## Breast Cancer

Awareness and Early Detection



## History

An accountant and a book keeper Two children, First Live birth at 32 \*\* No maternal or family history of BRCA \*\* Took Hormone Replacement for 3 yrs. \*\* Smoker \*\*

Wine 2 glasses a day



### Examination

A 2 cm x 2.5 cm x 2 cm , hard
mass in the right breast
Few axillary lymph nodes were
palpable



### Incidence

WHO estimated for 2008 : 1.38 million new cases, amongst women world wide

In US an estimated 230,480 women were diagnosed with Breast cancer in 2011

\* Additionally, 57,650 with <u>NON INVASIVE</u>

2140 cases of <u>MEN</u> with breast Cancer







#### Age-adjusted Cancer Death Rates,\* Females by Site, US, 1930-2005

\*Per 100,000, age adjusted to the 2000 US standard population. <sup>+</sup>Uterus cancer death rates are for uterine cervix and uterine corpus combined.

Note: Due to changes in ICD coding, numerator information has changed over time. Rates for cancer of the lung and bronchus, colon and rectum, and ovary are affected by these coding changes.

Source: US Mortality Data, 1960 to 2005, US Mortality Volumes, 1930 to 1959, National Center for Health Statistics, Centers for Disease Control and Prevention, 2008.

- Population study: 45% to 55% of breast cancers are explained by
- First live birth at a later age
- Nulliparity
- Family history of breast cancer
- Higher socioeconomic status
- Early menarche ..... Late menopause
- Prior history of benign disease, such as Atypical ductal hyperplasia
- Hormone replacement therapy

Alcohol

Detection 80%

Screening mammography

Ultrasound is needed to

Breast self examination ...

Found at Clinical breast

#### Presentation

micro calcifications, soft tissue density, discrete stellate lesion

differentiate solid lesions from the cysts

20%-----nodule, mass, thickening, fullness, pain, nipple discharge or inversion

examination--- mass, thickening, irregular firm to hard area with or w/o umbilication



## Treatment

- Primary treatment is SURGICAL -Lumpectomy or mastectomy + Axillary lymph node evaluation
- Radiation ( usually no rad. for mastectomy ,unless lymph nodes are involved and/or tumor size > 5cm. )
- Additional treatment (Adjuvant) is Chemotherapy and Hormones or Hormones alone
- Biological agents



#### Local recurrence

#### Table 7

Recurrence in the Breast after Conservative Surgery and Radiation Therapy for <u>Early-Stage Breast Cancer</u> in Nonrandomized Studies

Study	No. of Patients	Maximum Primary Tumor Size (cm)	Breast Recurrence at 10 Years (%)
Clark et al <sup>40</sup>	1,130	5	14
Dewar et al <sup>7</sup>	757	3	8
Fourquet et al <sup>12</sup>	518	5	11
Fowble et al <sup>34</sup>	697	5	18
Gage et al <sup>41</sup>	1,628	5	13
Haffty et al <sup>35</sup>	433	5	19
Halverson et al <sup>42</sup>	511	5	14
Kurtz et al <sup>4a, 43</sup>	1,593	5	14
Leung et al <sup>36</sup>	493	5	10
Mansfield et al <sup>9</sup>	1,070	5	14
Stotter et al <sup>38</sup>	490	5	19
Veronesi et al <sup>44</sup>	1,232	2	8

## Is there a difference in recurrence based on the type of procedure?

#### Table 3

Comparison of Local Recurrence after Conservative Surgery and Radiation with That after Mastectomy in Prospective Randomized Trials

			ocal Recurre	iice [%]
Trial	Endpoint	CS & R	(P value)	Mastectomy
Milan Cancer Institute Trial I <sup>3</sup>	Cumulative incidence at 18 years	7	(NS)	4
Institut Gustave-Roussy <sup>25</sup>	Cumulative incidence at 15 years	9	(NS)	14
NSABP B-06 <sup>2</sup>	Cumulative incidence at 8 years	10	(NS)	8
National Cancer Institute <sup>17</sup>	Crude incidence, median follow-up 10.1 years	19	(.01)	6
EORTC <sup>26</sup>	Crude incidence at 14 years	17	(NS)	14
Danish Breast Cancer Group <sup>27</sup>	Crude incidence, median follow-up 3.3 years	3	(NS)	4

CS & R = conservative surgery and radiation; EORTC = European Organization for Research and Treatment of Cancer; NS = not significant; NSABP = National Surgical Adjuvant Breast and Bowel Project.

Survival				
Size (cm)	<2	2-5	>5	
Neg. Nodes	96.3	89.4	82.2	
1-3 pos. Nodes	87.4	79.9	73	
>4 pos.Nodes	66	58.7	45.5	

\* 30 yr. Relative survival Node Neg. 62%; Node Pos. 19%

- ★ (40% of node neg.pts.Have died after 30 yrs.; 20% of
- \* node positive patients are still alive )
- Death rate : 3 % per year

Risk to the contra lateral breast is 0.7 to 1% per year



For Jane with a tumor size of 2.3 cm. 3/19 nodes involved and currently no evidence of disease elsewhere has an estimated survival of 75% to 80% at 5 years.

Would these numbers be predictably different if she had come to treatment earlier in the course of her disease?

