

## Impact on Subsequent Pregnancies



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Induced abortion creates future reproductive complications for women. These complications include: cervical damage leading to future problems in carrying a pregnancy to term; uterine damage resulting in *placenta previa* which increases the morbidity and mortality risks for both mother and infant; and ectopic pregnancy. Data indicate that in the past twenty years the incidence of these complications has risen sharply. Studies reveal that induced abortion can put a woman at a seven-fold increased risk of placenta previa and a 30 to 510 per cent increased risk of delivering a premature infant. Children born prematurely are at an enormously increased risk of developing cerebral palsy. Ectopic pregnancies are reaching epidemic proportions, the rates having doubled or tripled in many parts of the world in direct proportion to the increase in induced abortions. Yet North American researchers continue to minimize the seriousness of the risk of induced abortion to women's health and its effects on future pregnancies, with their statistical data often being at odds with their conclusions.

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Induced abortions complicate subsequent pregnancies by increasing the risk of cervical incompetence that causes late spontaneous abortions (miscarriages at eighteen to 22 weeks of age); placenta previa; premature labour and the delivery of premature infants as well as ectopic pregnancies.

Some issues dealt with in this chapter, such as ectopic pregnancy, also affect future fertility. If the primary effect of an induced abortion presents during a subsequent pregnancy we discuss it here. The medical conditions which cause infertility or sterility are found in Chapter 5.

### **Uterine or Cervical Damage and Subsequent Pregnancies**

One point of agreement among researchers working in the field of post-abortion research is that cervical or uterine damage caused by induced abortions continues to lead to major ongoing complications that affect subsequent pregnancies.

### **Cervical Dilation**

During the course of a normal pregnancy the cervix needs to resist the tendency to dilate under the downward pressure of the infant in the uterus. A decrease in cervical resistance leads to the premature dilation of the cervix with a subsequent late second trimester spontaneous abortion as the cervix becomes incompetent. Molin examines this problem of decreased cervical resistance following induced first trimester abortions. His study suggests that cervical resistance is correlated with the ability to continue subsequent pregnancies to term and a "fall in resistance to dilatation corresponds to a tear in the cervical tissue of more than two millimeters".<sup>1</sup> He demonstrates that if the cervix is dilated to nine millimeters during an induced abortion prior to the evacuation of the fetus, this can lead to a fall in cervical resistance in 12.5 per cent of patients, while dilating the cervix to eleven millimeters leads to decreased cervical resistance in two thirds (66.7 per cent) of the women. This finding did not change according to whether or not the woman had borne a child.

To reduce such injuries Molin suggests that *prostaglandins* and *laminaria tents* be used for all induced abortions. In many public and university hospitals, such precautions are

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part of the standard abortion preparation but the practices of private facilities may vary widely.

Injury to the cervix can be a possible cause of later spontaneous abortions. Zlatnik and colleagues determined that such cervical incompetence was associated with a wide cervical canal.<sup>2</sup>

Slater and colleagues reported lower birth weights in subsequent pregnancies when in a previous abortion the dilatation of the cervix was greater than twelve mm. It was also found that the subsequent pregnancies were shorter in duration, although the difference was not statistically significant.<sup>3</sup>

Although the *D&C* method described by Slater and colleagues is no longer used, dilation remains part of present-day *dilation and evacuation (D&E)* procedures. Also, the women who were aborted by D&C may well experience the longer-term effects of the abortion as long as they remain in the childbearing years. Thus a young woman having an abortion in 1985 at the age of seventeen is in her mid-thirties today. This maternal age is now common for a first planned pregnancy.

#### **Uterine Perforation**

A more recent American study found that “*most traumatic uterine perforations during first-trimester abortions are unreported or even unsuspected*” [emphasis added]. Data from the 1970s showed that tears to the wall of the uterus occurred up to 6.4 times per 1000 abortions. However, they conclude that this was a significant underestimate because such injuries are only detected during later gynecological surgeries. Accordingly, they now report “the true incidence of uterine perforations in the laparoscopic group was... 19.8/1000 procedures.”<sup>4</sup> Although few serious consequences result, the women at high risk for such injuries are those who have had children before, who abort under general anesthetic, and are over the age of 35.

