Review: spontaneous or induced abortion is not associated with development of breast cancer


What is the association between spontaneous or induced abortion and the development of breast cancer?

**METHODS**

Data sources: Medline, EMBASE/Excerpta Medica, and PubMed (to 2003); review articles; and discussions with colleagues.

Study selection and assessment: published or unpublished epidemiological studies that included >100 women with incident invasive breast cancer in countries with liberal abortion laws; and systematically sought information on every woman’s reproductive history, specifically previous spontaneous and induced abortions.

Outcome: breast cancer.

**MAIN RESULTS**

53 studies (n = 83 000) met the inclusion criteria: 13 prospective cohort and record linkage studies (n = 44 000) and 40 retrospective population or hospital case-control studies (n = 39 000). Only the results of prospective studies are reported here. A nested case-control approach was used to pool individual data from 12 prospective studies by randomly selecting up to 4 controls for each case (matched for age at diagnosis and geographical region). Analyses were stratified by study centre within study, age at diagnosis, parity, and age at birth of first child. Women with breast cancer had a mean of 2.4 births, and their average age was 50 years. Meta-analysis of 12 prospective studies that had data on both spontaneous and induced abortion showed that women who had ≥1 pregnancy ending in spontaneous or induced abortion did not have an increased risk of developing breast cancer (table). Relative risks did not differ according to number or timing of spontaneous or induced abortions.

**CONCLUSION**

Spontaneous or induced abortion is not associated with developing breast cancer.

### Relation between spontaneous or induced abortion and development of breast cancer*

<table>
<thead>
<tr>
<th>Risk factor</th>
<th>Relative risk of breast cancer (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spontaneous abortion</td>
<td>0.98 (0.92 to 1.04)</td>
</tr>
<tr>
<td>Induced abortion</td>
<td>0.93 (0.89 to 0.96)</td>
</tr>
</tbody>
</table>

*Abbreviations defined in glossary.

†Relative risk of breast cancer associated with ≥1 pregnancy ending as an abortion compared with never having had such a pregnancy. Relative risk <1 indicates a reduced risk of breast cancer. Analyses stratified by parity and age at first birth.

For correspondence: Secretariat, Collaborative Group on Hormonal Factors in Breast Cancer, Cancer Research UK Epidemiology Unit, Radcliffe Infirmary, Oxford, UK. epidemiology.unit@cancer.org.uk

Sources of funding: Cancer Research UK and World Health Organisation.

Commentary

The idea that breast cancer risk is increased among women who have had abortions is an important scientific theory that has been sensationalised by both pro-abortion and anti-abortion activists, who are willing to use a very mixed body of evidence for their own purposes. There are plausible biological mechanisms that might explain a relation between both spontaneous and induced abortions and the development of breast cancer. Regardless of the political context, it is important to understand the causes of this disease that might be amenable to behavioural change or public policy initiatives. However, this area of research has been plagued by methodological problems, including the problem of asking women to report induced abortions that may have occurred at a time when such procedures were illegal. Even very small differences in reporting between women with and without breast cancer could have led to the modest increases in risk reported in several studies.

The reanalysis of data from 53 studies of abortion and breast cancer by the Collaborative Group on Hormonal Factors in Breast Cancer gets around many of the methodological shortcomings of earlier studies and meta-analyses by focusing on countries with liberal abortion laws and providing a separate analysis of 13 studies where information on abortions was recorded prospectively. This subgroup of studies included data on 44 000 women and found no effect of either spontaneous or induced abortion on breast cancer risk. This is strong evidence that no causal relation exists of either clinical or public health significance. Interestingly, although the prospective studies showed no effect of induced abortions on breast cancer, the reanalysed data from 39 retrospective studies showed a slightly increased risk—evidence of a systematic recall bias in these studies.

Clinically, this study suggests that women who experience spontaneous abortion and women who are considering induced abortion can be reassured that no sound medical evidence exists that they will be at increased risk of developing breast cancer. With the publication of this methodologically sound and comprehensive reanalysis, it is hoped that resources available for breast cancer research can be redirected towards more fruitful lines of research into preventable causes.

Kate E Pickett, PhD
Department of Health Sciences
University of York
York, UK