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BREAST DISEASES AND FERTILITY PRESERVATION

ONCOFERTILITY COMMUNICATIONS

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Executive Editor

Dear All,
It's my absolute pleasure to set release our fifth volume of "Oncofertility Communication " which is based on Breast Cancer.

Breast cancer is second most common form of cancer in females. With advancements in screening tools for breast cancer, it is being diagnosed at an earlier age where a female may not have completed her family.

Treatment of breast cancer can lead to premature ovarian failure and premature menopause which can effect female from completing her family. Hence role of preserving fertility is important before start of treatment of breast cancer.

My special thanks to Dr Pappa Dasari for contribution for this volume of such an important aspect of fertility preservation.

Happy Reading!

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INTRODUCTION

Breast development (Mammogenesis) occurs during prenatal period, puberty and pregnancy. The hormones responsible for its proliferation are mainly estrogens, progesterones. Growth hormone has a role and prolactin is important especially during lactation. These hormones act through their specific receptors and through expression of the growth factors such as amphiregulin, epidermal growth factor, (EGF) Insulin like growth factor(IGF-1) and Fibroblast growth factor (FGF). Growth hormone and IGF play major role for breast development during prenatal period, infancy and childhood as evidenced by their gradual increase and peak level during puberty.[1] With the maturation of HPO axis the pituitary produces the FSH and LH which in-turn act on the ovaries to produce estrogen and progesterone which in turn act on the genital tract as well as breast and they promote breast development. Women experience cyclical symptoms related to breast due to the cyclical rhythm of hypothalamo-pituitary ovarian axis and the breast symptoms are usually complained in relation to menstrual cycle.

EFFECTS OF FERTILITY TREATMENTS ON BREAST CANCER RISK

Any drugs that act on the Ovaries or HPO axis also have a profound effect on breast.

It was found that infertile women had high density of breast tissue than the fertile women and the controlled ovarian stimulation (COS) can also result in increased density of the breasts. Though debatable but it has been reported that infertile women undergoing COS may be at increased risk of Breast cancer. The supraphysiological rise of estradiol (10 fold) associated with COS causes increased mitotic activity in mammary epithelium and this can initiate the tumourogenesis. However KARMA study between 2010 -2013 which involved 8963 women with infertility compared mammographic findings between infertile and fertile women and then with those who underwent COS could not find any association of increased cancer risk.[2]

FERTILITY PRESERVATION AND DECISION MAKING

Fertility preservation is a method or a technique to prevent the damage to the gametes of a female or a male during the disease process or treatment process and aims to safeguard or restore ones fertility at a later date once the disease is under control or cured. These include suppression of usage of drugs to suppress HPO-axis, and techniques like Oocyte cryopreservation (either mature or immature eggs), embryo cryopreservation and ovarian tissue cryopreservation in the female and semen cryopreservation and testicular tissue cryopreservation in the male. Preserving Fertility at the right time and if practised with in legal and ethical limits may help the family to get the genetic child when the sufferer loses reproductive organs.

Fertility preservation procedures may be undertaken for benign conditions or malignant conditions and awareness regarding these methods is less among the treating physicians and surgeons and also

among the public. Fertility concerns are less during the disease process and the reasons may be many fold. Some of them are lack of information, patient provider communication, fear of removing the gametes from the body and preserving invitro conditions, after effects of preservation, survival from disease and passing the disease or cancer to the offsprings, delay in instituting the treatment for the disease process, marital status, concern of getting married after suffering from a disease like cancer, additional costs involved in cryopreservation and subsequent ART procedures and success of getting a pregnancy later. The decision making process is very important which depends on various factors especially on provision and timing of Fertility preservation and availability of referrals to fertility clinics.[3] The scope may be improved by providing effective high quality communication, decision making aids, age-appropriate care, psychosocial support and continuum of care after disease process.[4]

ASCO recommends that the Oncologists and Gynaecologists caring for women with cancer should discuss the options of fertility preservation simultaneously at the time of diagnosis of cancer or at high risk for cancer and make an early referral to fertility specialist. It also recommends provision of Psychosocial support in case the woman is in distress. The discussions regarding fertility preservation to be documented.[5]

BENIGN BREAST DISEASES AND FERTILITY PRESERVATION

Benign breast diseases in reproductive aged women.

These are heterogenous group of conditions affecting breast with varied symptoms and most commonly found in 3rd and 4th decade of life though their incidence starts raising from second decade of life. Some of the benign breast lesions may predispose to breast cancer and it is important to consider these. Most of the benign breast diseases are diagnosed clinically and some of them are diagnosed incidentally by screening for breast cancer or on biopsy for mass lesion.

BENIGN BREAST DISEASES[6]

Benign breast diseases are more common than malignant lesions and are commonest in young women. Among 74 women with benign breast lesions diagnosed over one year fibroadenoma (55.4%) and fibrocystic disease (27%) were the commonest. Proliferative lesions without atypia are associated with 1.5 to 2 times risk and these include ductal hyperplasia and fibroadenoma.

Benign breast diseases present as mass lesions with or without pain and the diagnosis is established after an USG evaluation or MRI evaluation and after FNAC or Biopsy.

Identification of high risk women for breast cancer and counselling for Fertility preservation:
The histopathological lesions associated with breast cancer without any family history of breast cancer are shown in Table 1.

