Gyn Care for Women with Breast Cancer

Mindy Goldman, MD
Clinical Professor
Dept. of Ob/Gyn and Reproductive Sciences
Director, Women’s Cancer Care Program,
UCSF Breast Care Center
and Women’s Health
University of California, San Francisco

Case

• 34 yr. G2P2 presents with a palpable breast mass – you send her for a FNA which returns positive for carcinoma. She has no other medical history and no family history of breast cancer. She undergoes a lumpectomy for a 1.8 cm infiltrating ductal carcinoma that is ER+/PR+ and Her2Neu negative. She receives adjuvant chemotherapy with AC followed by Taxol, then radiation, and is placed on Tamoxifen. Her menses stop with chemotherapy and return 6 mos later.

Questions

• 1. Is she at risk for endometrial cancer by taking Tamoxifen?

• 2. Will Tamoxifen affect her menstrual cycles?

• 3. Would you recommend routine ultrasound surveillance?

Breast Cancer Epidemiology-

• Most common invasive cancer in US women

• 232,340 new cases invasive Breast ca in US in 2013

• Median age of diagnosis is 61

• 12% diagnosed in reproductive years (ages 20-44)

• More than 25,000 cases per yr in California
Breast Cancer Epidemiology

- Lifetime risk 1 in 8 at age 85
- 2.0 million women living in US with history of Breast Cancer
- Possible reasons for drop - less HRT, less mammography, more aggressive treatment of DCIS, use of SERM's, fewer Medicare visits. Unclear why more advanced cancers in young women? Environmental exposures

- 89% women diagnosed alive at 5 yrs – 98.6% alive for localized breast cancer
- Since 1990, breast cancer mortality has declined, and current declines 2% per year
- Risk of death from Breast Ca 1 in 35
- 40,000 deaths per year

Breast Cancer Treatments

- Breast surgery – either breast conserving lumpectomy or modified mastectomy. May also include immediate or delayed reconstructive procedures
- Radiation
- Chemotherapy
- Hormonal Therapies
These treatments can all have gynecologic effects

Gynecologic Issues Related to Breast Cancer

- Chemotherapy induced menopause
- Gynecologic effects of hormonal therapies
- Treatment of menopausal symptoms
  - Hot flashes
  - Vaginal dryness/discomfort
  - Sexuality issues
- Gynecologic uses of hormonal therapies
- Ovarian suppression
Breast Cancer Treatments and Menopause

Menopausal complaints often more severe

- Surgical treatments may include oophorectomy with immediate onset of menopause
- Premenopausal women with normal menstrual functioning get put into immediate menopause with chemotherapy
- Postmenopausal women taking HRT tend to abruptly stop when diagnosed with breast cancer
- Side effects of hormonal drugs like Tamoxifen may be severe

Chemotherapy Induced Menopause

- Incidence of ovarian failure dependent on chemotherapy regimen, cumulative dose and age of patient
- Most ovarian toxicity due to alkylating agents - cyclophosphamide
  - 33-81% after 6 cycles CMF
- Moderate ovarian toxicity with doxorubicin or cisplatin
- Less ovarian effects with 5-FU, methotrexate, and vincristine
- Less ovarian effects with taxol and taxotere, but less known regarding long term effects

Chemotherapy Induced Menopause

- Overall incidence of chemotherapy-induced amenorrhea ranges from 53% to 89%
- 50% women < 35 resume normal menses post chemotherapy
- 70-90% women > 40 have permanent ovarian failure post chemotherapy
- Long term cytotoxic effects - women who menstruate post chemotherapy still at increased risk for premature menopause

Can Ovarian Toxicity be Prevented?

- POEMS (Prevention of Early Menopause, phase 3 prospective trial) – presented at ASCO 5/2014
  - 2004-2011, 4 year follow up
  - 218 women with Stage 1-3 hormone negative breast cancer given Goserelin (GnRH agonist) with chemotherapy vs. chemotherapy alone
  - primary endpoint - ovarian failure
Can Ovarian Toxicity be Prevented?