Another recent report cautions about the maternal *morbidity* following second-trimester D&E abortions. American

practitioners note that “dilation and evacuations between twelve and sixteen weeks...have the potential to cause significant morbidity and mortality.” Because of the possible uterine complications, the researchers conclude that such procedures should only be used where intensive emergency treatment can be initiated immediately.<sup>5</sup>

### **Placenta Previa**

*Placenta previa* (when the placenta implants in the lower part of the uterus near or over the cervix) may be diagnosed if the placenta is located in the lower uterine segment and extends to the *cervical os* or covers the cervix. The reason for this has been identified by Barrett and colleagues<sup>6</sup> and Rose and Chapman who found an association between uterine scarring and curettage.<sup>7</sup> Where there is scarring of the upper uterus, future pregnancies cannot implant properly and so the new pregnancy becomes attached to the lower uterine segment near or over the cervix. This is known as faulty placentation. This condition is a complication in five of every 1000 deliveries annually in Canada and the United States and can result in serious injury to the mother and death to the baby during delivery, owing to severe *hemorrhage* before or during birth and severe *neonatal hypotension*.

Taylor and colleagues undertook a case-controlled, retrospective, and comparative study of all white women in the state of Washington from 1984 to 1987 whose pregnancies were complicated by placenta previa. They used birth records for this group as well as records of miscarriages and induced abortions. They found that women with a previous history of induced abortion were 28 per cent more likely to have a later pregnancy complicated by placenta previa. They labeled this risk as “minor” and downplayed the finding of Barrett and colleagues who in their 1981 study reported a seven-to fifteen-fold (i.e., 600 to 1400 per cent) excess risk among women who had undergone a legal abortion. They alleged that the Barrett study had failed to account for the dramatic increase in cesarean rates, which had occurred during the same period.

Taylor's study excluded 250 nulliparous women with placenta

previa. Thus the analysis was restricted to women who reported one or more previous live births. The 250 excluded placenta previa cases would have increased the sample by 50 per cent. The possible effect of including women with previous abortions but no live births was not considered in Taylor's discussion.

Taylor concludes that if induced abortion were shown to increase placenta previa, "...it would be of considerable import. However, we found only a small increased risk in association with induced abortion so its clinical or public health significance seems minor."<sup>8</sup> Taylor's conclusion provides a useful illustration of a fact noted elsewhere in this study: That the conclusions of research studies on abortion after-effects often minimize the significance of the data gathered (see Chapter 17 on methodological problems). Others might question this dismissal of a 28 per cent increased risk, as well as the casual disregard of Barrett and colleagues' finding of a *sevenfold* increased risk. Furthermore, while Taylor's study involved fewer than 2200 women, Barrett and colleagues surveyed over 5000.

## **Premature or Preterm Births**

### **Prematurity**

A direct consequence of both cervical incompetence and infection is premature or preterm birth (meaning birth at less than 37 weeks gestation). Prematurity is the leading cause of infant death before the age of one. Premature infants who do not die are at a much higher risk for physical and mental handicaps. Indeed pre-term birth is "the leading cause of infant morbidity and mortality."<sup>9</sup> Writing in the *Eugenics Review* about the East-European experience of legalized abortion, Malcolm Potts expressed "little doubt that there is a true relationship between the high incidence of therapeutic abortion and prematurity".<sup>10</sup> Prematurity is therefore a very serious consequence of induced abortion.

What is the magnitude of this risk? Forty-nine studies between 1963 and 2001 in ten countries (The United States, Britain, Germany, Japan, France, Australia, Denmark, Hungary, Greece, and Singapore) point to a statistically

significant increased risk of preterm births after abortion.<sup>11</sup> The classic book on the subject is Dr Barbara Luke's *Every Pregnant Woman's Guide to Preventing Premature Birth*, in which she writes "If you have had one or more induced abortions, your risk of prematurity with this pregnancy increases by about 30 per cent."<sup>12</sup>

The leading authority on prematurity is Dr Emile Papiernik. In a recent article he and his colleagues reported:

1. an 86 per cent increased risk of very preterm birth (meaning less than 33 weeks gestation) for women with previous first-trimester abortions.
2. a 267 per cent increased risk of very preterm birth for women with previous second-trimester abortions.<sup>13</sup>