Table 1 : Various benign breast diseases and relative risk of breast cancer in benign breast lesions by Histopathology[6]

S. No	Histopathologic diagnosis	Relative risk
1	Non Proliferative lesions	1
	Cysts,	
	Mild hyperplasia of the usual type	
	Columnar cell change	
2.	Proloferative lesions without atypia	1.3 - 1.9
	Sclerosing adenosis	
	Moderate or florid ductal hyperplasia of the usual type	
	Radial Scar	
	Intraductal Papilloma	
	Fibroadenoma	
3	Atypical Hyperplasia	3.9 - 13
	Atypical ductal hyperplasia	
	Atypical lobular hyperplasia	

Developmental lesions associated with breast cancer:

1. Hypoplasia of breast: is seen in congenital adrenal hyperplasia, turners syndrome, ulnar mammary syndrome and Polands syndrome. Polands syndrome and Mammry ulnar syndrome are reported to be associated with increased risk of breast cancer.
2. Ectopic Breast lesions and polymastia: These occur most commonly along the milk line but can also occur elsewhere in the body like thigh, knee, face neck etc and they respond to hormonal changes similar to normal breast and are predisposed to breast cancer though rare.

Acquired lesions:

1. Fibrocystic Changes: The most common benign breast disease usally occurs in the age group of 20-50 years and is affected by hormonal changes. These are classified as Non-proliferative lesions and Proliferative lesions without atypia and with atypia. Proliferative lesions without atypia are associated with 1.5 to 2 times risk of those who donot have and include those ductal hyperplasia and fibro adenoma. Proliferative lesions with atypia are atypical ductal hyperplasia and atypical lobular hyperplasia and these were reported to have 4 times the risk of developing invasive breast cancer than the average risk.

Table 2. The age specific risk of developing breast cancer: American Cancer Society 2017[8]

S. No	Current Age	10 Year Probability	Or 1 in
1	20	0.1%	1,567
2	30	0.5%	220
3	40	1.5%	68
4	50	2.3%	43
5	60	3.4%	29
6	70	3.9%	25
	Lifetime risk	12.4%	8

Women seeking fertility treatments should be made aware of the life time risk of breast cancer as well as age specific risk of breast cancer apart from risk based on family history.

Family history of breast cancer in one first degree relative increases the risk by 2 fold and 3 to 4 times if 2 or more first degree relatives are affected.[9] The risk is higherif the relatives were affected at younger age and when both breasts were involved. Family history of breast, Ovarian tubal and peritoneal cancer increases the risk further. In BRCA 1 and 2 mutations carriers the risk is 70%.

Other factors to be explained as high risk are:
Early menarche, Obesity, alcohol consumption and recent use of oral contraceptives[8]
Of all the risk factors age is the strongest risk factor. It has reported that women with less than 35 years are found to have high incidence of triple negative cancer which is more lethal and also familial type and also more prone to recurences.[10]

Management of infertility in women at risk for Breast Cancer Employing safe

Ovulation induction protocols to decrease the risk of breast cancer
Chemoprevention with tamoxifen reduces the breast cancer risk by 38% and hence tamoxifen should be incorporated in ovulation induction protocols in women at risk of breast cancer.[11,12]

- Tamoxifen protocols reported to cause ovulation in CC resistance women and a pregnancy rate of 23 % with 40 mg and 32 % with 80 mg given from day 5 to 9 of the cycle was acheived.[13]
- *Aromatose inhibitors like leterozole are recommended for ovulation induction in estrogen modulated conditions.(ACOG).*[14]

Leterozole given at a dose of 2.5 mg daily from day 3-7 with low dose FSH75 IU on Day 3 and 8 resulted in low peak E2 levels in addition to good success rate and low cost when compared to GnRH antagonist–FSH protocol.[15] Protocols using Gonadotropins like Chronic low dose or sequential protocols may also be used with or without IUI.

Affects of drugs used for Fertility treatment on Breast:
Estrogens and Progestins exert direct effect on breast and though they act synergistically there is a differential response of the alveolar and ductal system. When Breast tumour tissue was exposed to a combination of Estradiol and Progesterone, cell distribution of progesterone receptors resembles that of luteal phase of normal menstrual menstrual cycle. When Estrogens are administered in supraphysiological levels, then the changes are like that of fibrocystic disease of breast. Benign breast disease can be a precursor of breast cancer hence one should be careful while treating women with minipills and the estradiol levels to be kept between 50-120 pg/ml. However when progesterone is administered its anti-estrogenic activity is mediated through 17 beta hydroxysteroid dehydrogenase which brings about a reduction in estradiol receptors in tissues and also promotes estrogen metabolism.[16] Some studies have reported an increased risk of breast cancer when more than 12 cycles of clomiphene citrate was used for ovulation induction.[17] Recent studies have not found any increased risk of breast cancer in women who underwent invitrofertilisation.[18]

BREAST CANCER AND FERTILITY PRESERVATION

Breast Cancer estimates needing Fertility :
Breast cancer is the most common cancer among women and 7% of women less than 40 years and 11% less than 45 years suffer from it and more than 50% live for 20 years or more after undergoing therapy. The annual estimates of breast cancer survivors in US who intend to have child were 9569 and out of which 58 were between 15-24 years of age, 347 were between 25-29 years of age, 1106 were between 30-34 years of age, 2599 were between 35-39 years of age and 5 459 were between 40-44 years of age.[19]

Why Fertility preservation is necessary for women with breast cancer management

- Surgical therapy i.e, mastectomy causes lot of stress and psychological morbidity and impairs fertility through hypothalamopituitary dysfinction which causes anovulation and amenorrhea.
- Chemotherapy employed affects the ovarian cortex and decreases the ovarian reserve.
- Delay in childbearing contributes to age related decline of Ovarian reserve.
- Of all the breast cancers, 12% occur in women between age of 20-34 years,15% occur below the age of 45 years and 25% occur before menopause.
- There is a rise of 0.5% per year in the incidence of breast cancer with 1.4% decrease in mortality.[8]
- Early diagnosis of breast cancer and its effective management leaving young women desiring fertility after cancer therapy.

