

Chapter 2

Induced Abortion and Breast Cancer



2

Breast cancer poses a significant threat to the health and survival of women in the Western world. Excess estrogen exposure has emerged as a major risk factor, raising concern about the way in which induced abortion exposes women to the unprotected cancer-inducing effects of the high estrogen environment of early pregnancy. Since 1957, evidence linking induced abortion to the later development of breast cancer has been observed in 23 of 37 studies worldwide, including ten of fifteen U.S. studies. Although the poor quality and confusing presentation of many studies has hidden the significance of the breast cancer risk posed by induced abortion, a recent clarifying meta-analysis has established abortion as a significant independent risk factor, averaging a 30 per cent increased risk. The medical establishment has exhibited some reluctance to accept and respond to this emerging evidence, presumably because of the political controversy over abortion.

Induced Abortion and Breast Cancer

At the dawn of the 21st century, breast cancer poses a life-time risk to women of greater than one in ten. It now strikes over 170,000 American women and over 5,000 Canadian women every year.¹ Intense interest in the search for possible genetic, dietary, and environmental risk factors is shared by the medical research community and the public at large.

Possible Abortion and Breast Cancer Link

Pathophysiology

The observed association between induced abortion and an increased risk of the later development of breast cancer is congruent with our understanding of the hormonal effects of pregnancy on a woman's breast tissue. Prior to her first pregnancy, a woman's breast is composed largely of connective tissue linking ducts which contain few milk-producing cells. Upon conception, a surge of *oestradiol* reaches twentyfold in the first trimester, triggering an explosive growth of breast tissue, a period when breast cells are most likely to be affected by carcinogens. When a woman completes her first full pregnancy, further hormonal changes propel these newly produced breast cells through a state of differentiation, a natural maturing process which greatly reduces the risk of future breast cancer.²

An abrupt, premature termination of a first pregnancy by abortion arrests this process before the cancer-reducing evolution of hormone release later in pregnancy can occur, leaving a large population of dangerously-stimulated breast tissue cells in place, greatly raising future cancer risk. On the other hand, "...an early first full-term pregnancy would provide the greatest protection against breast cancer by drastically reducing, early on, the presence of undifferentiated and hence vulnerable breast cells, thereby decreasing the risk of subsequent transformation."³

Animal studies support this model. Russo and Russo exposed two groups of rats to a chemical carcinogen. One group, who mated and carried a first pregnancy to term, developed mammary tumors at a rate of six per cent. The other group,

who mated, became pregnant, then were aborted (via hysterectomy), developed mammary tumors at an incidence of 78 per cent; virgin rats also developed tumors at a high rate, but not as high as those that were aborted.⁴

Evidence of Risk in Humans

In 1994, Dr. Janet Daling, a research epidemiologist at the Fred Hutchison Cancer Institute in Seattle, published a study in the *Journal of the National Cancer Institute* revealing that women who underwent an induced abortion had a 50 per cent greater chance of developing breast cancer than matched control women who had not previously aborted. Importantly, Daling separated out women who had suffered a spontaneous abortion (miscarriage), and found they had no increased risk of breast cancer.⁵

Her findings were not unique. In fact, of fifteen U.S. studies to date, looking specifically at the risk of breast cancer in women with a history of induced abortion, eleven of these studies have shown an increased risk. The first of these, by Pike and colleagues, initially funded by the U.S. National Cancer Institute (NCI) and published in the *British Journal of Cancer*, uncovered a 137 per cent increased risk of breast cancer. They concluded that “a first-trimester abortion...before first full-term pregnancy appears to cause a substantial increase in risk of subsequent breast cancer. Our finding makes biological sense if one considers breast tissue as merely proliferating in early pregnancy; the protective effect of a first full-term pregnancy is then brought about by a combination of cell differentiation and possibly permanently altered hormone levels.”⁶

These studies of American women reinforce earlier and subsequent international investigations that now total 37 epidemiological studies worldwide, of which 23 show a higher risk of breast cancer in women who have chosen abortion. The original report of Segi in 1957 based on Japanese women diagnosed with breast cancer between 1948 and 1952 found a 163 per cent increased risk. A later Japanese investigation of women with breast cancer in Tokushima prefecture found a nearly identical 152 per cent increased risk. Along with two other positive Japanese studies, women who have undergone abortion were found to have an



increased risk of breast cancer in Russia (71 per cent increase), France (32 per cent increase), Greece (51 per cent increase), and the Netherlands (90 per cent increase).⁷

