



Birth-control methods which can cause abortion

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1.Introduction

Abortion, contraception and sterilisation

Substances and devices are abortifacient if they endanger the fertilised embryo by negatively influencing the endometrium¹ or the hormone balance involved in implantation. Contraception stops fertilisation from occurring. Sterilisation is any procedure by which an individual is made incapable of reproduction.²

Although abortion, contraception and sterilisation are separately identifiable, this does not mean that a particular substance or device will perform only one of these functions. While barriers such as condoms and diaphragms would appear to be solely contraceptive, many birth control methods can do more than one thing. Most methods which prevent or delay ovulation also thicken cervical mucus and render the endometrium unreceptive to an embryo seeking to implant. They are thus sterilising, contraceptive and abortifacient.

Until recently, the British pro-life movement has concentrated on opposing abortions performed under the 1967 Abortion Act. These procedures tend to take place at least six weeks after conception. However, many pro-life organisations, including SPUC, are now concentrating more attention on birth-control devices which cause earlier abortions.

The popularity of contraceptive pills

Pills became the most popular type of contraceptive soon after they were launched. The table below summarises English family-planning clinics' reports³ on contraceptive choice for 2000-2001.

| method | usage |
|----------------|-------|
| pills | 42% |
| male condoms | 35% |
| chemicals | 0.4% |
| implants | 0.4% |
| female condoms | 0.2% |
| rhythm method | 0.1% |

¹ the lining of the womb

² Dorland's Illustrated Medical Dictionary 27th Edition, WB Saunders Company, Philadelphia 1988

³ NHS Contraceptive Services, England: 2000-01,
www.doh.gov.uk/public/sb0127.htm

Data from an omnibus survey show that, in 1999, over half of women aged 16-49 reported using a non-surgical method of contraception. The survey data also shows that about 12% of women aged 16-49, an estimated 1.4 million women in that age group, had been sterilised. NHS hospital data show that about 55,000 women were sterilised in England in 1993 but this figure has fallen nearly every year since to about 41,000 in 1999.

Although contraceptive pills are popular, there are still calls from various quarters for new types of birth-control.

Demands for new types of birth-control

Women who use birth-control want to know that they will not be at increased risk of thromboembolism, breast cancer, or infertility, and that they can regain their fertility at any time.

Feminist activists have their own aims for contraceptive technology.

A woman-centred contraceptive research agenda was the focus of a 1996 Institute of Medicine Committee report. Priority was given to research on methods that act as a chemical or physical barrier to conception and to STDs including HIV; to menses inducers and once-per-month methods; and to male contraceptive methods⁴.

The population control movement supports contraceptives which give the birth-control provider greater influence over the users' fertility. Such techniques include long-acting injections, IUDs and implants.

The future direction of birth-control

Researchers seek methods which are longer-acting, involve a lower dose, are more specific and have fewer side-effects.

Manufacturers are developing formulations with less oestrogen and more progesterone. While a reduction in quantity of oestrogen could reduce side-effects and menstrual disruption, progesterone changes the lining of the womb to prevent implantation and thus can cause an early abortion. There is research into menstrual regulation formulas, which would only be taken if a period was late.

⁴ Joseph L. (1999) "Pushing the frontier of science: reflections on an Institute of Medicine Study", *International Journal of Gynaecology and Obstetrics* 1999 Dec;67 Suppl2:S93-9

Baird and Glasier predict⁵ that future developments will involve “selective modulators of hormone receptors” which will replace the currently available oestrogens and progestins “in order to avoid their risks, particularly venous thrombosis, while also reducing the incidence of common diseases such as breast cancer”. Baird and Glasier also predict the development of organ-specific drugs to avoid whole-body effects.

Birth-control developers are looking for new approaches which do not involve a regular regime on the part of the woman. These techniques, which are particularly intended for families in the developing world and for adolescents, often work by inducing abortions.

2. The development of contraceptive substances⁶

History

In the early 1900s scientists noticed that the continuing presence of the corpus luteum⁷ stopped further egg-release. In 1921 the Austrian Dr Haberlandt suggested that extracts from the ovaries of pregnant animals might be used as oral contraceptives. Pharmaceutical companies, fearing controversy, were reluctant to use these hormones for contraception. In the early 1950s Margaret Sanger and a wealthy friend provided encouragement and financial resources to researchers, so that the pill was eventually marketed. Margaret Sanger’s motivation for this activism was clearly eugenic⁸.