Counselling: Therapy for breast cancer and fertility preservation options
Therapy for breast cancer depends on the stage of the disease and both chemotherapy and radiotherapy can affect ovarian function.

Fertility preservation is to be offered for young nulliparous or any women desiring to have children after

a counselling process. Involvement of partner/husband/parents should be considered for informed decision.

The main issues to be discussed are the survival rate after therapy for cancer, recurrencerates, importance of compliance to therapy, effects of chemotherapy and radiotherapy on ovarian function and the options for preserving fertility such as oocyte /embryo cryopreservation and Ovarian cortex cryopreservation and the success rates of ART. The effect of drugs used for Ovarian hyperstimulation and side effect of ovarian hyperstimulation and yield of oocytes and fertilisation rates and vitrification and recovery rates.

Timing of embryo transfer after cure of cancer and the fear of congenital malformations ,recurrence of cancer and myths of transmission of breast cancer to the offspring are to wiped off.

- ***Counselling to be undertaken by a multi disciplenary team consisting of Surgical , Medical and or Radiation Oncologists and Fertlity specialist***

Staging of breast cancer may be explained in a simplified manner as per SEER summary staging (Surviellance, Epidemiology ad End Results).[8]

Insitu Stage: This refers to the presence of abnormal cells that have not invaded nearby tissues (Stage 0 of TNM Staging)—Survival 100%.
Local Stage: Cancer confied to breast (Stage I and II) ---survival 99%.
Regional Stage: Cancer spread to surrounding tissues of breast and or nearby lymphnodes (Stage II and III)—85% survival.
Distant Metastasis: Cancer has spread to distant organs or lymphnodes above the collarbone (Stage IIIc and IV)---27% Survival.

Table 3: Stages of Breast Cancer and 5 Year survival rates.[8,20]

Stage of Breast Cancer	Survival rates
Stage 0	100%
Stage I	100%
Stage II	98-100%
Stage III	72%
Stage IV	12-20%

Otherimportant factors that are taken in to consideration while counselling are age of the patient and Metastatic disease, Metastatic breast cancer (MBC). The median survival rate of women diagnosed with MBG is gradually increasing over the years , a 17 percent increase between 2000- to 2010 and the projected increase was 31 percent between 2010 to 2020 One third of women with MBC have lived 5 years or more. The overall survival rate was 90.7% between 2008 and 2013 in women less than 50 years of age.[21]

Compared to older women young women were reported to suffer from more aggressive breast cancer and many women less than 40 years of age are presenting with MBC. The evidence for this is accumulating that the biological behaviour of the tumour is different in Younger women.

Table 4: 5 year survival with respect to age:

Age group in years	5 Year survival rate
20-34	99%
35-44	95%
45-54	76%
55-64	68%

Chemotherapeutic regimensused to treat breast cancerand their toxicity and return of fertility

It is imporatant to discuss the effects of chemotherapy on fertility.Chemotherapy causes depletion of primordial follicles in a dose dependent manner, fertility can be impaired depending on type and dosage of chemotherapy . Depletion of primordial follicles can in turn impair the mean age of menopause.[23] Amennorhea is 30-40% in women less than 40 years when cyclophosphamide, methotrexate and 5FU were employed where as it is only 13.5% when Anthracycline , Cyclophosphamide and Paclitaxel was used.[24]

Table 5. Risk of permanent amenorrhea or Infrtility with chemotherapeutic regimens[25]

Risk	Chemotherapy Schedule
High risk >80%	External radiotherapy that includes the pelvic region CMF, CEF, CAF x 6 cycles. Women > 40 years old
Intermediate risk	CMF, CAF,CEF for 6 cycles in women 30-39 years old
	AC For 4 cycles in women >40 years old
Low risk<20^	CMF, CEF, CAF x 6 cycles in women < 30 years old
	AC x 4 in women < 40 years old
Very low risk	Vincristine
	Methotrexate
	Fluorouracil
Unknown risk	Taxanes
	Oxaliplatin
	Irinotecan
	Monoclonal Antibodies (trastuzumab, bevacizumab and
	cetuximab)
	Tyrosine-Kinase Inhibitors (ertolinib, imatinib)

(CMF: cyclophosphamide, methotrexate and fluorouracil
CEF: cyclophosphamide, epirubicin, fluorouracil
CAF: cyclophosphamide, doxorubicin, fluorouracil
AC -Doxorubicin and Cyclophosphamide

Double standard breaks in DNA are the most lethal forms of insult on human genome and Cyclophosphamide and doxorubicin cause DNA damage,Cyclophosphamide to a greater extent than Doxorubicin. Both drugs cause apoptosis and cell death of primordial follicles[26]

Ovarian stimulation in patients undergoing fertility preservation:
Ovarian reserve and as well as Ovarian response to ovarian hyperstimulation is less in women with breast cancer especially when they are BRCA carriers.