## Survival

- Stage 0 Survival is nearly 100%
- Stage 1 tumor size < 1 cm. 95%</p>
- Stage 2 tumor size 2-5 cm + nodes positive 65%
- Stage 3 or 4 survival is poor

## What means do we know to detect cancers early in their development ?

#### Mammography for early detection



#### Normal Mammogram





This oval mass appears to have its well-circumscribed margin obscured by overlapping tissue. This lesion was diagnosed as being malignant.<sup>1</sup>







The asymmetric area of the left breast has its density concentrated centrally and has the appearance of mass formation. Here, it was found to be associated with cancer.<sup>2</sup>









## Screening

## Screening

Main purpose of screening is to test large
 <u>ASYMPTOMATIC</u> population, at an
 acceptable cost

\* Determine the likelihood of having



## SCREENING

- If breast cancer can be detected during the 'Sojourn' period
- Women can be treated at an early stage
- Significantly improving their prognosis
- and reducing the rate of mortality

## SCREENING

#### Does screening of women with use of mammography reduce mortality ?

#### Mammography Trials

- Randomized controlled trials :
- HIP, NY -62000 -10yr. -30% red. reduction 133000-Swedish 2 county. 20yrs.-32% red. Malmo I, II -42000 -36% red. \*\* 51000 44% red Gothenberg -\*\* \_ Meta-analysis 30% red. in mortality \*\*

## Mammography

- Adoption of mammography as a screening tool
- There is controversy of sort about the use of mammography leading to over treatment ...... but
- Trials justified the criteria proposed by Wilson and Jurger



## Mammography

- # 1 in 8 will be diagnosed
- Breast cancer : most common malignancy in the U.S.
- Second leading cause of death from cancer
- Years of life LOST : estimates 779000 years of premature mortality each year - an average of 18.6 years of life lost per woman dying from this disease
- # 1 in 33 will die

#### Worldwide incidence of breast cancer



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Figure 2. Age Curve for Breast Cancers in Greater Mumbai, 1982-1999



#### Figure 1. AAR Incidence Rates for Breast Cancers in Indian Populations

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Table 1. Crude Incidence Rate of Breast Cancer among Religious Groups in Mumbai, Chennai and Karunagappally (/100,000).

Religion	Mumbai*	Chennai**	Karunagappally***
Hindu	21.0	17.2	15.0
Muslim	19.8	11.5	7.8
Christian	32.3	24.8	17.7

\*Cancer Morbidity and Mortality in Greater Mumbai 1996 \*\*Madras Metropolitan Cancer Registry 1996 \*\*\*Cancer Incidence in Karunagappally, Karunagappally 1996

Table 2: Percentage Distribution by Education for Breast Cancer, Greater Mumbai, 1993-97

Site	Illiterate+Lite	Prim+Middle	Sec+Tech	College
Breas	st 16.2	25.2	40.2	44.4
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Figure 3. Trends in Various Incidence Rates per 100,000 Population, Breast Cancer in Greater Mumbai 1982-99

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Trends in Breast Cancer in Indian Populations

Table 4. Numbers of New Cases and the Crude (CR), Age Adjusted (AAR) and Truncated (TR) Incidence Rates for Breast Cancer, Greater Mumbai, 1982-1999

Year	No. of Cases	CR	AAR	TR
1982	483	13.6	22.8	52.3
1983	529	13.4	23.1	53.0
1984	595	14.4	23.7	54.0
1985	656	15.2	25.6	57.0
1986	674	15.5	22.9	50.9
1987	630	14.0	20.1	44.0
1988	654	14.0	19.8	42.9
1989	692	14.2	20.2	44.9
1990	857	19.5	27.9	63.3
1991	971	21.6	30.8	67.3
1992	963	20.9	29.1	64.7
1993	938	19.9	28.3	61.6
1994	962	20.0	28.5	60.2
1995	974	19.8	27.4	61.1
1996	1023	20.3	28.5	60.8
1997	1055	20.7	28.1	58.8
1998	1063	20.4	27.6	57.0
1999	1127	21.2	28.3	57.6

Source: Cancer Incidence in 5 Continents Vol.VII IARC, Lyon, France.

There has been an increase in the incidence of breast cancer in Mumbai and elsewhere in India.

This may be due to Life style changes adopted in India. or as a result of migration.

In developing countries such as India, only 10% avail themselves for treatment at STAGE I disease.



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#### Breast cancer in India

 Can we get Indian women to undergo detection at an early stage so we can make a difference in their survival ?



## India

*	Sushilaben	63	survives	16 years
*	Pushpa	61	recurred	6 years
*	Mrs.B.P.	57	dead	4 years
*	Gul J	46	Stage II	3 years
*	Dr. Sudha	39	dead	4 years
*	Katie	55	DCIS	9 years

Breast cancer in India Early detection

• Geeta 55

I am a U.S. citizen of Indian origin, who was 0 diagnosed with intra ductal breast cancer on one side, at age 37,17 years ago, and am doing fine. In the U.S. thanks to mammography and early detection, cancers are detected at an early stage.Indian women too should get themselves screened, at younger ages. I had no family history, as I pointed out.

## Can we prevent breast cancer?

#### Breast cancer

- Best strategy for now -
- is to detect early -
- so one can strive for long survival by timely intervention
- http://www.bihartimes.com/newshealth/2008/April/newshealth15April2.html



# Film mammography is the GOLD STANDARD

for screening

## If you build, they will come

#### Nobody needs to know? It will be your secret!





