

MECHANISM OF ACTION UTERINE CONTRACEPTIVE DEVICES*

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The increasing use of the intrauterine contraceptive device (IUCD) as a method family planning has demonstrated its popularity not only in India but also in other countries throughout the world. This has, in its turn stimulated considerable research on its biological effects both in experimental animals as well as in the human. It has been shown that these devices have an antifertility effect in practically all the species that have been tested, although the stage of reproductive process influenced differs from species to species. These differences noted in its mode of action may be as a result of difference in the anatomical conformation among various species, or as a result of marked variation in size shape and composition of the devices used. In the human, IUCD'S are generally composed of stainless steel or mixture of polyethylene and barium sulphate. Various shapes that have been used are loops, coils, bows, rings of sizes which fill the uterine cavity without applying undue lateral pressure to the uterine walls. In the large domestic animals spirals of polyethylene have been used. In the rodents and rabbits, threads of silk or nylon were used in earlier experimental work.

The antifertility effect in the chicken and sheep is as a result of inhibition of sperm transport. In the rabbit, sow and cow, as well as the ewe, corpus luteum function is impaired to varying degrees; this effect appears to be unilateral and local rather than systemic. In animals such as the guinea pig, cow and sow, in which sperm transport is not affected as it is in the sheep, fertilization does occur. Fertilized ova which implant adjacent to an IUCD are likely to be lost. IUCD does not inhibit ovulation, sperm transport and fertilization in rodents, but they do inhibit implantation with increasing effectiveness as one progressed from the rabbit, through the rat, to the mouse.

It has been shown that both rhesus monkeys and human females ovulate with the device and there is no significant evidence, that the devices have systemic effects in primates as they appear to have in rabbits and sheep, beyond the observation that IUCD may elevate or prolong oxytocin secretion in post-partum women.

In human females there is histological evidence of endometrial inflammation and alterations in the normal endometrial progression during the menstrual cycle, these changes may be sufficient to explain the prevention of IUCD of uterine pregnancies. Observations in the rhesus monkeys that devices may increase tubal motility need confirmation in the human. It is not known if the device affects fertilization in either rhesus monkey or human females.

Many possible explanations of the antifertility action of intrauterine contraceptive devices can be considered on the basis of the numerous studies already done. There, are, however, particularly areas that require further investigation and elucidation, the accumulation of which must still be awaited, with the ultimate aim of achieving better intrauterine contraceptive device designed for human use.

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