Ovarian stimulation may have deleterious effect on tumour progression because of the high estradiol levels due to gonadotropins. This is true especially for estrogen dependent tumours.There is an association between exogenous estrogen and breast cancer development and progression. Aromatase inhibitors like leterozole can overcome this. The peak of estradiol in the protocols of ovarian stimulation with tamoxifen or with letrozole is lower than the levels achieved in a natural cycle; around 300–350 pg/ml[27]

A prospective study used tamoxifen alone at a dose of 60 mg or in combination with low dose FSH or Leterozole 5mg and low dose FSH in 60 women with breast cancer. The study concluded that the embryo yield was comparable but leterozole FSH combination was preferable because of low peak E2 levels associated with this protocol.[28]

Co-administration of Leterozole along with gonadotropins throughout the antagonist cycle resulted in a significantly low E2 levels without compromising the IVF outcomes.[29] In poor responders Leterozole +GnRH antagonist stimulation did not result in better outcomes than GnRH antagonist alone.[30]

The most widely used protocol to stimulate patients with breast cancer is the oral administration of letrozole 5 mg from day 2–3 of the cycle, in conditions of ovarian quiescence [follicular stimulating hormone (FSH) < 13 IU/L/E2 < 60 pg/ml]. After 2 days of treatment with letrozole, a variable dose of recombinant FSH (rFSH) between 150 and 300 IU/day is added. When the concentration of serum estradiolexceeds 250 pg/ml or the follicles reach a size greater than 14 mm in diameter, administration of GnRH antagonists is started to avoid the premature peak of LH. Follicular growth is monitored until at least two of the follicles reach 18-20 mm in diameter and at that momentovulation is triggered with the agonists of GnRH[25]

Neoadjuvant Chemotherapy:
The main worry in accepting fertility preservasation is the possible delay in start of chemotherapy required for ovarian hyperstimlation and oocyte retrieval. In California Cancer registry the median time from diagnosis to neoadjuvant chemotherapy was 3-4 weeks and in ASCO meeting it was said to be 5weeks. In California cancer registry the data did not show any decreased survival rates when the time duration from diagnosis to start of neoadjuvant chemotherapy was 6weeks. In 2016 ASCO meeting it was stated that there was a decrease in survival rate when there was adelay of more than 9 weeks.

COS takes about 10 days and waiting for spontaneous menstruation delays the time to start chemotherapy.The preferred Protocol is random start protocol.This is initiated as and when the patient presents. [31,32]

At the time of diagnosis if there is a follicle of more than 18 mm it can be aspirated and Oocyte cryopreservation or embryo cryopreservation can be considered.

Late Follicular Phase Start Protocol: If the follicular size is < 18 mm follicular stat protocol is initiated with Leterozole and FSH combination and antagonist is administered for 5 days. ***(Fig.1)***

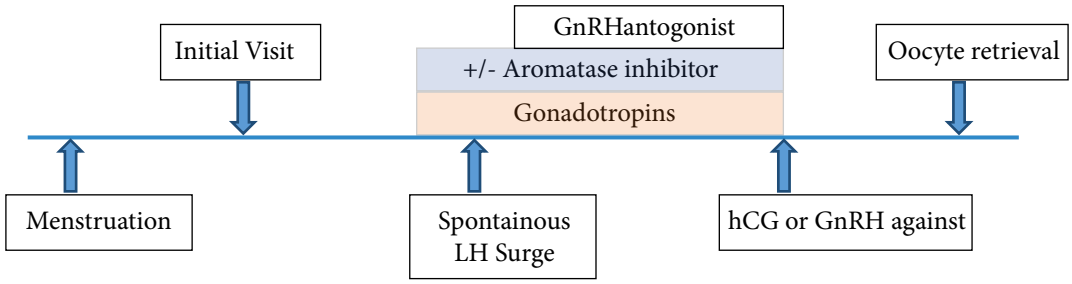


Fig 1. Random Start Protocol; Late Follicular Start

Luteal Phase Start Protocol: If the follicle has already ruptured and the patient is in luteal phase, Gonadotrophins ,aromatase inhibitors can be started and GnRH antagonist is administered ***(Fig.2)***

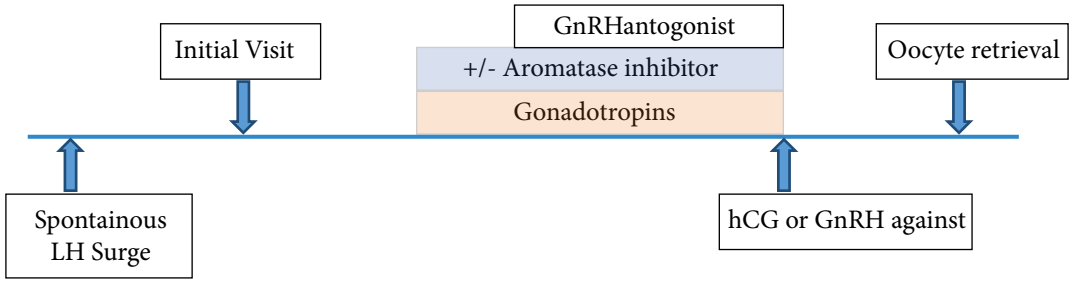


Fig 2. Random Start Protocol; Luteal Phase Start Protocol

If the patient is in mid luteal phase GnRH antagonist like Cetrorelix 3 mg is given and when once withdrawal bleeding is ensured,Gonadotropins are administered from day 2 and antagonist is administered when follicles are 12 to 14 mm.[33]

Adjuvant Chemotherapy and Fertility preservation:
Adjuvant chemotherapy for early breast cancer reduces the risk of recurrence by 35% and death by 27% inyoung women and it is appropriate in ER negative.[34]

We do have 6 weektime between Surgery and starting chemotherapy and 2 cycles of Ovarian stimulation can be undertaken.

