery. This has made planning of future pregnancy mandatory for patients with diabetes mellitus. Patients are advised for contraception until optimization of metabolic control has been achieved or until complete and contemporary treatment of the diabetes complications has been fulfilled.<sup>2</sup>

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Choice of contraception depends on the aim: short lasting contraception aiming on future pregnancy planning or long lasting contraception targeting family planning.<sup>2</sup>

In women with diabetes mellitus it is extremely important to take into consideration the type of the diabetes, its duration, degree of metabolic compensation, presence of diabetic complications, body-mass index of the woman and presence of risk factors for cardiovascular diseases.<sup>2</sup>

In women with type I diabetes mellitus it is possible to use hormonal contraception depending on patient's request or on medical indications. This is considered only in cases when diabetes has less than 15 years duration and microangiopathic complications and other vascular risk factors are absent.<sup>2</sup>

It is important to advise contraception keeping in view the insulin requirement, its dosage correction and acquiring of strict metabolic control and maintaining body weight. Different suitable options may be offered to the woman with diabetes and the patient's choice should be considered in selecting the proper method. For this purpose each and every method with its challenges should be discussed individually. When the combined preparations are contraindicated, progestagenic oral hormonal contraception can be considered if gynaecological contraindications are absent and there is no risk for menstrual disturbances. In women with type 2 diabetes mellitus, combined hormonal contraceptives should be avoided as they could provoke clinical manifestation and deteriorate progress of diabetes mellitus.<sup>2</sup>

### Discussion

Contraception may be planned according to different diabetes related status of women in the reproductive age; Women with preexisting Diabetes, women with history of GDM and breast feeding diabetic women. Choice of contraception may depend on different stages of reproductive age; requiring temporary contraception i.e women having future pregnancy planning and women having completed their family and not planning a further pregnancy. Contraceptive method may vary according to the above mentioned criteria.

### Overview of Contraceptives

Combined hormonal contraception (CHC) methods including combined contraceptive pills, transdermal contraceptive patches, combined vaginal rings, and

combined injectable contraception are available. The advances in preparation of these oral combined contraceptive methods overrule the previously documented risks associated with these options. However, as the estrogen component of these combined contraceptive preparations increases the risk of thromboembolic manifestations, caution must be taken while prescribing these agents for women with diabetes having vascular co-morbidities.

In diabetic patients with advanced complications or who have had diabetes mellitus for a long duration, combination contraceptive is usually the least recommended option and should only be considered if other contraceptive options are difficult to accept.<sup>3</sup>

On the other hand progesterone-only pill (POP) is considered as a safe contraceptive method for diabetic women of different ages irrespective of presence of complications and duration of diabetes. This safety factor makes POP an appropriate choice for women with diabetes, hypertension and or cardiovascular co morbidities. POP usually does not interfere with lactation, so it can be easily an option of choice for breastfeeding women during the postpartum period and even throughout the period of lactation. While POP is safe, to get its efficacy it should be taken consistently daily, and its failure rate will be increased if there is any disruption in its regular schedule.<sup>3</sup>

ACOG (American College of Obstetrics and Gynecology) recommends the use of OCPs in women with diabetes younger than 35 years who do not smoke; are otherwise healthy; and show no evidence of hypertension, nephropathy, retinopathy, or other vascular disease.<sup>4</sup>

Long-acting reversible contraceptives (LARC) have high efficacy, which makes it a preferable option for women with diabetes Mellitus. These long acting methods include copper elucidated intrauterine device (IUD), different intrauterine system (IUS), injectable contraceptives and progestogen-only subdermal implants. These IUD devices can cause menorrhagia and or polymenorrhea so caution should be taken for women who have bleeding-related disorders, such as heavy periods, anaemia, fibroids and on antiplatelet or anticoagulant treatment. With a few specific contraindications, this method of contraception is a better option with high efficacy and easily placed in the outpatient setting. Women for whom the POP is contraindicated, develop adverse events after using and who have normal menstrual cycle are typically excellent candidates for IUDs.