Exposure

Some in the scientific community have maintained that even a 30 per cent increased risk of breast cancer from abortion is quite small compared to, for example, the tenfold increase in lung cancer with smoking. On the other hand, the typical smoker with lung cancer has acquired this risk by smoking a pack of cigarettes a day for anywhere from ten to 40 years, which represents 73,000 to 292,000 cigarettes. And even after thousands of cigarettes, the risk can be partly reversed if a person quits early enough. But a measurable increased risk of breast cancer comes after just one "exposure" to abortion, and abortion is not reversible.

The overall exposure of women to abortion is enormous. Of roughly 1,300,000 abortions in the U.S. each year, over half are performed on women with their first pregnancy. At a baseline rate of development of breast cancer of ten per cent, a 30 per cent increased risk above this could result in 20,000 extra cases of breast cancer per year as these women age through the next few decades. In Eastern Europe, the phenomenon may underlie the recent alarming increase in the incidence of breast cancer in younger women. While the typical breast cancer patient in Western Europe presents in her forties and fifties, a marked increase in breast cancer onset in the late twenties and early thirties has been observed in Lithuanian women, many of whom may have had five or six abortions by their mid-twenties.⁸

Response in North America

Despite intense interest among the public and the medical research community in the possible genetic, dietary, and environmental risk factors for breast cancer, the findings of both North American and international studies linking abortion with breast cancer have generally been ignored by North-American cancer research authorities. The official Web site of the U.S. National Cancer Institute (cancernet.nci.nih.gov) minimizes the abortion-breast cancer link, as do other national cancer institutes, for example in Canada (cancer.ca), and among public health information groups (healthlinkusa.com).

Until recently, authoritative medical reviews of breast cancer risks have not even mentioned induced abortion.⁹ However, the emancipation of medical information on the internet has led to the development of a “fifth estate” of alternative analyses of medical data (abortioncancer.com).

Where a connection between abortion and an increased risk of breast cancer has been discovered, researchers have often seen their findings either minimized or questioned by the medical and research establishments. Before the 1994 publication in the United States of the Daling research, the *Journal of the National Cancer Institute (JNCI)*, stated about earlier studies: “...recently, foes of abortion and some scientists have been pointing to a few studies that suggest that an aborted pregnancy increases the risk for the disease.” When the Daling study was published in the *JNCI*, the journal ran an accompanying editorial that played down Daling's finding of a 50 per cent increased risk of breast cancer attributable to induced abortion among American women.¹⁰ Since Daling's and other research scientists' publication of data linking abortion and breast cancer, the controversy over their findings has been discussed in the mass media, including a newspaper article in *The Wall Street Journal* entitled “The Politics of Breast Cancer”. In this article, John McGinnis noted that “Recently...several respected, supposedly impartial scientific researchers have been brushing aside...evidence of a link between abortion and breast cancer, thus allowing the politics of abortion to discourage at least one area of breast cancer research.”¹¹ In the spring of 2003, the U.S. National Cancer Institute convened a workshop to address the growing controversy, but according to reports, the more than four decades of evidence documenting an abortion-breast cancer link did not lead to a significant revision of NCI's published “fact sheet”.

A Clarifying Meta-analysis

One of the researchers whose work has been most questioned by the cancer establishment is Dr. Joel Brind, a professor of endocrinology at Baruch College, City University of New York. At the same time that Daling was publishing her results, Dr. Brind and his team were sifting through decades of published data on the epidemiology of breast cancer. Using the technique of meta-analysis to look at data from

previous studies, Brind found a significant connection between induced abortion and the later development of breast cancer.