- Results: More pregnancies and more live births with goserelin
  - Ovarian failure - 22% chemotherapy arm vs 8% goserelin arm ($P = .04$)
  - Attempted pregnancy - 12 (11%) chemotherapy arm and 22 (21%) goserelin arm became pregnant ($P = .03$)
  - Live Births - 8 patients chemotherapy arm (7%, 12 babies) and 16 patients (15%) in the goserelin arm (18 babies, $P = .05$)
  - 4-year disease-free survival - 78% in the chemotherapy arm and 88% in the goserelin arm ($P = .04$).
  - 4-year overall survival was 82% chemotherapy arm vs 92%, goserelin arm ($P = .06$).

Breast Cancer Tumors

- Breast tumors are all sent for ER/PR status and to see whether over-expression of Her2neu
  - Estrogen and Progesterone positivity tells you the tumor will benefit from drugs that manipulate the hormonal environment
  - 2/3 of breast cancers are hormone positive

HER-2 Tumors

- The HER2 gene makes the protein HER2 receptor which is important in controlling epithelial cell growth, cell differentiation and possibly angiogenesis
- HER2 tumors overexpress Her2-neu and are oncogene driven and a marker of more aggressive tumor
- 18-20% of breast cancers over express HER2-neu

HER-2 Tumors

- Anti-angiogenic drug Trastuzumab (Herceptin) - attaches to HER2 receptors on the surface of breast cancer cells and prevents them from receiving growth signals
  - Biologic targeted therapy
  - Typically used with either anthracycline-based or docetaxel and carboplatin (TCH) chemotherapy
  - Studies have shown improved 5-year disease-free survival and overall survival but more cardiotoxicity
  - Recent study showing benefits of similar drug pertuzumab (Perjeta) with Herceptin and chemotherapy had improved survival for metastatic Her2-positive disease
SF Giants Trivia

In 1883, John B. Day and Jim Mutrie, owners of the American Association’s New York Metropolitans, form a National League team called ....

A. The Giants
B. The New York Grizzley’s
C. The New York Razorbacks
D. The Gothams

The Answer Is.....

• The Gothams

• The pennant-winning Metropolitans move over to the National League franchise in 1885. On June 3, after a rousing extra-innings victory over Philadelphia, manager Jim Mutrie was so overcome with emotion that he supposedly blurted out a description of his team that immediately became the franchise’s new nickname - He called them his Giants

Hormonal Treatments and Breast Cancer

• Used to reduce recurrences and overall breast cancer mortality in women with hormone receptor positive breast cancer

• Biologic goals of hormonal therapy
  • Block production of estrogen
  • Block action of estrogen
  • Down-regulate the estrogen receptor

Hormonal Treatments of Breast Cancer

• SERMS: Tamoxifen (Soltamox), Raloxifene (Evista), Toremifene (Fareston)

• Estrogen Receptor Downregulators: Fulvestrant (Faslodex)

• Aromatase Inhibitors: Anastrozole (Arimidex), Letrozole (Femara), Exemestane (Aromasin)
Hormonal Treatments of Breast Cancer - Tamoxifen

• Complex drug with estrogen and anti-estrogen properties

• Originally made as contraceptive then found to suppress mammary tumors in rats

• By 1992 shown to increase disease free interval and decrease contralateral breast cancer in pre and postmenopausal women

Benefits of Tamoxifen

• 5 years of tamoxifen reduces breast cancer recurrence by 40%-50% in premenopausal women and 30%-50% in premenopausal women

• 5 years of tamoxifen reduces risk of a new contralateral breast cancer by about 50%

• 5 years of tamoxifen has shown improved overall survival with more than 15 years of follow up

• 5 years of tamoxifen has been found to better than 2

• Can be used as neoadjuvant therapy to shrink large, hormone-receptor-positive breast cancers prior to surgery

Tamoxifen – Longer Treatment

• Earlier international trials showed differences in benefits with longer treatment