The ideal candidate for the sub dermal implant would be

a woman with diabetes who desires the highest contraceptive efficacy, a simple method and who can cope with irregular bleeding patterns.<sup>3</sup>

A Cochrane review<sup>5</sup> focused on different explanations and evidences from randomized controlled trials regarding hormonal vs nonhormonal contraceptive methods among diabetic women. Results from several such studies inferred that there was very little evidence of adverse events of hormonal contraceptives on glycaemic control and diabetic complications. Although the quality of the data was not so conclusive, it identified that POP and IUD are not contraindicated in women of reproductive age having diabetes, whereas the Combined hormonal contraceptive was identified as having very little effect on glycaemic variability.

Barrier methods include a range of contraceptives including diaphragms, cervical caps, as well as male and female condoms. Some involve using spermicide; however, there appear to be no studies contraindicating the use of spermicide from a diabetes perspective. These options usually have the highest failure rates as these are person-dependent, with efficacy rates depending on patient adherence and acceptability. Often some couples do not accept the use of barrier method, which decrease its efficacy as with contraceptive methods. According to a survey, a male and female condom, is 98% and 95% effective with proper use respectively. On the other hand a diaphragm with spermicide has an effectivity of 92%-96%.<sup>6</sup>

Male and female permanent sterilization methods require an operative procedure; however, strict glycaemic control is mandatory prior to the surgery otherwise there is a risk of postoperative infection and profound co morbidities.

Emergency contraceptive pills are often required for different reasons including incorrect use of contraceptives and following sexual abuse. These pills should be made accessible to women with increased risk of accidental conception. In perspective of diabetes there is no contraindications to prescribe emergency progestogen-only contraceptive pills within the recommended time period or to the use of the IUD within 5 days of unprotected intercourse or no more than 5 days after ovulation, when the menstrual cycle is regular helping the exact ovulation day calculation.<sup>7</sup>

### Choices of Contraceptive Method

The World health organization (WHO) compares and contrasts the different methods of contraception among different group of diabetic populations (Table).

**Table:** Choices of contraceptive method for different types of diabetes. 1= No restriction for use in any situation. 2= Generally suggested method. 3= method not usually suggested unless other methods not available/acceptable. 4= Method not to be suggested. [WHO Medical Eligibility Criteria for Contraceptive Use].<sup>8</sup>

Condition	Combined Pill	Progesterone only Pill	Medroxy Progesterone /Norethisterone	Implants	Cu IUD	Intrauterine System
History of GDM	1	1	1	1	1	1
Type 2 DM	2	2	2	2	1	2
Type 1 DM	2	2	2	2	1	2
With microvascular complication	3/4	2	3	2	1	2
With macrovascular complication	3/4	2	3	2	1	2

## WHO (World Health Organization) Recommendation of Contraception<sup>8,9</sup>

WHO give following recommendation for women with diabetes:

1. Hormonal contraception is safe in women with diabetes without any micro or macrovascular complications.
2. Copper Intrauterine device is safe in both type 1 and type 2 Diabetic.
3. Emergency contraceptive is safe for all diabetics to prevent unintended pregnancy.
4. Injectable contraceptive is not contraindicated in healthy diabetic women.
5. Male and female sterilization remains an option.
6. Effective preconception contraception must be provided to all women till the achievement of glycemic target suitable for pregnancy.

On the other hand experts from Joslin Diabetes Center recommend to suggest family planning / contraceptive issues as follows. Depo-Provera and progestin-only oral contraceptives are less preferred in patients who have had gestational diabetes, as they can accelerate the development of type 2 diabetes. In patients with pre-existing diabetes, Depo-Provera may worsen glycaemic control. The intrauterine device (IUD) is preferred because it is a metabolically neutral and highly effective form of contraception.<sup>10</sup>

## Conclusion

Incidence of DM in women of reproductive age is rising. Effective contraception is required in order to prevent unintended pregnancy and thus preventing adverse maternal and foetal outcomes. Thus Contraceptive choices need to be individualized for women at different

stages of reproductive age. Women without complications have multiple choices for contraception and those with complications may need specialist advice. The risk benefit ratio should be clearly judged while prescribing a particular method.

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