⁵ D Baird and A Glasier, “Science, medicine and the future: contraception”, *BMJ* 1999, 319, 969-973 (9 October)

⁶ Mostly taken from Guillebaud, J. (1997), *The Pill and other forms of hormonal contraception*, Fifth Edition, Oxford University Press. Dr Guillebaud was the first practising gynaecologist to be given a personal chair in family planning and reproductive health, which he holds at University College, London.

⁷ During ovulation the ovarian follicle ruptures and releases its oocyte. The remains of the follicle form the corpus luteum (yellow body) which contains yellow-pigmented luteal cells which release progesterone and oestrogens. If fertilisation does not occur, the corpus luteum degenerates and a new cycle ensues. If fertilisation occurs, the corpus luteum is prevented from degeneration by human chorionic gonadotrophin released by the embryo and continues to grow and secrete progesterone till the end of the fourth month, after which it slowly regresses. The corpus luteum can reach between one third and one half the size of the ovary by the end of the third month.

⁸ Visit <http://www.all.org/abac/eugen03.htm> to read more about Margaret Sanger.

Trials began in Puerto Rico in 1956 and were highly successful until chemists removed oestrogen from the pills, thinking it an impurity. Irregular bleeding and accidental pregnancies then began to occur. Researchers realised that oestrogen was necessary for effectiveness and control of the cycle, and the combined pill was created. The US Food and Drug Administration released Enavid-10, the first combination oestrogen and progestogen birth control pill, in 1960. Enavid-10 delivered as much oestrogen in a day as is now taken in a week and delivered as much progestogen in a day as is now taken in a month in one brand of pill.

Since the mid-1980s, developments have come mainly from research into hormonal methods, including:

- new delivery systems such as implants and hormone releasing intrauterine devices
- better progestogens
- lower doses of oestrogen⁹.

Progestogen methods are more likely to be abortifacient.

3. How abortifacient birth-control works

Birth-control methods which comprise combinations of oestrogens and progestins can stop the menstrual cycle's hormone changes and thus prevent the maturing of follicles and ovulation. However, these drugs also have other mechanisms which reduce the chances of conception occurring if an egg is released, and further effects which possibly cause an early abortion if conception does occur.

Ovulation, fertilisation and implantation depend on the secretion of progesterone by the ovary at the right time. Progesterone is responsible for the transcription of endometrial gene products which are crucial for implantation. Too high a proportion of progesterone in relation to oestrogen increases the likelihood of an abortifacient effect.

Embryo implantation involves a series of interdependent, hormonally-controlled factors, with the embryo a dynamic participant.¹⁰ Oestrogen and progesterone regulate these factors both directly and indirectly. It is reasonable to expect that hormones found in birth control methods would adversely affect various implantation factors.

⁹ D Baird and A Glasier, "Science, medicine and the future: contraception", *BMJ* 1999, 319, 969-973 (9 October)

¹⁰ Wilks J (2001) "Preimplantation contraception, emergency 'contraception'", Not in print.

The hormone-receptor interaction is one of the foundations on which the birth control pill was developed. Synthetic hormones act on the same receptors as natural ones and artificial female hormones can mimic or disrupt normal cyclical patterns.

4. Birth control products which are available or under development and which have abortifacient mechanisms

Combined oral contraceptives

These pills contain oestrogen and progestin and are taken daily. They:

- suppress ovulation
- thicken cervical mucus
- change the endometrium making implantation of the newly-conceived embryo less likely and thus can induce an early abortion
- reduce sperm transportation in fallopian tubes.

Progestin-only pills

These are taken daily and contain no oestrogen. They do not rely solely on stopping egg release and women who take such pills have natural periods. The pills:

- suppress ovulation
- thicken cervical mucus
- change the endometrium making implantation less likely and thus can induce an early abortion
- reduce sperm transportation in fallopian tubes.

Progestin-only pills have been fancifully described as a “barrier method of family planning which is taken by mouth”¹¹. The sperm-barrier effect on the cervical mucus reaches its maximum between four and five hours after taking the pill.