Brind and biostatistician Vern Chinchilli pooled together patients and control subjects from 28 original published reports, establishing stringent and conservative criteria to select data in which exposure to induced abortion could be separated clearly from spontaneous abortion. The overall odds ratio, for any abortion exposure, of the risk of breast cancer was found to be 1.3, a 30 per cent increased risk (where 1.0 represents no increased risk). The study is so statistically powerful that the 95 per cent confidence interval was a tight 1.2 to 1.4 (twenty per cent to 40 per cent increased risk), meaning there is less than a one in twenty likelihood that the increased risk of breast cancer could be anything less than twenty per cent. Statistically, Brind's study is virtually unassailable, yet its publication ignited a storm of controversy.¹² The validity of his finding is gradually being recognized. Dr. Thomas Stuttaford, an eminent medical columnist in Britain, has recently announced a change of mind. Writing in *The Times* (London) he stated, "Breast cancer is diagnosed in 33,000 women in the UK each year; of these, an unusually high proportion had an abortion before eventually starting a family. *Such women are up to four times more likely to develop breast cancer*" [emphasis added].¹³

Effect of Delayed Childbirth

A crucial feature of Brind's study was his careful separation of the independent effects of abortion on a woman's breast cancer risk from the previously-known risk of delaying her first full-term completed pregnancy. Some critics in the medical community assert that this delayed first-birth effect is the only explanation for a claimed increased risk of breast cancer. Brind's study conclusively demonstrates that abortion is an *independent* risk factor in its own right. This conclusion was achieved in two ways: 1) By including studies in which the control group (women without breast cancer) included nulligravid women (women who had never been pregnant); and 2) In studies where some women had given birth, at various ages, a calculation was performed to subtract out the effect of age at first live birth. The result? The independent risk of induced abortion was still significant.

Brind and his colleagues argued that the two effects – delayed childbirth and abortion – are additive. If it is assumed, conservatively, that an average woman’s lifetime risk of breast cancer is ten per cent (one in ten), it is known that an early full-term pregnancy reduces this risk, from ten per cent to about seven per cent. If a young pregnant woman opts instead for an abortion, she relinquishes the benefit of an early completed pregnancy and, in addition, adds the independent 30 per cent increased risk from the abortion, raising her risk from ten per cent to thirteen per cent. Thus the decision to abort her first pregnancy will nearly double her lifetime risk of breast cancer, from seven per cent to thirteen per cent. A second abortion will add further risk, both from the abortion itself and by further delaying the protective effects of a first completed pregnancy.

Despite the statistical power of Brind’s study (or, perhaps, because of it), many in the medical and scientific community were quick to attack his findings. The *New England Journal of Medicine* published a remarkably flawed Danish study which explained away a 44 per cent increased risk of breast cancer in women with a history of abortion as being based on an otherwise unexplained global increase in breast cancer incidence. The JNCI offered a generic criticism of the technique of meta-analysis, stating that “biased studies entered into a meta-analysis produced biased results.”¹⁴

With time, however, the quality of Brind’s study has gradually begun to win grudging acceptance among important sectors of the world medical community. In April 2000, Britain’s Royal College of Obstetricians and Gynecologists (RCOG) published Evidence-based Guideline No. 7: *The Care of Women Requesting Induced Abortion*, which said of two of the most thorough reviews of the abortion-breast cancer literature, one being Brind’s meta-analysis: “These two meta-analyses were independently assessed for the RCOG Group. The assessor concluded that both were carefully conducted reviews and that the Brind paper had no major methodological shortcomings and could not be disregarded.”¹⁵

Even more significant was the inclusion, for the first time, of abortion as a risk factor for breast cancer in a February 2000 review of the subject by Katrina Armstrong and colleagues in the *New England Journal of Medicine*. Although abortion was

downplayed as one of four “risk factors...less consistently associated with breast cancer”, its inclusion in such a short list represents a significant acknowledgement.¹⁶ A 1992 review in the same journal did not mention abortion, despite 45 years of evidence at that point.¹⁷

Recall Bias

One way of explaining a clearly emerging worldwide trend linking abortion with an increased risk of breast cancer, is the concept of recall bias, proposed by Harris and colleagues. These authors postulated that “a woman with cancer is perhaps more likely to remember and report a previous abortion than a healthy control”.¹⁸ If this was true, a falsely elevated apparent risk in breast cancer patients might result. The only support for this notion rests with a set of Swedish data which shows that, rather than non-cancer patients underreporting abortions, several women with cancer seemed to overreport abortions, that is, apparently they declared abortions they never had (based on discordance between a computerized registry and interview data).¹⁹ Few workers in the field accept this concept, which raises questions about the quality of data reporting in that study. Indeed, the Swedish authors of this study eventually retracted their claim.²⁰ In any event, there are now four studies whose design has conclusively ruled out any evidence of recall bias.²¹