• Adjuvant Tamoxifen, Longer vs Shorter (ATLAS) looked at >15,000 women, 5 or 10 yrs of Tam

  – Reductions in recurrence, mortality, contralateral breast cancer with 10 vs 5
  – More endometrial cancer, PE and Ischemic Heart Disease

Tamoxifen - Longer Treatment

• Adjuvant Tamoxifen To Offer More (aTTOM) trial looked at 7000 women given 5 or 10 yrs of Tam – results 2013

  – Decreased recurrence with 10 yrs, not seen until year 6
  – Trend toward decreased mortality after year 10
  – Increased endometrial cancers and endometrial cancer death

• Standard of care changing to 10 years of adjuvant tamoxifen
Stopping Tamoxifen for Pregnancy

- Given the recommendations for longer treatment and trials showing safety of pregnancy after breast cancer, more oncologists recommending stopping tamoxifen for pregnancy and then resuming post partum.
- Typically recommended to do at least 2 years of tamoxifen therapy.
- Stop for at least 2 mos (wash out) prior to attempting pregnancy.
- Tamoxifen may slow milk production and should not be used when breastfeeding.

Tamoxifen for Breast Cancer Prevention

- Breast Cancer Prevention Trial showed 5 years of Tamoxifen in high risk women reduced risk of hormone receptor positive breast cancer by 45%.
- Approved by FDA in 1998 for breast cancer prevention.

Tamoxifen – Why Don’t More Women Use for Prevention?

- Adverse side effects reported in 60% pts.
- 20-40% discontinue drug because of poor tolerability and effects on QOL.
- Weight gain typically 7-10 lbs.

Common Side Effects:
- Hot Flashes
- Vaginal Discharge
- Vaginal Dryness
- Joint Pain
- Headaches

Tamoxifen – Adverse Events

- Increased rate of venous thromboembolic events, particularly in first two years.
- Additional pro-coagulant effect when tamoxifen is added to chemotherapy.
- Overall 2-3 fold increased RR for DVT and PE.
- If Factor V Leiden mutation 5 -fold increased risk of thromboembolism.
**Tamoxifen – Adverse Events**

- Increased risk for arterial thromboembolism (stroke)
- Stroke risks thought to be counterbalanced by favorable effects on ischemic heart disease:
  - Overview of RCT of adjuvant tamoxifen showed non-significant increased stroke deaths (3 extra per 1000 women in first 15 yrs) was exactly balanced by a non-significant reduction in cardiac deaths (3 fewer per 1000 women during the first 15 years)
- Most recommendations are to discontinue tamoxifen for few days before surgery or long travel

**Tamoxifen - Biologic Effects**

- Agonist and Antagonist effects
- Effects of Tamoxifen vary depending on hormonal environment

**Tamoxifen and Premenopausal Women**

- Induces estrogen production and ovulation - has been used for ovulation induction for IVF
- Reports of ovarian cysts in upwards of 30% women
- Menstrual irregularities - mainly oligomenorrhea or amenorrhea (but affected by prior chemotherapy)
- Growth of endometrial polyps, fibroids, endometriomas
- Not thought to increase the risk of endometrial cancer

**Tamoxifen – Recommendations for Contraception**

- Reports of teratogenicity in rodent studies, although series of women who have conceived on Tamoxifen and had normal pregnancy outcomes
- Non-hormonal forms of contraception recommended
Tamoxifen and Postmenopausal Women

- Increased endometrial proliferation, cystic changes, polyp formation, adenocarcinoma and uterine sarcoma
- Frequency of cancer dependent on endometrial surveillance: TVS vs. EMB and criteria for surveillance – symptomatic vs. asymptomatic
- The reported risks of endometrial cancer in Tamoxifen users have ranged from 1.3-7.5 in RCT, and increase with longer use
- Meta-analysis of 32 RCT trials showed RR 2.7, primarily in women >50

Tamoxifen and Endometrial Cancer

- Absolute risks - about 4 cases of endometrial cancer per 1000 women taking Tamoxifen each year
- 95% of Endometrial Cancers present with Vaginal Bleeding
- Risks are thought to decrease as soon as tamoxifen is stopped
- Most women get a much greater benefit to their breast than risk to their uterus