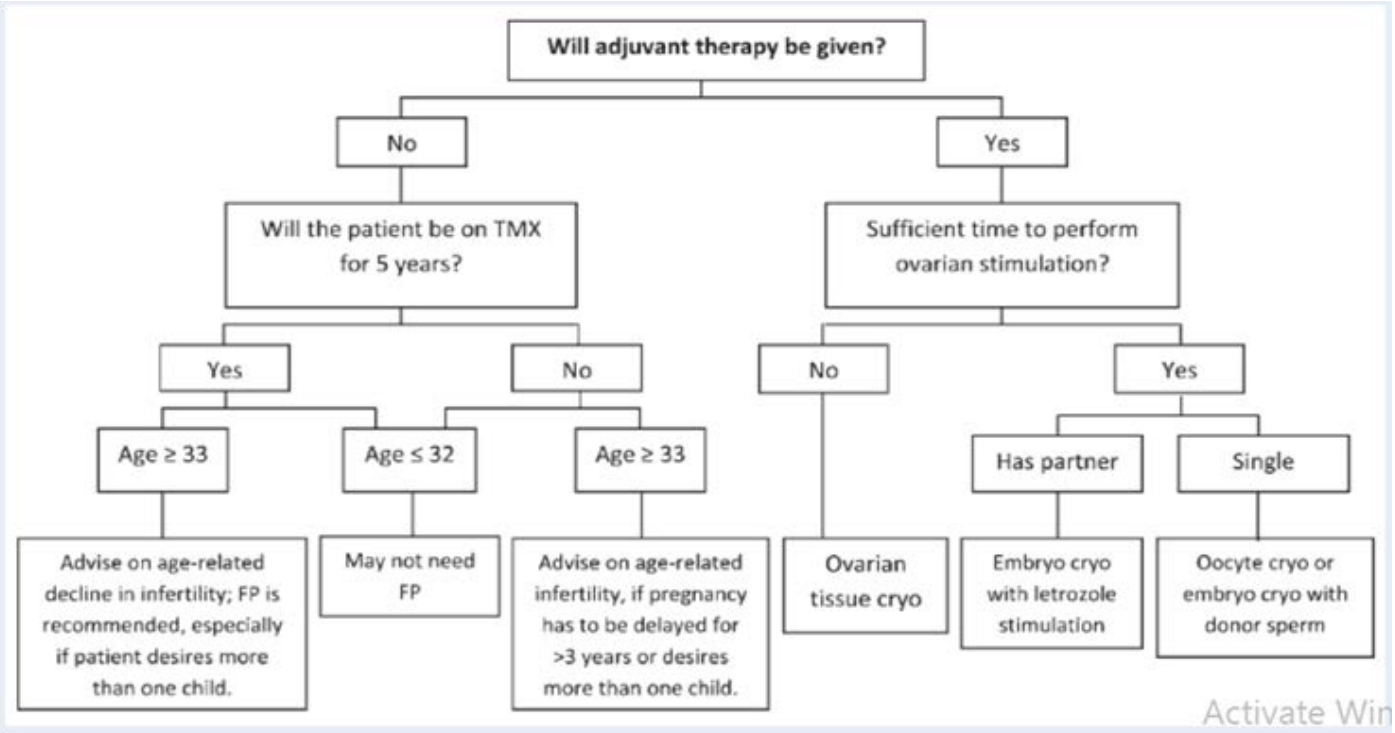
Table 6: Chemotherapy regimens for adjuvant chemotherapy and their impact on fertility[35]

Chemotherapy Regeimen	Risk of amenorrhea or infertility	
	Age ≤ 35 years	Age > 35 years
CMF	4-40%	80-100%
CEF	47%	80-100%
CAF	No data	30%
AC	13.9%	68,2%
AC-T	9-13%	65-67%
AC-TH	0-14%	56-67%

When there is no time to undertake the standard fertility preservation methods Ovarian suppression with GnRH agonist to be considered. GnRH agonist administration prevents the natural rise of FSH during the cycle and thus the follicular maturation.A recent study employing GnRHa showed decrease in **chemotherapy induced POF when given along with chemotherapy and impove fertility rates in women with breast cancer.**[36] However other studies did not show any benefit of GnRH a suppression.[37.,38]

The advice on choice of Fertility preservation can be as in the algorithm below..