The Importance of Identifying Precise Studies

Over two dozen other studies of the association of abortion and breast cancer since 1960 are betrayed by various confounding factors which prevent an examination of uncontaminated data related to induced abortion. The most common error is the failure to separate data from women who have suffered miscarriages (spontaneous abortion) from those who have undergone induced surgical abortion. Spontaneous abortion has long been recognized to offer no increased risk of subsequent breast cancer, and there are clear biological reasons for this. It appears that miscarried pregnancies are doomed from the earliest days after conception by a failure to develop the expected estrogen hormonal surge, thus these women are never exposed to the powerfully high estrogen levels of a healthy pregnancy that is abruptly

terminated by abortion. The low maternal oestradiol surge in spontaneous abortion was first observed by Kunz and Keller in 1976, and has recently been confirmed by Stewart and colleagues. This biological difference between spontaneous and induced abortion underlies the flaw inherent in epidemiological studies that pool data from both groups, and points out the value of a meta-analysis such as the one carried out by Brind, which isolates and studies data from induced abortion alone.²²

A study that mixes spontaneous abortion cases with induced abortion is imprecise, and results in a falsely low apparent risk of subsequent breast cancer. For example, in a 1996 study by Newcombe and colleagues, which garnered prominent attention, the actual increased breast cancer risk of women exposed to induced abortion was 23 per cent, but by mixing in women who had suffered miscarriages, the risk was watered down to twelve per cent.²³ It was this twelve per cent figure that was most quoted in press reports, misleading the public into believing the study showed only a minimal risk of breast cancer from abortion. It is clear that further human studies are needed which separate miscarriages from induced abortions in order to advance our understanding of this important area of women's health research.

Age at First Abortion

Only a few studies have looked at the question of whether a woman who has an abortion at a very young age faces a significantly higher risk of developing breast cancer. In noting that the rate of cell proliferation is likely to be highest in the youngest subjects, Daling and her colleagues have suggested that the greater risk for women younger than eighteen at the time of their first abortion may be real, and should be further investigated.²⁴ One of the most recent studies reconfirmed this point, demonstrating an increased breast cancer risk in women who abort a first pregnancy under age twenty, whereas nulliparous women who abort above age twenty showed no such risk.²⁵

Family History

Although data on this subject are limited, the observations are ominous. In the Daling study of 2000 women, twelve women had a combination of a positive family history of

breast cancer and an abortion before age eighteen. All twelve women went on to develop breast cancer before age 45. The risk in this study was, therefore, incalculably high.

The Medical Establishment

There are serious grounds for believing that induced abortion creates an increased risk of breast cancer, and that this risk may be more significant for women with a positive family history. Research studies in this field have been hampered by the omission of key information, imprecise gathering of data (mixing miscarriages with induced abortions), and the politicized nature of the subject, all of which conspire to create significant barriers to a true understanding of the risk. Many North American researchers who study breast cancer are unwilling to accept induced abortion as a factor worthy of study.

For women considering abortion to have the benefit of a truly informed choice, a major shift in the medical paradigm is required. It has long been observed that the medical establishment is slow to respond to emerging data. The smoking-lung cancer link and the relationship between diet and health are but two examples of concepts which have taken years, even decades, to become accepted. Today they form part of conventional medical wisdom.

Table 2-1

World epidemiological studies on the association of breast cancer with induced abortion.²⁶

To date, twenty-three of thirty-seven studies worldwide have shown an increased risk of breast cancer in women with a history of induced abortion, including twelve of fourteen studies in which statistical significance was reached.

Risk of abortion presented in terms of Odds Ratios (OR), i.e., OR=1.3 represents a 30 per cent increased risk of breast cancer; OR=0.9 represents a ten per cent reduced risk; OR=1.0 represents no particular risk. Variability of the data is represented by the 95 per cent Confidence Intervals (95 per cent CI), means that the true result has a 95 per cent chance of falling within the described range.