Combined injectable contraceptives

These monthly injections of oestrogen and progestin include products such as Cyclofem and Mesigyna. They:

- suppress ovulation
- thicken cervical mucus
- change the endometrium making implantation of the embryo less likely and thus can induce an early abortion

¹¹ Guillebaud, J. *op.cit.*

- reduce sperm transportation in fallopian tubes.

Intra-uterine devices (IUDs)

These flexible metal and/or plastic devices are inserted in the uterine cavity. IUDs can be:

- copper-releasing
- inert
- progestin-releasing
- levonorgestrel-releasing.¹²

Copper-releasing IUDs can:

- interfere with the ability of sperm to pass through the uterine cavity
- interfere with fertilisation in the fallopian tube
- cause local inflammation in the uterine lining, inhibiting implantation if conception has occurred and thus can induce an early abortion.

Progestin-releasing IUDs additionally:

- thicken cervical mucus thus interfering with sperm movement
- produce endometrial changes which may interfere with implantation of the newly-conceived embryo if fertilisation has occurred and thus can induce an early abortion.

Levonorgestrel-releasing IUDs such as Mirena rely more on preventing implantation than devices which were available before them.¹³ Despite major health problems with IUDs such as the Dalkon Shield, it is claimed that some devices have health benefits since they allow the ovaries to continue releasing oestrogen. Some are also said to combat anaemia.¹⁴

Implants

The Norplant implant consists of six small, flexible capsules filled with levonorgestrel, a synthetic progestin, which are put under the skin of the upper arm through minor surgery. Norplant:

- suppresses ovulation
- thickens cervical mucus
- changes the endometrium making implantation of the newly-conceived embryo less likely and thus can induce an early abortion
- reduces sperm transportation in fallopian tubes.

¹² This type has only become available recently.

¹³ Guillebaud, *op. cit.*

¹⁴ *ibid*, page 234

A birth control implant which is under development, and which could be called Norplant-2, may consist of just two capsules. Also under development is Implanon, a single implant injected through a wide bore needle. “It has just one problem: it releases 3-ketodesogestrel, which is the active product formed in the body from the progestogen in Marvelon, and the so-called third generation [birth control pills] are under something of a cloud at present. Yet there really should be no problem when it is used in this way, and not combined with artificial oestrogen”¹⁵.

Contraceptive implants can be fitted and then forgotten about for long periods. Where birth-control is socially funded, they offer cost-savings “especially when providers are also responsible for the cost of unplanned pregnancies”¹⁶.

Progestin-only injectable contraceptives

These progestin injections are given every two or three months and they:

- suppress ovulation
- thicken cervical mucus
- change the endometrium making implantation of the newly-conceived embryo less likely and thus causing an early abortion
- reduce sperm transportation in fallopian tubes.

Depo-Provera uses depot medroxyprogesterone acetate (DMPA) in a 150µg dose into a muscle, usually the buttocks, every 12 weeks. Noristerat¹⁷ is an injection of a norethisterone ester given every eight weeks.

RU486 (also marketed as Mifepristone)

Research was undertaken on the mifepristone antiprogestogen to see if it could be developed as an oral contraceptive that could be taken either daily or weekly. Daily doses of between 0.5mg and 1mg and a weekly dose of 5mg mifepristone produced changes in the lining of the womb that could potentially prevent implantation of a fertilised egg. Encouraged by these findings ... WHO conducted studies in small numbers of women to test whether these doses would be effective in preventing pregnancy. The final results from these studies will not be available until later in 1998¹⁸. Interim results indicate that dosage levels that do not disrupt the menstrual cycle apparently do not produce a reliable

¹⁵ Guillebaud *op. cit.*

¹⁶ Bromham, D. (1996) “Contraceptive implants”, *BMJ* 1996; 312: 1555-1556 (22 June)

¹⁷ also known as Norigest or Nur-Isterate

¹⁸ These results were requested from WHO, 23rd November 2001.

contraceptive effect. Since the aim of these studies was to find out if mifepristone could be used for contraception without disturbance of the menstrual cycle, these results are considered disappointing and hence research in this area will not be continued¹⁹.