Algorithm for Fertility preservation proposed by Semmenzer and Oktay 200639



Donor oocytes and Surrogacy:

To be advised in women who are at high risk for recurrence and require life long tamoxifen or aromatase inhibitors. Success rates of 60 % may be expected with donar egg.[39]

Failure to advice Fertility Preservation in women with breast Cancer:
Failure to advice fertility preservation techniques prior to chemotherapy or radiotherapy in young women with breast cancer may lead to failure to conceive even with oocyte donation even though the woman may survive for more than 5 years. Hence chemoradiation can have deleterious affects not only on the ovary but on the uterus as well even though incidence and damage is very less as compared to effect on ovaries.[41]

A qualitative study to assess the conflicts faced by women with breast cancer has surfaced the fact that more attention is to be paid on preserving reproductive capacity before starting the treatment for breast cancer and this solves the biggest conflicts in the life of women with breast cancer.[42]

Pregnancy outcome after breast cancer therapy
Though fertility is decreased after breast cancer therapy, pregnancy out come is not affected in the form of miscarriage, pregnancy loss or increased congenital malformations.Pregnancy after breast cancer does not increase the recurrence rates or overall survival rates. Australian population study found survival rates better at 5 and 10 years in women who had subsequent pregnancy. It is adviced to delay pregnancy for 2 years after therapy as most recurrences are reported to occur with in this period. But once the adjuvant therapy is completed they can attempt pregnancy as more than 50 % conceived with in 2 years.[43]

Pregnancy after Breast cancer does not increase recurrence and it can be protective. A meta-analysis reported 41% risk reduction for death in those who had subsequent pregnancy after breast cancer when compared to those who did not.[44]

The problem of breastfeeding after surgery for breast cancer is another fear and women can be informed that they can breast feed from the contralateral breast..

MALE BREAST CANCER AND FERTILITY PRESERVATION

Male breast cancer is 1/100th of females. It contributes to 2.6% of all cancers under 40 years of age. It accounts for only 1% of all breast cancers world wide but it has been reported to be on rise for the past 2 decades. The overall survival of males<40 years with breast cancer was better than those more than 40 years and discussing fertility preservation options is an important issue. It has been found that young men with breast cancer are more likely to be hormone receptor positive.[45]

The risk factors for male breast Cancer:
These are more commonly BRCA 2 gene mutation than BRCA 1 mutation,[46,47] Kleinfelters Syndrome, Cowdens disease[48] Obesity, testicular tauma, Gynaecomastia, Cirrhosis, radiation exposure and estrogen therapy.[49]

Men diagnosed with breast cancer should be informed regarding the treatment plan of breast cancer being based on the stage and also the affects of chemotherapy and radiotherapy which are gonadotoxic and the survival rates which are not different from women as per the stage.
The management of Male breast cancer includes Surgery in the form of Mastectomy with sentinel node biopsy or Hormone therapy. Adjuvant Chemotherapy or Neoadjuvant therapy are considered based on stage of the disease. Need for radiotherapy, Targeted therapy, management of recurrences and long term follow up to be discussed.

Fertility preservation options:
The discussion and options should be explained at the time of diagnosis and should be carried out prior to breast cancer treatment and this advice should be documented.

Semen cryopreservation is the recommended choice but if partner is available embryo cryopreservation can also be advised.

Testicular tissue cryopreservation to be adviced in cases of metastatic breast cancer and in adolescents with breast cancer.

Semen cryopreservation is a simple procedure and once the decision is made it can be carried out at once and it does not delay the treatment process for breast cancer. It can be collected easily or by stimulation by vibrator or electroejaculation. Sometimes it can be extracted surgically.[50] All the legal and ethical principles to be followed as applicable to Cryopreservation.

KEY MESSAGES

- The incidence of breast diseases and breast cancer is on rising trend especially in younger age population.
- It is important to identify women at risk for breast cancer even in the benign breast disease group and use safe ovulation induction portocols to minimise the rise of estradiol.
- Counselling prior to breast cancer therapy is mandatory to document fertility issues discussed and advice appropriate Fertility preservation methods. Affects of chemotherapy, Radiotherapy and survival rates and pregnancy after the disease process need detailed discussions and social support system should also be in place and to be offered.
- Embryo cryopreservation is the first option for people with partner and otherwise oocyte and sperm cryopreservation are appropriate.
- Random start protocols do not delay in starting neoadjuvant chemotherapy.
- Donor egg and surrogacy programmes are the last options in late stages and when recurrence rates are expected to be high.
- Male breast cancer though not as common as female breast cancer, information regarding affects of chemotherapy and radiotherapy need to be discussed and the options of Fertility preservation to be offered.

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Organised by

INDIAN FERTILITY SOCIETY

15th Annual Congress of Indian Fertility Society

FERTIVISION 2019

6-8 December

The Leela Ambience Hotel, Gurugram
New Delhi | India

Theme: Beyond Tomorrow

First Announcement

www.fertivision2019.com

Invitation

Dear Friends, Welcome to *FERTIVISION 2019*

On behalf of the Indian Fertility Society (IFS), we are extremely pleased to announce and cordially invite you to the much awaited academic event – the **15th National Annual Conference - Fertivision 2019**, to be held on **6th, 7th & 8th December 2019** at Hotel **The Leela Ambience, Gurugram, New Delhi / NCR, India**.

This conference is aimed to provide the most comprehensive academic platform in the field of Infertility and Assisted Reproductive Technology (ART)" befitting the theme of the meeting "Beyond Tomorrow"

Renowned and leading expert faculty from around the world would gather and deliver talks in our cutting edge scientific program which will not only enrich your current knowledge and clear all doubts faced in day-to-day clinical practice, but will also enlighten you about the latest innovations and ongoing research.