In the same year (1999), Zhou and colleagues in Denmark surveyed 15,727 women whose pregnancies were ended by first-trimester abortions and compared them with 46,026 women whose pregnancies were not interrupted by induced abortions. They discovered the following increased risk of preterm births:

1. after one abortion: 89 per cent
2. after two abortions: 166 per cent
3. after three or more abortions: 103 per cent

They concluded, "The study showed an increase in preterm and post-term pregnancies after induced abortions."<sup>14</sup>

A large German study of 106,345 births showed that previous induced abortions pushed up the likelihood of a subsequent premature delivery by percentages that increased strikingly with the number of previous abortions.

**Increased risk by number of previous abortions**<sup>15</sup>

	1	2	3
Delivery at less than 32 weeks (per cent)	150	460	510
Delivery at less than 37 weeks (per cent)	50	110	260

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Finally, a French study of 12,432 women found an overall increased risk of pre-term birth associated with previous induced abortions to be 40 per cent.<sup>16</sup>

Papiernick's, Zhou's, Martius', and Henriet's are only the most recent of 49 studies from around the world that have found varying degrees of risk of prematurity after abortion. All of these studies' findings were statistically significant. Not surprisingly they demonstrate that the more the abortions the greater the risk. More unexpected is the revelation that the linkage between abortion and prematurity is strongest with extremely premature deliveries (meaning under 32 weeks' gestation).

Why does abortion increase the likelihood of prematurity? According to Dr Luke:

The procedures for first-trimester abortion involve dilating the cervix slightly and suctioning the contents of the uterus...The procedures for second-trimester abortion are more involved, including dilating the cervix wider and for longer periods, and scraping the inside of the uterus. Women who had had several second-trimester abortions may have a higher incidence of incompetent cervix, a premature spontaneous dilation of the cervix, because the cervix has been artificially dilated several times before this pregnancy.<sup>17</sup>

A second major cause of prematurity mentioned by experts in the field is infection. Dr Janet Daling and colleagues report that if the previous pregnancy ended in induced abortion the risk of intraamniotic infection increased by 140 per cent.<sup>18</sup> As Dr Judith Lumley explains, "One possible mechanism is that cervical instrumentation can facilitate the passage of organisms into the upper part of the uterus, increasing the probability of inapparent infection and subsequent preterm birth."<sup>19</sup>

In short, the greater the number of previous induced abortions the higher the risk of prematurity as a consequence of either cervical incompetence or infection.

**Cerebral Palsy and Other Disabilities Resulting from Prematurity**

The implications of this finding are enormous. In a sweeping survey of 111 studies of prematurity led by Dr Gabriel Escobar of the Kaiser Permanente Medical Center in California, it was determined that *the rate of disability among very low birthweight infants (less than 1500 grams) was 25 per cent. The rate of cerebral palsy was 7.7 per cent.* Given that the rate of cerebral palsy is about 0.2 per cent (or two in a thousand) among the general population, this means that *prematurity at below 1500 grams birth multiplies the risk of the baby's contracting this serious condition over 38 times.*<sup>20</sup>

Further research is needed on the statistical relationship between the rise of induced abortion and the rising incidence of cerebral palsy. There is no doubt however, that more induced abortion means more subsequent preterm births, and more preterm births mean a greatly increased incidence of cerebral palsy. It comes as no surprise to discover that since abortion was legalized in the late 1960s and early 1970s, the incidence of premature births has also risen. Between 1981 and 2001, the rate of premature births rose from 9.4 to 11.9 per cent - a net increase of 27 per cent during these two decades.<sup>21</sup>

The clear link between induced abortion, preterm births and cerebral palsy have implications for informed consent by women who undergo abortion. The point has already been made that the liability costs for cerebral palsy are exceptionally high. Induced abortion, therefore, unless it is accompanied by very detailed informed consent, "may carry an unsupportable legal liability." A consent form that "does not inform women of the elevated future risk of a preterm delivery, and that the latter constitutes a risk factor for devastating complications such as cerebral palsy, may not satisfy courts."<sup>22</sup>