Tamoxifen and Other Types of Endometrial Cancer

- Recent studies show more aggressive endometrial cancer subtypes in Tamoxifen users: sarcomas, papillary serous, clear cell, and mixed mullerian tumors
- Cancer registry data has shown that shorter time to development of cancer and more aggressive subtypes but no differences in endometrial cancer specific survival
- Overall felt that tamoxifen does not affect endometrial cancer survival

Endometrial Surveillance with TVS – what are the concerns?

- Increased endometrial thickness, irregular echoes, cystic changes (‘Swiss-cheese appearance’), polyps and hyperplasia
- Findings do not correlate with malignant histology
- Thickened endometrium can be atrophic. Mechanism may be stromal hypertrophy, enlargement of subendometrial glands
- No prospective data on what is normal endometrial thickness for women on tamoxifen
What are the problems with routine surveillance?

- Absence of a defined endometrial thickness cut-off for the tamoxifen patients reduces ultrasound accuracy and increases the number of patients referred for unnecessary hysteroscopy
- Overtreatment with unnecessary surgeries

Endometrial Surveillance – Other Imaging for patients on Tamoxifen

- Saline Sonogram – useful in distinguishing polyps from cystic endometrium overall improved sensitivity
- MRI useful for evaluating myometrium but less accurate in looking at intra-cavitary lesions - sensitive in evaluating endometrium but not specific enough to assess cancer vs. other pathology
- Lack of good data looking specifically at Tamoxifen

Ultrasound of Patient on Tamoxifen

Clinical Pearls for Tamoxifen and Imaging

- Get baseline sono for comparison because there are many times that “things come up” – bloating, pain, bleeding that may require imaging
- Do not get routine surveillance
- Do not use endometrial thickness as an indicator for intervention
- Consider saline sonograms to improve PPV but no stated guidelines
- Endometrial effects are thought to stop once tamoxifen is stopped and risks back to baseline in about 5 years
What about levonorgestrel-releasing IUD (Mirena) for women on Tamoxifen?

- Cochrane review to determine effectiveness of Mirena in preventing endometrial hyperplasia, polyps, and adenocarcinoma in pre and postmenopausal breast cancer patients taking tamoxifen
- Looked at only RCT, 2 met search criteria
- Results:
  - Mirena led to significant reduction in the incidence of endometrial polyps OR 0.14
  - Neither trial powered to detect changes in rate of endometrial hyperplasia or adenocarcinoma or whether Mirena led to increased risk of breast cancer recurrence
  - More vaginal bleeding in the Mirena treatment group in the first six months only


What about levonorgestrel-releasing IUD (Mirena) for women on Tamoxifen?

- Recent RCT 2013 in China showed similar reduction in polyps, no differences in hyperplasia or cancer and not powered to assess breast cancer recurrence
- Many oncologists feel uncomfortable based on risks of progestins to the breast

Tamoxifen and CYP Testing

- Tamoxifen is converted into its active metabolites in the liver by the CYP2D6 liver enzyme, part of the P450 detoxification pathway
- CYP2D6-mediated drug metabolism is variable. 7-10% of individuals have decreased enzyme production - Concern whether poor metabolizers may not benefit from tamoxifen and have increased risk for recurrence
- Trials have not yet shown that CYP testing is clinically useful
- Some concerns with co-administration of pure SSRI’s that are potent inhibitors of CYP - Paroxetine, Fluoxetine

Tamoxifen vs. Raloxifene for Breast Cancer Prevention – STAR Trial

- STAR trial: 5 years, one of largest breast cancer prevention studies, 500 centers in US, Canada, and Puerto Rico
- Tamoxifen reduced risk of invasive breast cancer and DCIS by 50%
- Raloxifene was 75% as effective as Tamoxifen in preventing invasive breast cancer and 78% as effective as Tamoxifen in preventing DCIS
- Significantly fewer endometrial cancers, thromboembolic events and cataracts
- Raloxifene - FDA approved for breast cancer prevention in PMP women in 2007
Giants Trivia:
What year did the New York Giants become the San Francisco Giants?