Antigestogens might also be used for 'once a month' pills. If they are given in the early luteal phase of the cycle, the formation of a secretory endometrium is retarded without affecting the regular pattern of menstruation... A once-a-month pill that prevented ovulation or implantation would be welcomed by many women from various countries and cultures (ref: Rimmer, Horga, Cerar, Alder, Baird, Glasier. Do women want a once a month pill? *Hum Reprod* 1992; 7: 608-611). In contrast, only a minority of women would be prepared to use a pill taken around the time of expected menses, when implantation of the embryo would already have occurred²⁰.

Transdermal contraceptive patches

Contraceptive patches are being promoted because of the high failure-rate of the pill in everyday use, particularly among young women. Ortho-Evra patches are applied weekly. They have a low level combination of oestrogen and progesterone and, thus, similar mechanisms to the oral contraceptive pill. The Food and Drug Administration has approved them for use in the USA and they were due to start to be sold in 2002 at a similar price to the pill²¹.

Injectable levonorgestrel

Research is taking place on three-monthly 10mg injections of levonorgestrel butanoate. The low dose would:

- expose women to fewer synthetic hormones than DMPA²²
- result in less suppression of the ovaries so that fewer women would get amenorrhoea.²³

It is likely that injectable levonorgestrel will have a greater effect on the endometrium thus preventing implantation of the newly-conceived embryo.

¹⁹ World Health Organisation (1997), "Reproductive Health Research: the new directions" *Biennial Report 1996-1997*, www.who.int/hrp/br/1996-97/2.html

²⁰ Baird & Glasier *op.cit.*

²¹ correspondence from Michael Hains, 21/11/01

²² see 4.6 above

²³ WHO, *op.cit.*

Inducer of missed period

It has also been proposed that mifepristone could be taken only if the menses was overdue (“contragestion”). An inducer of a missed menses acts by disrupting an implanted embryo and induces a very early abortion. A pilot study supported by the WHO reported very few ongoing pregnancies in women given a combination of 600 mg mifepristone and 1 mg gemeprost within 10 days of expected menses (ref: WHO, Menstrual regulation by mifepristone plus prostaglandin – results from a multicentre trial. *Hum Reprod* 1995; 10: 308-315)²⁴.

Contraceptive vaccines

Scientists have been seeking since the 1970s to use the body’s immune system to block conception and terminate pregnancies.²⁵ The work is considered useful in population control strategies. In China, research on contraceptive vaccine is considered to “contribute to poverty alleviation and improvement of every aspect of human life and sustainable development”²⁶. These vaccines are not yet in widespread use.

One contraceptive vaccine has been designed to cause the egg to reject the sperm and is therefore not abortifacient. Abortifacient vaccines include:

- anti-hCG
- trophoblastic antigen.

Anti-hCG

The anti-hCG vaccine counteracts the natural effects of the human chorionic gonadotropin (hCG) hormone. Embryos produce hCG to signal maintenance of the corpus luteum which provides progesterone and oestrogen which, in turn, maintain the endometrium rather than allowing a period to occur. An anti-hCG vaccine was shown to produce antibodies which inactivated hCG, prevented retention of the corpus luteum, and brought about normal menses²⁷ and an early abortion.

²⁴ *Ibid.*

²⁵ Lawrence Roberge (1994) “Abortifacient vaccines: technological update, hazards, and pro-life appraisal”, <http://pages.morning-after pill.com/lroberg/vaccine.htm>

²⁶ “Research and development of contraceptive vaccine”, <http://sedac.ciesin.org/china/policy/acca21/218-1.html>

²⁷ Pal R. “Absence of corpus luteum rescue by chorionic gonadotropin in women immunized with a contraceptive vaccine”, *Fertility and Sterility* 76 (2): 332-336, 2001.

Trophoblastic antigen

The cells around the early embryo which form the outer layer of the trophoblast help the embryo implant and later form the placenta. The vaccine trains the woman's body to treat a protein on the trophoblast as foreign and to mount an immune response against it, destroying the embryo before implantation through an early abortion.