At least three European governments have responded to the greatly increased risk of prematurity and other threats to women's health posed by induced abortion, by sharply curtailing the availability of the procedure. In the early 1970s the Hungarian government, alarmed by the striking increase





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in premature births to women with a record of induced abortion, and worried also by the striking increase in physically and mentally handicapped babies born to such women, rewrote its abortion law. By restricting access to the procedure it reduced the abortions by 40 percent between 1973 and 1974. This reduction has remained permanent, as Hungary's abortions in 2000 remained below the 1974 total.<sup>23</sup>

Poland is the second country to have cut back the availability of abortion, making it legally permissible only for rape, threat to the mother's life, or serious illness. Since the new law was passed in 1993 the recorded incidence of induced abortion has tumbled from almost 60,000 in 1990 to under a thousand per year.<sup>24</sup>

Finally, in the summer of 2003, as this book goes to press, we learn that the government of Russia has introduced sweeping legislation to enforce stringent criteria before a woman can be approved for an induced abortion. The health impact of abortion on women and their subsequent children are a major thrust behind this legislation.<sup>25</sup>

#### **Ectopic Pregnancy**

An ectopic pregnancy occurs when an embryo implants outside of the uterine cavity, generally in the fallopian tubes. Rupture of an ectopic pregnancy accounts for ten to fifteen per cent of maternal deaths. The occurrence of ectopic pregnancies has increased significantly in recent years. Goldner used the United States Centers for Disease Control Surveillance Summaries to determine that between 1970 and 1989 "the rate increased almost fourfold from 4.5 to 16.0 ectopic pregnancies per 1000 reported pregnancies."<sup>26</sup>

There are two separate issues regarding the relationship of induced abortion to ectopic pregnancies: 1) The increased risk of ectopic pregnancy occurring subsequently as a result of an induced abortion; 2) The increased health risk incurred when an abortion is performed for an unrecognized ectopic pregnancy.

### **Ectopic Pregnancies Subsequent to Induced Abortions**

There is a documented relationship between induced abortion and the occurrence of a subsequent ectopic pregnancy. Michalas and colleagues note “a worldwide epidemic of ectopic pregnancy,” and have found that “induced abortions were positively related to ectopic pregnancy.”<sup>27</sup>

Even a single abortion increases a woman's risk of having an ectopic pregnancy in the future with the relative risk of a subsequent ectopic pregnancy for a woman who has had an abortion double that experienced by women who have not had induced abortions. They referred to a small study from Boston that reported a 2.6-fold increase in the risk of ectopic pregnancy after two or more induced abortions. Levin in a retrospective study found that the “possible association of multiple prior induced abortions with subsequent ectopic pregnancy persists.”<sup>28</sup> In addition, Yugoslav and Japanese studies reported crude relative risks at least double those of women with no history of induced abortion. Parazzini and colleagues in Italy found that the risk of ectopic pregnancy after induced abortion continued to escalate with each subsequent induced abortion a woman underwent.<sup>29</sup> They determined that the ectopic pregnancy risk in women having multiple abortions was thirteen times higher than for women who carried to term. Combined, these five studies all reveal that induced abortion results in a two to thirteen-fold increase in the risk of a subsequent ectopic pregnancy.

Why do induced abortions lead to ectopic pregnancies? Chung and colleagues “showed a highly significant association” between both retained products of conception and pelvic infection following induced abortion and the later occurrence of ectopic pregnancies. They conclude that these two medical complications of abortion lead to a five-fold increase in the rate of ectopic pregnancies.<sup>30</sup> The most common cause of an ectopic pregnancy is pelvic infection.<sup>31</sup> Induced abortions increase the incidence of pelvic infections which cause scarring within the fallopian tubes. The scar tissue interferes with normal tubal motility or flexibility. As a consequence the fertilized ovum is entrapped and then implants in the tube. The presence of post-abortion pelvic inflammatory disease is predictive of a greater likelihood

of an ectopic pregnancy in the future.

