

# Breast Cancer, fertility, and pregnancy



*By Dr Justus Appfelstaedt and Dr Fatima Hoosain, specialist surgeons with an interest in breast, thyroid and parathyroid health as well as soft tissue surgical oncology*

In South Africa, about 1 in 6 breast cancers occur in women younger than 40 years. As regular mammographic screening is recommended from the age of 40 upwards, younger female patients' cancer is usually detected clinically (a lump in the breast) and likely to be at a more advanced stage than screen-detected cancer. A cancer diagnosis in a younger woman obviously requires a multitude of conversations, but one that we are increasingly having is that of fertility.

More women are postponing childbearing until they have finished tertiary education, are established in their careers, and have formed stable relationships. For women who have not yet finished family planning, a breast cancer diagnosis has profound implications on their ability to have a child.

While breast cancer itself does not have any known effect on fertility, *the treatment of it* does.

Some of the implications and important factors that women should be aware of when undergoing treatment and wanting to fall pregnant are outlined below.

## 1. Hormones

As many breast cancers are stimulated in their growth by oestrogen, several treatments reduce oestrogen levels or block the effect of oestrogen in target tissues. One of the most common medications prescribed for premenopausal women suppresses ovarian sex hormone production. When on these medications, women are in an artificial menopausal state and therefore infertile. Other treatments modulate the effect oestrogen has on breast tissue by binding to the oestrogen receptor in breast tissue and blocking it. The most prominent in this group – Tamoxifen – does not make women infertile but has strong teratogenic effects, i.e. if women get pregnant while on Tamoxifen, the chance of having a mis formed baby are high and these women should practice effective contraception. This is particularly important, as Tamoxifen is routinely given for 5 years and in many cases for 10 years.

## 2. Chemotherapy

A side effect of chemotherapy is that it decreases ovarian function permanently. This means, that with advancing age, more and more women are permanently postmenopausal after completion of chemotherapy. As a rough rule of thumb, chemotherapy for breast cancer ages ovaries by about 10 years. In practice, this means that almost all women aged 40 and older will experience early menopause after chemotherapy and women before that age will experience decreased fertility.

While chemotherapy is also teratogenic, this only holds true for the first trimester of pregnancy; thereafter it can be given safely. Care must be taken, however, to avoid undergoing chemotherapy near the birth as the risk of post-partum sepsis in chemotherapy is very high.

### 3. Bisphosphonates and Biologicals

For both groups of medication, there is very little information available. It seems that both do not have a significant effect on fertility but must not be given during pregnancy. Bisphosphonates such as Zoledronate have an anti-angiogenic effect (i.e. they prevent formation of new blood vessels). Angiogenesis is understandably an essential process in the intra-uterine growth and development of the baby. Biologicals such as Trastuzumab have significant cardiotoxicity; i.e. make it more difficult for the heart to cope with the increased load during pregnancy.

### 4. Radiotherapy

Radiotherapy is part of many treatment plans for primary breast cancer; it is obviously highly teratogenic and cannot be given during pregnancy; at other times, it is relatively safe and does not influence ovarian function unless the ovaries are in the radiation field such as in radiation for pelvic bone metastases.

### 5. Surgery

Breast surgery does not influence fertility. However, the associated general anaesthetic is known to lead to a spontaneous miscarriage in about 1 in 200 to 300 pregnant women.

As can be seen, all breast cancer treatments aside from surgery have the potential to lead to deformities in the child and miscarriages or significantly reduce fertility. Discussions pre-treatments are vital and fertility management options such as egg or embryo freezing are strongly recommended. If a pregnancy does occur during active treatment, this requires a multi-disciplinary evaluation of mother and baby and very complex decisions regarding further treatment or continuing the pregnancy.

We suggest that every younger woman given a breast cancer diagnosis asks the questions below:

- Could treatment increase the risk of, or cause, infertility? Could treatment make it difficult to become pregnant or carry a pregnancy in the future?
- Are there other recommended cancer treatments that might not cause fertility problems?
- Which fertility option(s) there are?
- What fertility preservation options are available at this hospital? At a fertility clinic?
- Would you recommend a fertility specialist (such as a reproductive endocrinologist) who I could talk with to learn more?
- Is birth control recommended?
- After treatment, what are the chances that my fertility will return? How long might it take for my fertility to return?



---

### Biography - Dr Justus Apffelstaedt

Dr Justus Apffelstaedt is a former Associate Professor of Surgery and Head: Surgical Oncology Service, University of Stellenbosch. Dr Justus Apffelstaedt earned a Medical Degree and a Doctorate in Medicine in Germany, as well as an MMed and FCS(SA) in South Africa and an MBA from Bond University in Australia.

He has represented developing countries on the Breast Surgery International (BSI) council and is a founding member and first chairman of the Breast Interest Group of Southern Africa (BIGOSA).

He is a fellow and life member of the International Union Against Cancer (UICC) Fellows.

He is excellent at translating complex medical terminology into easily understood language and is a proponent of proactive breast health management through extensive dissemination of information to the general public.

His breast service is the only one in Africa to publish peer-reviewed data comparable to international breast practices in breast screening. He is also the author and co-author of several publications in peer-reviewed national and international journals on breast cancer screening and breast health issues.

His current interest and field of practice includes breast health, thyroid, parathyroid and soft tissue tumours.

He has practices in Cape Town, South Africa and Windhoek in Namibia.

### Biography-Dr Fatima Hoosain:

Dr Fatima Hoosain is a specialist surgeon who enjoys all aspects of General Surgery, with a particular interest in breast and thyroid health. This includes surgery for breast, thyroid and soft tissue tumours.

Dr Hoosain graduated with an MBChB from the University of Stellenbosch in 2009, subsequently specialised in General Surgery and qualified with an FCS (SA) and MMed (Surg) in 2019. She has been involved in the publication of several journal articles.

Dr Hoosain is also a member of the Breast Interest Group of South Africa (BIGOSA), the Association of Surgeons of South Africa (ASSA), the Surgical Research Society of South Africa (SRS) and the South African Colorectal Society.