A. 1948
B. 1952
C. 1958
D. 1964

The Answer Is.....
1958

Aromatase Inhibitors

- Tamoxifen competes with estrogen at receptor binding site in the breast preventing receptor activation
- Aromatase Inhibitors prevent conversion of androstenedione and testosterone into estrogens and decrease peripheral circulating estrogen
- Not useful in premenopausal women because blocking aromatase in the ovaries results in lower estradiol levels which reduce negative feedback and increase pituitary gonadotropin output, increasing ovarian function

Aromatase Inhibitors

- Third generation AI’s used:
  - Anastrozole (Arimidex)
  - Letrozole (Femara)
  - Exemestane (Aromasin)

Nonsteroidal - reversible
Steroidal - irreversible inhibitors
### Anastrozole, Tamoxifen, Alone or in Combination (ATAC) trial

- 9000 PMP women with early stage breast ca, treated with 5 yrs of Anastrozole vs. Tamoxifen, first interim analysis presented in 2001 with now 13 years of follow up.
  - Anastrozole had improved Disease Free Survival (HR .90 at 100 mos)
  - Anastrozole had improved time to recurrence (HR .81 at 100 mos)
  - Anastrozole had lower incidence of contralateral breast cancer (HR .68 at 100 mos)

### Anastrozole vs. Tamoxifen - Adverse Effects

- Worse with AI – only about 60% of women continue full recommended treatment
- More arthralgia, myalgia, and bone loss with AI
- Increased cardiovascular risks with AI, but no difference in MI, or MI related death
- Increase risks of fracture with AI during treatment but not seen after completion
- More colorectal and lung cancers with AI, not significant
- More vaginal dryness, dyspareunia and decreased libido with AI

### Anastrozole vs. Tamoxifen - Beneficial Effects

- Better with AI:
  - Fewer CVA in AI group but did not persist after treatment
  - Lower thromboembolic events with AI
  - Fewer endometrial, ovarian cancer and melanoma in AI - only significant for endometrial cancer
  - Aromatase Inhibitors thought to prevent endometrial cancer

### Aromatase Inhibitors - 2014

- Many international trials have now shown efficacy of aromatase inhibitors in adjuvant treatment for postmenopausal women
- FDA approved Anastrazole (Arimidex) as first-line adjuvant therapy in PMP women with hormone positive breast cancer
- FDA approved Letrozole (Femara) for extended adjuvant use in women with early-stage, hormone-receptor-positive breast cancer after five years of tamoxifen
- Trial of Exemestane(Aromasin) showed 70% reduction in ER-positive invasive breast ca with exemestane compared to placebo over a 3-year period, not yet FDA approved for prevention
### Aromatase Inhibitors – Gynecologic Uses

- **Ovulation Induction** – studies have shown pregnancy rates similar to gonadotropins
- **Ovulatory Dysfunction** – PCOS. Meta-analysis of 4 published trials showed pregnancy rates similar to Clomiphene
- **Treatment of Pelvic Pain and Endometriosis** – aromatase is expressed at higher levels in endometriosis implants than in normal endometrium. Letrozole and Norethindrone reported to improve symptoms and histologic diagnosed endometriosis – No RCT compared to standard medical therapies
- **Treatment for Fibroids** – documented aromatase in myoma cells
- **ACOG Technical Bulletin on Aromatase Inhibitors in Gynecologic Practice** - Aug 2008

### Breast Cancer – What’s New in 2014

- **Individualized Treatment** - Advances in gene expression technologies improves predictions of prognosis and treatment benefit
- **Oncotype DX, Mammoprint, PAM50 test** - genomic tests that predict risk of cancer recurrence and likely benefit from adjuvant chemotherapy
- **Recent study** on the genomics of breast cancer showed four distinct genetic types of the disease
- **Breast cancer treatments are becoming more individualized**