**Undiagnosed Ectopic Pregnancies at the Time of an Induced Abortion**

Ectopic pregnancies can be difficult and costly to identify.<sup>32</sup> A woman with an ectopic pregnancy generally presents six to eight weeks after her last menstrual period with a history of abdominal pain and vaginal bleeding. Twenty per cent of women with an ectopic pregnancy will not experience abdominal pain.<sup>33</sup> Therefore a woman with an ectopic pregnancy could have an abortion and, assuming that she is not longer pregnant, dismiss her symptoms of pain and bleeding as normal post-abortion side-effects. This is of special concern because most abortion clinics advise women to expect cramping and bleeding for up to three weeks and no period for six to eight weeks. For two vital reasons a woman with an undiagnosed ectopic pregnancy is placed in a vulnerable position by this advice: 1) It may not only cause a significant delay in making the correct diagnosis; 2) it may also increase her risk of serious medical complications and death.

Concerns regarding abortion and missed ectopic pregnancies are underscored by recent publication in Archives of Pathology which note that certain jurisdictions have not yet adopted the recommendation that all tissue removed at the time of an induced abortion be examined for fetal parts. Studies have found that medical follow-up was required in 28 per cent of cases where the pathology was abnormal. Obviously the absence of fetal tissue would alert medical personnel to the possible presence of an ectopic pregnancy and potentially avert a life-threatening event.

Because ectopic pregnancies are a significant cause of maternal deaths request have been made to the Centers for Disease Control to investigate all deaths from ectopic pregnancies to determine if a woman has had a recent abortion. Any identified deaths would then be attributed to induced abortions, not pregnancy. (see Chapter 6 for a further discussion of maternal mortality).

**Limitations in the North-American Data**

Daling and colleagues found that women who had two or more induced abortions increased their risk of ectopic pregnancy 2.6 times. While admitting that this finding is “worrisome”, they nonetheless concluded that “it remains unresolved whether having a legal induced abortion in the United States imparts an excess risk of EP [ectopic pregnancy].” The abstract to the study states that the research shows that abortion “does not carry a large excess risk.” Here again, the conclusion is at odds with the data.<sup>34</sup>

Many observers would consider a risk of a 2.6 times increase in a potentially life-threatening condition to be “excess[ive].” As we have noted above in the section on *Placenta Previa*, there is a marked tendency in the North-American literature on abortion for researchers to minimize their own findings. Those interested in the subject are well advised to read the numerical data and compare them carefully with the abstract and conclusions, rather than relying on either the abstract or conclusions alone. Comparisons are also recommended with literature from European countries, particularly Great Britain and the Scandinavian countries, where population size and sophisticated medical linkage data bases make data collection more accurate and comprehensive.

Another compromising factor is that North-American statistics do not always break down the risks by population group. This is a limitation because some ethnocultural groups in North America are at significantly greater risk than the aggregate data show. African-American women, for example, are more likely to die from an ectopic pregnancy present at the time of an induced abortion.<sup>35</sup> Goldner notes that “...deaths from complications were consistently higher for blacks and other racial minorities than for whites throughout the period.”<sup>36</sup>

**Conclusion**

A survey of the literature makes it clear that “an underreporting of information particularly with respect to an induced abortion” is a major flaw in all retrospective research.<sup>37</sup>

Underreporting is clearly a problem in the North-American case data as well. There are many procedures which aborting women are subject to, whose consequences put them at higher risk for future health problems: Cervical dilation, still used in D&E, can lead to cervical incompetence which often results in miscarriage; uterine perforations may be three times higher than previously believed; abortion produces an increase of up to sevenfold in the risk of placenta previa; and there is a disturbing rise in ectopic pregnancies which are significant contributors to maternal deaths and which are very likely associated with the increase in induced abortions over the past 30 years. Indeed, the five studies we surveyed reported *an increased risk, anywhere from twofold to thirteenfold, that induced abortion will lead to an ectopic pregnancy.*

The gravest consequence of induced abortion for future pregnancy is a rise in the rate of premature births ranging from 30 to 700 per cent. Preterm babies weighing less than 1500 grams suffer an incidence of cerebral palsy over 38 times greater than full-term babies. Thus induced abortion tremendously increases a woman’s risk of later bearing a child with cerebral palsy.

Too many North-American studies minimize these findings with serious implications for the present and future health of North-American women, especially those who are African-American.