A large number of renowned international faculties have already confirmed their participations till date. The pre-congress workshops on 6th December are specially designed for informal in-depth training with hands on sessions on simulators and live, where ever feasible. There will be 4 simultaneous running streams on 7th & 8th December covering a wide variety of topics, enabling you to choose the deliberations specific to your area of interest and clinical practice. We are having a dedicated hall for the esteemed embryologist friends.

The best oral and poster presenters under various categories and the quiz winners will be honored with special awards and prizes. Do join us in large numbers and update your knowledge with most updated current standards in clinical practice, as well as get inspired to innovate further to overcome remaining enigmatic issues!

The three days of scientific program will encompass didactic lectures, keynote presentations, panel discussions and orations. There will be 9 Pre-conference workshops based on Ovulation Induction, Ultrasound, Andrology, Embryology, Hands on Embryo Transfer, Ovum Pickup and PGS and more. These workshops will be in addition to the special state of the art workshops by the faculty from IFFS and ESHRE. We expect delegates across India, Sri lanka, Bangladesh, Nepal, Middle - East Countries and African Nations and the arrangements are being made to accommodate more than 2500 delegates.

The exhibition area will be one of the highlights of the conference. Exhibiting provides tremendous benefits to both participating industry and the society. Tea, coffee and lunch will be served confluent with the trade area to allow optimal interaction between the trade companies and delegates during beverage and lunch breaks.

We invite you to participate in the Fertivision 2019 and exchange your expertise with more than 2500 specialists in the field of Assisted Reproduction.

We look forward to your active participation and suggestions for successful conduct of the conference.

With Our Best Regards

Dr. M Gouri Devi
Organizing Chairperson
FERTIVISION 2019

Dr. Pankaj Talwar
Organizing Secretary
FERTIVISION 2019

and All Executive Committee of Current IFS team

Scientific Highlights

1. Fertivision 2019 Would be One of the Most Comprehensive Coverage on "Best Practices, Innovations and Progress in the Field of Infertility and ART" Being Conducted in India.
2. We Promise You Cutting Edge Academic Deliberations Delivered by Leading Renowned Expert Faculty from Around the world befitting the Theme of the Meeting "Beyond tomorrow"
3. In the Conference There Would Be 4 Simultaneous Halls Running with Legendary Faculty in Lead Interacting With You, Covering a Wide Variety of Topics, and Enabling You to Tailor the Program Especially to Your Area of Interest and Clinical Practice. We are Having a Dedicated Hall for the Esteemed Embryologist Friends.
4. Along With the Main Conference We are Having 9 Pre -Congress Workshops on 6th Dec 2019 Pertaining to the Burning Issue in ART.
5. We Welcome You and Offer You This Opportunity to Showcase Your Research Work on a Prestigious National Platform and Enhance Your CV.
6. Scientific Quiz for sharp talented young minds with primary rounds conducted by various IFS Chapters across the country and abroad
7. Several Prizes and Awards for Best Paper, Poster and Quiz winners
8. Enjoy the Evenings With Exciting Social and Cultural Program
9. Sightseeing Tours in and Around Delhi Organized Professionally by Leading Event Management Teams.
10. A Great Opportunity for All of Us to Amalgamate the Most Updated Current Standards in Our Clinical Practice and Look Beyond Tomorrow

Limited Seats

Choose from 10 Pre Conference Workshops | 6 December

1)	*IFFS Workshop on Do's and Don'ts in Ovarian Stimulation*
2)	*Reproductive Surgery*
3)	*Ultrasonography Imaging In Infertility*
4)	*Andrology & Semenology*
5)	*Ovum Pickup and Embryo Transfer (With Simulators)*
6)	*Cryobiology*
7)	*Total Quality Management*
	Pre Lunch Workshop (0900 - 1300 Hrs)
8 A)	*Holistic Medicine and Patient Counselling*
	Post Lunch Workshop (1400 - 1700 Hrs)
8 B)	*Publish or Perish*
9)	*PGT and Genomics*

Early Bird Reg. Ends 1st September

Registration Details

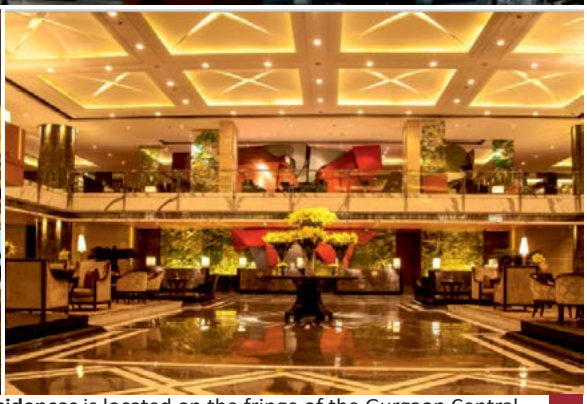
Category	Early Bird Fees Till 1st September 2019		Regular Fees Till 15th October 2019		Onspot	
IFS Member	INR 10500		INR 12500		INR 14500	
Non IFS Member	INR 12500		INR 14500		INR 16500	
Conference Registration plus Life Time IFS Membership	Embryologist	INR 14500	Embryologist	INR 16500	Embryologist	INR 18500
	Gynaecologist	INR 15500	Gynaecologist	INR 17500	Gynaecologist	INR 19500
PG Students (No Dinner)	INR 6000		INR 7000		INR 8000	
Accompanying Person	INR 10500		INR 11500		INR 12500	
Foreign Delegates	$ 350		$ 400		$ 500	