### Ovarian Suppression and Ablation

- **Ovarian ablation** oldest form of systemic treatment for breast ca, first described 1896
- **Methods** – Surgical, Radiation-Induced, Medical with GNRH analogs (Zoladex)
- **Many studies** looking at ablation as adjuvant therapy
  - **Overview of trials:**
    - Ovarian suppression (OS) and ovarian ablation (OA, via surgical oophorectomy) significantly decreases recurrence and improves survival in women < 50 with hormone positive tumors
Ovarian Suppression and Ablation

- OS and OA thought to be comparable to chemotherapy alone – but data based on older regimens and not established for current anthracycline or taxane based regimens

- Not clear that OS/OA provides an additive benefit to chemotherapy – possibly in women under age 40 who are more likely to have return of ovarian function post chemotherapy

Ovarian Suppression and Endocrine Therapy

- Some trials suggest that ovarian suppression plus tamoxifen provides added benefit. Many oncologists suppress ovaries for 3 yrs in high risk patients

- Current trials (TEXT, SOFT) looking at ovarian suppression to determine optimal hormonal therapy for premenopausal women with early breast cancer - recent combined data showed OS with AI had 34% lower risk of recurrence than Tamoxifen with OS, awaiting data on OS and AI vs. Tamoxifen alone

Should the Ovaries Come Out?

- Although data showing ovarian suppression is beneficial, not clear that oophorectomy should be done in all premenopausal women with hormone positive breast cancer

- Counterbalancing risks of subsequent heart disease with oophorectomy in early stage breast cancer, and recent reports of more osteoporosis and arthritis

Ovarian Suppression and Fertility

- Recent studies showing ovarian suppression prior to chemotherapy preserved ovarian function

- Many fertility programs focused on assisted reproductive techniques to preserve fertility – ovarian stimulation with Tamoxifen or Letrozole and embryo cryopreservation, ovarian tissue or oocyte cryopreservation prior to chemotherapy
More Giants Trivia
Who hit the first homerun into McCovey Cove?

A. Sammy Sosa
B. Jeff Kent
C. Barry Bonds
D. Will Clark

And the Answer Is....

• Barry Bonds

• This ball was hit over the right field wall into the Pacific Ocean against Rich Rodriguez on May 1st, 2000

Final Thoughts......

• Common questions about breast cancer

How to treat Hot Flashes in Breast Cancer Patients

• Low dose antidepressants – Venlaflaxine, Paroxetine, Fluoxetine, Citalopram, Desvenlafaxine (1/10-20th doses for depression)
• Antihypertensive Clonidine
• Gabapentin (Neurontin)
• Vitamin E
• Soy supplements
• Herbal Products: best studied Black Cohosh
• Tibolone (in Europe)
• Chinese Herbs
• Alternative Therapies
How to treat Vaginal Dryness in Breast Cancer Patients

- Lubricants for sexual activity
- Oils to the tissue - mineral, olive, coconut
- Vaginal Preparations of Estrogens or Testosterone - remember testosterone preparations not FDA approved and need to be compounded
- Estring (best data, limited), Vagifem
- Replens - Several studies showing improvement in vaginal itching, irritation and dyspareunia - equivalent to vaginal estrogen creams, most improvement in first 2 wks
- SERMS – Ospermifene, no data in breast cancer patients

Common Questions - Do Fertility Drugs increase the risk of Breast Cancer? - NO

- Israeli cohort showed no increased risk except for women treated with clomiphene citrate Breast Cancer Res Treat. 2006
- Large Danish cohort showed no association Cancer Epidemiol Biomarkers Prev. 2007
- Israeli cohort of IVF found women over age 40 and those who underwent >4 cycles had a higher risk of breast cancer Ann Surg Oncol. 2008
- Large British cohort with ovulatory disorders showed higher risk of primary breast cancer but no increased risks with fertility drugs Br J Cancer. 2009
- US cohort of 12,000 women from 1965-1988 showed no increased risk except for women using >12 cycles of Clomid Cancer Epidemiology, Biomarkers & Prevention, April 2014.