**Key Points Chapter 4**

- Subsequent pregnancies are negatively affected by induced abortion.
- The main complications are: cervical incompetence leading to future miscarriages; uterine perforations and placenta previa with serious implications to the health of the woman and her child(ren) in later pregnancies; and ectopic pregnancies which, if undiagnosed and not treated, can lead to a woman's death.
- Forty-nine studies of preterm or premature births from Europe and North America found increased risks ranging from 30 per cent to 510 per cent.
- The consequence of this significantly increased risk of prematurity after abortion is that the rate of cerebral palsy among premature infants weighing less than 1500 grams at birth is 38 times greater than among the general population. Induced abortion, in other words, is directly responsible for many thousands of cases of cerebral palsy – in North America alone – that otherwise would not have occurred.
- Despite the data which point to the link between induced abortion and future serious health risks, many North-American research studies fail to point these out.
- Numerical data should be carefully compared to research abstracts and conclusions because they often do not correlate; in other words, where data clearly indicate increased health risks, they are often minimized in the abstracts and conclusions of medical articles.
- In light of the growing knowledge of the impact of abortion on the rate of prematurity, abortion providers may soon incur greatly increased liability for obtaining informed consent from women contemplating induced abortion.

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### Notes

- 1 Molin A. Risk of damage to the cervix by dilatation for first-trimester-induced abortion by suction aspiration. *Gynecologic and Obstetric Investigation* 1993;35(3):152-4.
  - 2 Zlatnik FJ, Burmeister LF, Feddersen DA, Brown RC. Radiological appearance of the upper cervical canal in women with a history of premature delivery II. Relationship to clinical presentation and to tests of cervical compliance. *Journal of Reproductive Medicine* 1989 August;34(8):525-30.
  - 3 Slater PE, Davies AM, Harlap S. The effect of abortion method on the outcome of subsequent pregnancy. *Journal of Reproductive Medicine* 1981 March;26(3):123-8.
  - 4 Kaali SG, Szigetvari IA, Bartfai GS. The frequency and management of uterine perforations during first-trimester abortions. *American Journal of Obstetrics and Gynecology* 1989 August;161(2):406-8; p. 407.
  - 5 Trott E, Ziegler W, Levey J. Major complications associated with termination of a second trimester pregnancy: a case report. *Delaware Medical Journal* 1995 May;67(5):294-6.
  - 6 Barrett JM, Boehm FH, Killam AP. Induced abortion: a risk factor for placenta previa. *American Journal of Obstetrics and Gynecology* 1981 December 1;141(7):769-72.
  - 7 Rose GL, Chapman MG. Aetiological factors in placenta praevia--a case controlled study. *British Journal of Obstetrics and Gynaecology* 1986 June;93(6):586-8.
  - 8 Taylor VM, Kramer MD, Vaughan TL, Peacock S. Placenta previa in relation to induced and spontaneous abortion: a population-based study. *Obstetrics and Gynecology* 1993 July;82(1):88-91; p. 91.
  - 9 Thorp JM, Hartmann KE, Shadigian E. Long-term physical and psychological health consequences of induced abortion: review of the evidence. *Obstetrical and Gynecological Survey* 2003;58(1):67-79; p.75.
  - 10 Potts M. Legal abortion in Eastern Europe. *Eugenics Review* 1966-1967; 58-59:232-250, p. 235.
  - 11 Zhou W, Sorensen HT, Olsen J. Induced abortion and subsequent pregnancy duration. *Obstetrics & Gynecology* 1999 Dec;94(6):948-53.
- Pickering RM, Forbes J. Risk of preterm delivery and small-for-gestational age infants following abortion: A population study. *British Journal of Obstetrics and Gynaecology* 1985;92:1106-1112.

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Michielutte R, Ernest JM, Moore ML, Meis PJ, Shrp PC, Wells HB, Buescher PA. A comparison of risk assessment models for term and preterm low birthweight. *Preventive Medicine* 1992;21:98-109.

Berkowitz GS. An epidemiologic study of preterm delivery. *American Journal of Epidemiology* 1981;113:81-92.

Lieberman E, Ryan KJ, Monson RR, Schoenbaum SC. Risk factors accounting for racial differences in the rate of premature birth. *New England Journal of Medicine* 1987;317:743-748.