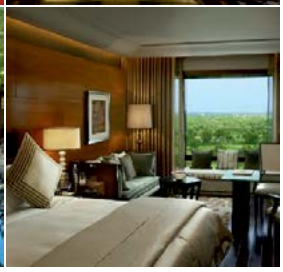
Inclusive of 18% GST

Register at www.fertivision2019.com

Venue:

The Leela Ambience Hotel, Gurugram
New Delhi | India





The Leela Ambience Hotel & Residences is located on the fringe of the Gurgaon Central Business District, fifteen minutes from Delhi's International Airport and thirty minutes from Central Delhi.
In addition to 322 contemporary and world class five star deluxe rooms and suites, The Leela Ambience Gurgaon also features 90 residencies (with one, two and three bedroom) fully serviced luxury Residences.

Multi Award winning restaurants include; Multi-cuisine all day dining– Spectra, Italian – Zanotta, cuicina Italiana, North Indian – Diya and whisky bar- Rubicon. The "Royal Club" is located on the 6th floor of the Hotel. The Royal Club features are 24 hour butler service, with evening cocktails and a Boardroom.
The 27,000 square feet, beautifully finished convention facilities, meeting and boardrooms were recently awarded the prestigious 5-Star deluxe "Best Luxury Hotel and Conference Centre – India".

This venue has been chosen with a lot of care and thought keeping in mind the comfort and also enjoyment of the delegates when visiting Delhi.

Conference Secretariat

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15th Annual Congress of Indian Fertility Society

FERTIVISION 2019

6-8 December The Leela Ambience Hotel Gurugram, New Delhi, NCR | India

Organised by IFS Indian Fertility Society

Registration Form

Title Prof/ Dr/ Mr/ Ms _____ Gender : Male ☐ Female ☐

First Name _____ Last Name _____

Institution _____ IFS Member No. _____

Correspondence Address _____

_____

City _____ Pin Code _____ State _____

Mobile No. _____ Email _____

(All the above fields are mandatory)

Limited Seats

Choose from 9 Pre Conference Workshops | 6 December — Choose Any 1 Workshop

1)	☐	*IFFS Workshop on Do's and Don'ts in Ovarian Stimulation*	
2)	☐	*Reproductive Surgery*	
3)	☐	*Ultrasonography Imaging In Infertility*	
4)	☐	*Andrology & Semenology*	
5)	☐	*Ovum Pickup and Embryo Transfer (With Simulators)*	
6)	☐	*Cryobiology*	
7)	☐	*Total Quality Management*	
		Pre Lunch Workshop (0900 - 1300 Hrs)	
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8 B)	☐	*Publish or Perish*	
9)	☐	*PGT and Genomics*	

Registration Fees

Inclusive of 18% GST

Please tick the appropriate checkbox

Category	Early Bird Fees Till 1st September 2019	Regular Fees Till 15th October	Onspot
IFS Member	INR 10500 ☐	INR 12500 ☐	INR 14500 ☐
Non IFS Member	INR 12500 ☐	INR 14500 ☐	INR 16500 ☐
Conference Registration plus Life Time IFS Membership	Embryologist INR 14500 ☐ / Gynaecologist INR 15500 ☐	Embryologist INR 16500 ☐ / Gynaecologist INR 17500 ☐	Embryologist INR 18500 ☐ / Gynaecologist INR 19500 ☐
PG Students (No Dinner)	INR 6000 ☐	INR 7000 ☐	INR 8000 ☐
Accompanying Person	INR 10500 ☐	INR 11500 ☐	INR 12500 ☐
Foreign Delegates	$ 350 ☐	$ 400 ☐	$ 500 ☐

Inclusive of 18% GST

Conference Registration Fees Includes

- 18 Hrs of World Class Academic Program with Access to Best & Brightest International & National Faculty
- 3 Lunches and 6 Tea / Coffee Served During the Conference on 6, 7 & 8 December
- Banquet Dinner on 7 December
- Conference Kit (Including Bag, Badge, Notepad, Certificate & Pen)
- 1 Pre Conference Workshop
- Accompanying Person is Entitled for Food Coupons Only

Mode of Payment

1. **Bank Draft/Cheque - To be made in favor of "INDIAN FERTILITY SOCIETY"**
2. **Bank Transfer Details**
   IFS Account Name : Indian Fertility Society
   Account Number: 50562010067180
   IFSC Code : ORBC0100179
   Bank Name: Oriental Bank of Commerce
   Branch: Connaught place, New Delhi- 110001

Cancellation Policy

- Cancellation till 31st October, 2019 – 50% Refund.
- Cancellation from 1st November, 2019 – No Refund.
- All refunds will be made after the congress.

Cheque / Draft No. _____ **Total Amount** _____

Note: Kindly email us bank deposit slip / UTR number once you made the payment for our record.
Payment confirmation will take 7-10 working days post deposit of cheque, DD or RTGS

3. To Register online log on to www.fertivision2019.com

Congress Manager's

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New Delhi – 110017
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Email: fertivision2019@gmail.com

Please send Registration Form along with cheque / draft at the following address

www.fertivision2019.com

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