Is it safe to get pregnant after having Breast Cancer? - YES

- Large population registry studies have shown no increased risks of recurrences for women who get pregnant after prior treatment for breast cancer
- Typically recommended to wait at least 2 years from diagnosis
- Pregnancies more often in women with early stage disease so possible selection bias “healthy mother effect”

Can Women Breastfeed after Breast Cancer? - MAYBE

- Most patients report inadequate lactation in affected breast
- May have asymmetric breasts due to inadequate hypertrophy
- Breast conserving surgeries may allow for lactation
- Less likely with:
  - Centrally located tumors
  - If prior radiation - induces fibrosis of lobules with decreased milk production
Is HRT after Breast Cancer safe? MAYBE

- Qualitative review of 10 prospective and 2 randomized trials in Belgium - no increased risks. *Human Reproduction* 2007 22(2):616-622

- Retrospective study from large HMO in Washington looking at pharmacy data showed no increased risk of recurrence or mortality. *J Natl Cancer Inst.* 2001 May 16;93(10):754-62

- Review from Germany of four prospective randomized studies and 15 observational studies - Only the Hormonal Replacement Therapy after Breast cancer: Is iT Safe (HABITS) study showed an increased risk of recurrence. *Minerva Ginecol.* 2007 Oct;59(5):529-41

- Follow up of large Stockholm trial that included lower doses of progestins did not show increased risk of recurrence at 10.8 yrs fu (originally stopped early in 2003 after HABITS published showing increased risk). *Eur J Cancer.* Aug 11 2012

- HT safe if DCIS only and bilateral mastectomies


Is breast imaging needed after bilateral mastectomies? NO

- If complete mastectomy no need for imaging

- If skin sparing, nipple sparing procedure, some centers may still recommend screening mammography

- MRI can be helpful to establish the presence of residual breast tissue after bilateral mastectomy, and routine screening not recommended if no residual breast tissue is seen

- With saline or silicone implants or autologous reconstruction procedures imaging typically not recommended

Case

- 34 yr G2P2 presents with a palpable breast mass – you send her for a FNA which returns positive for carcinoma. She has no other medical history and no family history of breast cancer. She undergoes a lumpectomy for a 1.8 cm infiltrating ductal carcinoma that is ER+/PR+ and Her2Neu negative. She receives adjuvant chemotherapy with AC followed by Taxol, then radiation, and is placed on Tamoxifen. Her menses stop with chemotherapy and return 6 mos later.
### Questions

<table>
<thead>
<tr>
<th>Question</th>
<th>Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Is she at risk for endometrial cancer by taking Tamoxifen?</td>
<td>NO</td>
</tr>
<tr>
<td>Will Tamoxifen affect her menstrual cycles?</td>
<td>MAYBE</td>
</tr>
<tr>
<td>Would you recommend routine ultrasound surveillance?</td>
<td>NO</td>
</tr>
</tbody>
</table>

### Hopefully now, you will....

<table>
<thead>
<tr>
<th>Topic</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Know more facts about breast cancer</td>
<td></td>
</tr>
<tr>
<td>Understand the gyn issues related to the treatment of breast cancer</td>
<td></td>
</tr>
<tr>
<td>Understand when Tamoxifen and Aromatase Inhibitors are used in breast cancer treatment</td>
<td></td>
</tr>
<tr>
<td>Understand the gyn implications of Tamoxifen and the Aromatase Inhibitors</td>
<td></td>
</tr>
<tr>
<td>Know about the role of ovarian suppression in breast cancer</td>
<td></td>
</tr>
<tr>
<td>Know about fertility drugs and breast cancer</td>
<td></td>
</tr>
<tr>
<td>Know about safety of pregnancy and hormone use after breast cancer</td>
<td></td>
</tr>
<tr>
<td>Know something new about breast cancer that you didn’t know before this talk</td>
<td></td>
</tr>
</tbody>
</table>

### Thank You

- **GO GIANTS!**