Lang JM, Lieberman E, Cohen A. A comparison of risk factors for preterm labor and term small-for-gestational-age birth. *Epidemiology* 1996;7:369-376.

Mueller-Heubach E, Guzick DS. Evaluation of risk scoring in a preterm birth prevention study of indigent patients. *American Journal of Obstetrics and Gynecology* 1989;160:829-837.

Shiono PH, Lebanoff MA. Ethnic differences in preterm and very preterm delivery. *American Journal of Public Health* 1986;76:1317-1321.

Pantelakis SN, Papadimitriou GC, Doxiadis SA. Influence of induced and spontaneous abortions on the outcome of subsequent pregnancies. *American Journal of Obstetrics and Gynecology*. 1973;116:799-805.

Lumley J. The association between prior spontaneous abortion, prior induced abortion and preterm birth in first singleton births. *Prenatal and Neonatal Medicine* 1998;3:21-24.

Van Der Slikke JW, Treffers PE. Influence of induced abortion on gestational duration in subsequent pregnancies. *British Medical Journal* 1978;1:270-272.

Richardson JA, Dixon G. Effect of legal termination on subsequent pregnancy. *British Medical Journal* 1976;1:1303-1304.

Pickering RM, Deeks JJ. Risks of delivery during 20th to the 36th week of gestation. *International Journal of Epidemiology* 1991;20:456-466.

Koller O, Eikhom SN. Late sequelae of induced abortion in primigravidae. *Acta Obstetrica et Gynecologica Scandinavica* 1977;56:311-317.

Papaevangelou G, Vrettos AS, Papadatos D, Alexious C. The effect of spontaneous and induced abortion on prematurity and birthweight. *Journal of Obstetrics and Gynaecology of the British Commonwealth* May 1973;80:418-422.

Bognar Z, Czeizel A. Mortality and morbidity associated with legal abortions in Hungary, 1960-1973. *American Journal of Public Health* 1976;66:568-575.



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Martius JA, Steck T, Oehler MK, Wulf K-H. Risk factors associated with preterm (<37+0 weeks) and early preterm (<32+0 weeks): univariate and multi-variate analysis of 106 345 singleton births from 1994 statewide perinatal survey of Bavaria. *European Journal of Obstetrics & Gynecology and Reproductive Biology* 1998;80:183-189.

Lekea-Karanika V, Tzoumaka-Bakoula C and Golding J. Previous obstetric history and subsequent preterm delivery in Greece. *European Journal of Obstetrics & Gynecology and Reproductive Biology* 1990 November;37:99-109.

Ancel PV, Saurel-Cubizolles MJ, Renzo GCD, Papiernik E, Breart G. Very and moderate preterm births: are the risk factors different? *British Journal of Obstetrics and Gynaecology* 1999; 106:1162-1170.

Lumley J. Very low birth-weight (<1500g) and previous induced abortion: Victoria 1982-1983. *Australian and New Zealand Journal of Obstetrics and Gynecology* 1986;26:268-272.

Twenty-nine additional studies are listed in Rooney B, Calhoun BC. Induced abortion and the Risk of later premature births. *Journal of American Physicians and Surgeons* 2003 (Summer) [See footnote 22].

12 Luke B. *Every Pregnant Woman's Guide to Preventing Premature Birth*. 1995 [foreword by Emile Papiernik], New York: Times Books; p. 32.

13 Ancel P-Y, Saurel-Cubizolles M-J, Renzo GCD, Papiernik E, Breart G. Very and moderate preterm births: Are the risk factors different? *British Journal of Obstetrics and Gynaecology* 1999; 106:1162-1170.

14 Zhou et al. 1999. See n. 11, p. 948.

15 Martius et al. 1998. See n. 11.

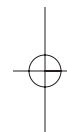
16 Henriët L, Kaminski M. Impact of induced abortions on subsequent pregnancy outcome: The 1995 French national perinatal survey. *British Journal of Obstetrics and Gynaecology* 2001; 108: 1036-1042; p.1036

17 Luke 1995. See n. 12, pp. 32-33.

18 Krohn MA, Daling JR, , Miscarriage or termination in the immediately preceding pregnancy increases the risk of intraamniotic infection in the following pregnancy. *American Journal of Epidemiology* 1992;136:1013

19 Lumley 1998. See n. 11.

20 Escobar GJ, Littenberg B, Petitti DB. Outcome among surviving very low birthweight infants: a meta-analysis. *Archives of Disease in Childhood* 1991;66:204-211.