5. The birth-control debate

Reasons for supporting and providing birth-control

Those who advocate and supply birth control can do so because of the profit to be made from pharmaceutical sales. Some have concerns at human population levels and others have an ideological belief in the importance of reproductive choice for women. There is also a wish to prevent teenage pregnancy.

Commercial interests which were involved in the development of contraceptives needed to bury bad news about contraceptive pills. A letter to the editor of the *British Medical Journal* discussed third generation oral contraceptives.

At the end of 1998 three major studies without sponsoring from the industry found a higher risk of venous thrombosis for third generation contraceptives, unlike three sponsored studies. To date, of nine studies without sponsoring, one study found no difference and the other eight found relative risks from 1.5 to 4.0 (summary relative risk 2.4); four sponsored studies found relative risks between 0.8 and 1.5 (summary relative risk 1.1) ... In 1995 four studies found the same risk ... The companies proclaimed that with almost total certainty everything was the result of bias and confounding. Even for a skeptic at the time, that was an unreasonable position: all four studies were reasonably executed and had withstood criticism from the Committee on Safety of Medicines and reviewers of leading journals. Thus, the companies' position ran the high risk of damaging both their product and their credibility ... Since 1995 three multinational companies have used enormous marketing resources to sow confusion ... Many general practitioners, gynaecologists, and family planners were swayed into accepting methodological arguments that sounded logical because of their legitimate concern with good contraception²⁸.

²⁸ Vandenbroucke, J P (2000), "BMJ readers should know whose words they read" (letter), *BMJ* 2000; 320: 381 (5 February)

A libertarian argument can also be used to support birth-control. It has been suggested by zealous advocates of birth control that, after freedom of speech and worship, and freedom from want and fear, the fifth freedom is from a perceived excess of fertility.²⁹

Birth control and abortion

In a review³⁰ of Randy Alcorn's *Does the birth control pill cause abortions?*, Dr Joel Goodnough set out to disprove, both scientifically and philosophically, the arguments that the oral contraceptive pill (OCP) was abortifacient. Dr Goodnough's arguments represent some common justifications for use of OCPs and other abortifacient birth control methods. He raises the issues of whether:

- embryo death is frequent and/or can be proved
- an OCP which causes the loss of an embryo is abortifacient
- the benefits of OCPs justify their use if embryo death is unlikely
- OCPs meet the requirement of double effect.

John Wilks responded³¹ to Dr Goodnough and one of his general criticisms was that Dr Goodnough's references were outdated and failed to reflect current knowledge of the process of implantation.

Frequency and proof of embryo death

Dr Goodnough blames all pregnancies which occur while a woman is on the pill on user-error and says there is no evidence of breakthrough ovulation. He suggests it is speculative to say that implantation is inhibited in the case of breakthrough ovulation, and that there is no literature to show this. He also suggests that "the effect of a hostile endometrium may be absent in cases of ovulation when it matters and present in cases of anovulation, when it does not matter".

Wilks cites studies showing significant breakthrough ovulation which is not necessarily attributable to user error and states that modern formulations contain more progesterone and are hence more likely to allow breakthrough ovulation.

²⁹ D Baird, The fifth freedom, *BMJ* 1965; ii: 1141-1148, cited in D Skegg Safety and efficacy of fertility-regulating methods: a decade of research, *Bulletin of the World Health Organisation*, 1999, 77 (9) pp 713-721.

³⁰ Goodnough, J. (2001) "Redux: is the oral contraceptive pill an abortifacient?", *Ethics & Medicine* 17 (2001): 37-51. See abstract of this article in *Bioethics Research Notes* Vol 1303.

³¹ Wilks J (2001), "Response to Joel Goodnough MD, 'Redux: is the oral contraceptive pill an abortifacient?'" , *Ethics and Medicine* 17:2 (2001): 103-115. See abstract of this article in *Bioethics Research Notes* Vol 1303.

Inhibition of implantation is not speculative. There is much evidence of reduced endometrial thickness in pill-takers. From a moral point of view, it does not matter how often embryo death occurs. It only matters that it does.

The abortifacient (or otherwise) nature of OCPs which cause the loss of embryos

Dr Goodnough concedes that “although there is no direct evidence that this results in loss of the embryo, one cannot prove that it never happens”. He argues, however, that, while an abortifacient is what he describes as “anything used to cause or induce an abortion”, an OCP is merely a contraceptive which, if it fails, can result in the death of an embryo.