Studies whose results are statistically significant are indicated by an asterisk.



par=parous; null=nulliparous; appr=approximate

Study	Year	OR	95 per cent CI
United States			
Pike MC, Henderson BE et al.	1981	2.37	0.85 - 6.93
Brinton LA, Hoover R et al.	1983	1.2	0.6 - 2.3
Rosenberg L, Palmer JR et al.	1988	1.2*	1.0 - 1.6
Howe HL, Senie RT et al.	1989	1.9*	1.2 - 3.0
Moseson M, Koenig KL et al.	1993	1.0	0.7 - 1.4
Laing AE, Demenais FM et al.	1993	3.1*	2.0 - 4.8
Laing AE, Bonney GE et al.	1994	2.44*	1.0 - 6.0
Daling JR, Malone KE et al.	1994	1.36*	1.11 -1.67
White E, Malone KE et al.	1994	-	-
Brinton LA, Daling JR et al.	1995	0.99	0.81 - 1.21
Newcomb PA, Storer BE et al.	1996	1.23*	1.00 - 1.51
Palmer J, Rosenberg L et al.	1997	1.20*	-
Lazovich D, Thompson JA et al.	2000	1.10	0.8 - 1.21
Newcomb PA, Mandelson MT	2000	0.9	0.5 - 1.6
Mahue-Giangreco M, Ursin G et al	2003	1.05 par	0.75 - 1.48
		0.69 null	0.46 - 1.04
Japan			
Segi M, Fukushima I et al.	1957	2.63*	1.85 - 3.75
Watanabe H and Hirayama T et al.	1968	1.51	0.91 - 2.53
Nishiyama F	1982	2.52*	1.99 - 3.20
Hirohata T, Shigematsu T et al.	1985	1.51	0.93 - 2.48
France			
Le M-G, Bachelot A et al.	1984	1.32	0.97 - 1.77
Andrieu M, Clavel F et al.	1994	1.1	0.7 - 1.8
China			
Sanderson M, Shu X-O et al.	2001	0.9	0.7 - 1.2
Ye Z, Gao DL et al.	2003	1.06	0.91 - 1.25
Russia			
Dvoirin VV and Medvedev AB	1978	1.71	0.80 - 3.64
Yugoslavia			
Burany B	1979	0.50	0.33 - 0.74
Slovenia			
Robertson C, Van Den Donk et al.	2001	1.1 appr	-
Denmark			
Ewertz M and Duffy SW	1988	2.91	0.77 - 16.2
England			
Goldacre MJ, Kurina LM et al.	2001	0.83*	0.74 - 0.93
Sweden/Norway			
Harris B-M L, Eklund G et al.	1989	0.9	0.5 - 1.3
Adami H-O, Bergstrom R et al.	1990	-	-
Erlandsson G, Montgomery SM et al.	2000	0.84*	0.72 - 0.99
Italy			
Parazzini F, La Vecchia C et al.	1991	0.92	0.80 - 1.06
La Vecchia C, Negri E et al.	1993	-	-
Tavani A., La Vecchia C et al.	1996	1.3	1.0 - 1.6
Talamini R, Franceschi S et al.	1996	-	-
Greece			
Lipworth L, Katsouyanni K et al.	1995	1.51*	1.24 - 1.84
Netherlands			
Rookus MA and van Leeuwen FE	1995	1.9*	1.2 - 3.1
Meta-Analysis			
Brind J, Chinchilli VM et al.	1996	1.3*	1.2 - 1.4

Key Points Chapter 2

- Abortion increases a woman's overall risk of breast cancer by 30 per cent.
- The risk is likely much higher in women who have a first abortion at a young age, or who have a family history of breast cancer.
- Since 1957, 23 of 37 worldwide studies show an increased breast cancer risk with abortion, a risk as high as 310 per cent.
- Ten of fifteen U.S. studies confirm the abortion-breast cancer link.
- The biological rationale for breast cancer development is related to the woman's unprotected internal exposure to estrogen when a pregnancy is abruptly terminated early in gestation.
- The magnitude of the risk has, until recently, been hidden by studies of poor quality, many of which have failed to separate induced abortion from low-risk spontaneous miscarriage.
- The medical establishment is often slow to accept and respond to emerging data, slowed further, in this case, by the conflicting politics of abortion.

Induced Abortion and Breast Cancer

Notes

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Induced Abortion and Breast Cancer

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Women's Health after Abortion: The Medical and Psychological Evidence

United States

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Induced Abortion and Breast Cancer

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Japan

Segi et al. 1957. See n. 7.

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