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- 21 Martin JA, Hamilton BE, Ventura SJ, Menacker F, Park MM, Sutton PD. Births: Final Data for 2001. National Vital Statistics Reports 2002 December 18;51(2). <http://www.cdc.gov/nchs/releases/02news/precare.htm>
- 22 Rooney, B, Calhoun, BC. Induced abortion and the risk of later premature births. *Journal of American Physicians and Surgeons* 2003 (summer); 8 (2): 46-49, p. 47.
- 23 Hungary, 2001, in *Demographic Yearbook, 2001 ed.*, on line, Council of Europe. Available at <http://www.coe.int/t/e/social%5fcohesion/population/demographic%5fyear%5fbook/2001%5fEdition/Hungary%202001.asp>. <http://www.johnstonsarchive.net/policy/abortion/ab-hungary.html>
- 24 Gentles, I. In the matter of child care, Canada could learn from Poland. *The Report* 2000 (9 October 2000), p. 46]
- 25 Russia prepares to end its embrace of abortion: tighter laws reverse tradition of tolerance. *Globe and Mail [Toronto]* 2003 (2 July), p. A1;
- 25 Russians Feel Abortion's Complications; used as birth control in Soviet times, practice has led to widespread infertility. *Washington Post* 2003 (22 February), A16, Final Edition.
- 26 Goldner TE, Lawson HW, Xia Z, Atrash HK. Surveillance for ectopic pregnancy--United States, 1970-1989. *Morbidity and Mortality Weekly Report, Centers for Disease Control Surveillance Summary* 1993 December;42(SS-6):73-85.
- 27 Michalas S, Minaretzis D, Tsionou C, Maos G, Kioses E, Aravantinos D. Pelvic surgery, reproductive factors and risk of ectopic pregnancy: A case controlled study. *International Journal of Gynecology and Obstetrics* 1992 June;38(2):101-5, pp. 101, 103.
- 28 Levin AA, Schoenbaum SC, Stubblefield PG, Zimicki S, Monson RR, Ryan KJ. Ectopic pregnancy and prior induced abortion. *American Journal of Public Health* 1982 March;72(3):253-6.
- 29 Parazzini F, Ferraroni M, Tozzi L, Ricci E, Mezzopane R, La Vecchia C. Induced abortions and risk of ectopic pregnancy. *Human Reproduction* 1995 July;10(7):1841-4.
- 30 Chung CS, Smith RG, Steinhoff PG, Mi MP. Induced abortion and ectopic pregnancy in subsequent pregnancies. *American Journal of Epidemiology* 1982 June;115(6):879-87; p. 884.
- 31 Tenore J. Ectopic Pregnancy. *American Family Physician* 2000 (Feb.15): 1080-1088.

### Impact on Subsequent Pregnancies

32 Wong TW, Lau CC, Yeung A, Lo L, Tai CM. Efficacy of transabdominal ultrasound examination in the diagnosis of early pregnancy complications in an emergency department. *Journal of Accidental and Emergency Medicine* 1998 May;15(3):155-8.

33 Abbott J, Emmans LS, Lowenstein SR. Ectopic pregnancy: ten common pitfalls in diagnosis. *American Journal of Emergency Medicine* 1990;8:515-522.

34 Daling JR, Chow WH, Weiss NS, Metch BJ, Soderstrom R. Ectopic pregnancy in relation to previous induced abortion. *Journal of the American Medical Association* 1985 February;253(7):1005-8.

35 Atrash HK, Koonin LM, Lawson HW, Franks AL, Smith JC. Maternal mortality in the United States, 1979-1986. *Obstetrics & Gynecology* 1990 December;76(6):1055-60.

Atrash HK, MacKay HT, Hogue CJ. Ectopic pregnancy concurrent with induced abortion: incidence and mortality. *American Journal of Obstetrics and Gynecology* 1990 March;162(3):726-30.

36 Goldner et al. 1993. See n. 26.

37 Taylor et al. 1993. See n. 8.

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