He substitutes the intention of the user for an accurate understanding of how the OCP works. Intending or hoping that one’s pill will not cause an early abortion is not a rational or defensible approach if one knows that the evidence says that it can, and often will, do so. As described above, many contraceptives of various kinds can actually cause abortions and should therefore be called abortifacients.

Similarly, a carcinogen causes cancer regardless of its primary intention. Pharmaceutical companies refer to their products’ action on the endometrium in their literature³². Many doctors and health professionals openly accept the function of birth control methods to prevent implantation and, by prescribing them instead of alternatives, signal their intention for this to occur.

Weighing OCPs’ benefits against risks to embryos

Goodnough states that the degree of risk to the embryo is unknown, and “with every medication, with every treatment, with every surgery there is an inherent risk of causing harm... If we were to let fear of hurting an individual patient paralyze us into inaction, no one would be helped... If the risk of death is low, the benefits of the OCP justify use. Since the risk of death on the OCP is less than the risk of death in pregnancy, the risk is tolerable”.

This calculation is based on the false assumption that endangering the embryo for one’s own benefit is acceptable, and further flawed by confusing the risk to the

³² For example: “The pill ... makes the lining of the womb thinner so that it is unsuitable for pregnancy...”, *A small book of questions and answers about the ‘pill’*, Wyeth Pharmaceuticals and the Family Planning Association of Australia (publication date unknown); “... altering the lining of the womb so that it becomes difficult for a fertilised egg to implant itself and develop”, *Oral contraception today: Your questions answered*, Schering Pty Ltd. (publication date unknown).

mother with the risk of destroying an embryo. Furthermore it suggests that the pill or pregnancy are the only alternatives when, in fact, there are other alternatives which do not endanger lives.

Double effect

Goodnough believes the pill meets the requirements for the principle of double effect because the desired effect is the prevention of conception by prevention of ovulation, and suggests there are no safer alternatives. This is not a valid use of the double effect principle because:

- An unintended harmful outcome is only allowable if it is proportionate to the benefit being sought. The death of an embryo is a very grave harm to that embryo, of course, and is wholly disproportionate to the supposed good being sought, namely child-free intercourse for the woman and her partner.
- The double effect principle also requires that other means of achieving the objective should be sought to try to avoid the harm. There is no suggestion of any such effort by Dr Goodnough.
- It would seem to be the case that some – perhaps many – users of abortifacient birth control actually want an abortifacient effect if the contraceptive mechanism(s) fail. Double effect is not applicable when the harmful side effect of one's action is, in reality, an intentional and deliberate consequence.

6. Conclusion

Many up-to-date birth-control methods, as well as those under development, are of the kind which threatens unborn life. Couples relying on these methods will know this. There are alternatives to abortifacient birth-control which do not threaten life.

7. Terminology

| | |
|-------------------------------|--|
| abortifacient (adjective) | tending to cause abortion |
| abortifacient (noun) | a drug or device which intentionally or accidentally causes an abortion |
| abortion | the destruction of the developing embryo/foetus in the mother's body, or the fatal expulsion of the fetus or embryo, spontaneously, or by surgical or medical techniques |
| contraceptive (noun) | a drug or device to prevent conception during intercourse |
| induced abortion | a deliberately caused abortion |
| miscarriage | the unintended death and expulsion of the unborn from the womb (same as spontaneous abortion) |
| progestational (adjective) | helping embryos develop by priming the endometrium (lining of the uterus) to receive an embryo just before menstruation |
| progesterone | a naturally occurring progestational hormone which is the principal agent in promoting and maintaining gestation |

| | |
|----------------------|--|
| progestin | the unrefined product extracted from the corpus luteum; any natural or synthetic progestational agent |
| progestogen | any progestational agent |
| spontaneous abortion | the unintended death and expulsion of the unborn from the womb (same as miscarriage) |
| sterilisation | rendering a person infertile indefinitely, usually by means of a surgical operation to remove the ovaries or to cut or tie the fallopian tubes or vas deferens |
| therapeutic abortion | a deliberately caused abortion undertaken on the grounds of a risk to health |