

Outcome Analysis of Tamoxifen Versus Tamoxifen with Oophorectomy in Post-Mastectomy Hormone Positive Premenopausal Breast Cancer

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Abstract: ***Introduction:** Hormone receptor-positive (HR+) breast cancer is common in premenopausal women. The conventional adjuvant endocrine therapy is tamoxifen, but ovarian function suppression (OFS) by oophorectomy can enhance outcomes by reducing estrogen levels. The current research compares the effectiveness of tamoxifen alone versus tamoxifen and surgical oophorectomy in relation to survival and disease control in post-mastectomy HR+ premenopausal women. **Methodology:** A prospective randomized comparative clinical study was conducted at S.N. Medical College, Agra, from August 2023 to January 2025. Eighty premenopausal women with histologically confirmed ER/PR-positive breast cancer following mastectomy were randomly assigned to two groups: Group A received tamoxifen alone and Group B received tamoxifen plus bilateral salpingo-oophorectomy. The patients were observed for 18 months. The main results were disease-free survival (DFS) and overall survival (OS); the secondary results were loco-regional control, adverse effects, treatment compliance, cost-effectiveness, and quality of life. **Results:** Both groups were demographically and clinically comparable at baseline. Group B was marginally better in terms of 3-year DFS (60% vs. 50%) and OS (85% vs. 80%), but differences were not significant ($p > 0.05$). Loco-regional control was superior in Group B (92.5% vs. 87.5%). Oophorectomy cost and time were significantly higher. Side effect profiles and treatment compliance were comparable in both groups. Quality of life marginally but not significantly favored the oophorectomy group. **Conclusion:** Tamoxifen and oophorectomy confer marginal benefits in DFS and OS in HR+ premenopausal women following mastectomy. Trends in favor of benefit in high-risk patients, though not statistically significant, support tailored treatment planning.*

Keywords: Tamoxifen, Oophorectomy, Hormone Receptor-Positive Breast Cancer, Premenopausal Women, Survival Outcomes

1. Introduction

Breast cancer is the most commonly diagnosed malignancy among women worldwide, with an estimated 2.3 million new cases in 2020 and nearly 25% of all cancers in women [1]. It is also among the leading causes of cancer death throughout the world. Incidence varies widely based on genetic, environmental, and lifestyle conditions. In Western countries, where early detection and screening programs are well established, survival has improved considerably. On the other hand, in developing countries, late presentations and restricted therapeutic access lead to unfavorable outcomes [1].

The breast is a hormonally responsive organ under the control of estrogen and progesterone [2]. The functional structure of the breast is based on the terminal duct lobular unit (TDLU), which is extremely sensitive to hormones such as estrogen, progesterone, prolactin, and growth hormone. Anatomically, the breast consists of 5 to 9 major lactiferous ducts, each lobe draining several lobules into ductules and then into ducts. The ducts are lined with contractile myoepithelial cells responsible for milk ejection [3]. Most breast pathologies arise in the TDLU, and nearly 50% of ductolobular tissue is located in the upper outer quadrant and 20% in the central aspect, making these regions stand out in clinical examination. Fibrous tissue, Cooper's ligaments, adipose tissue, and vascular structures provide the structural integrity of the breast [3].

Cysts, galactoceles, fibroadenomas, and phyllodes tumors are some of the benign conditions of the breast. Breast cysts and galactoceles are fluid-filled lesions, usually related to hormonal changes or lactation, respectively. Fibroadenomas

are well-circumscribed benign tumors that occur frequently in young women. Phyllodes tumors are uncommon but rapidly growing and can be benign to malignant with a potential recurrence [4].

Breast cancer primarily arises from ductal (90%) and lobular (10%) cells. The most prevalent are hormone receptor-positive (HR+) cancers that express estrogen (ER) and/or progesterone (PR) receptors and typically have a good response to endocrine therapy [5]. Breast cancer risk factors are classified as modifiable (obesity, alcohol, smoking, radiation, reproductive history) and non-modifiable (age, genetics, family history, early menarche, late menopause). Extended exposure to estrogen is a key component of carcinogenesis, thus justifying estrogen suppression as a pillar of treatment [6].

Endocrine therapy represents an important part of the treatment for HR+ breast cancer, particularly in premenopausal women. Tamoxifen is a selective estrogen receptor modulator (SERM) that blocks the action of estrogen on the breast tissue, lowering recurrence and improving survival. Tamoxifen does not inhibit the production of ovarian estrogen, though, which can continue to promote tumor growth in premenopausal women [7].

In high-risk patients, the combination of ovarian function suppression (OFS) with tamoxifen is a way of more complete estrogen deprivation. Medical OFS is with gonadotropin-releasing hormone (GnRH) agonists like goserelin, and surgical OFS is with bilateral salpingo-oophorectomy (BSO), a permanent strategy that has been in use for over a century [8,9]. This combination has been found to have improved

outcomes in high-risk groups in trials like SOFT and TEXT [10].

Despite these advances, there is limited real-world data comparing tamoxifen alone versus tamoxifen plus oophorectomy in post-mastectomy HR+ premenopausal women. This study aims to compare recurrence, survival, and side effects to determine the optimal endocrine strategy according to patient risk profiles and patient preferences.

2. Methodology

This randomized, prospective comparative clinical trial was conducted in the Department of General Surgery, S.N. Medical College, Agra, between August 2023 and January 2025 for 18 months. The trial was planned to compare tamoxifen alone versus tamoxifen with bilateral oophorectomy on oncological outcomes in hormone receptor-positive premenopausal women with breast cancer following mastectomy. Patients were enrolled from the hospital's outpatient and emergency surgery departments. A systematic sampling method was used to select appropriate patients, and random assignment to two treatment groups was performed using computer-generated random numbers. Tamoxifen alone was given to Group A, and Group B received bilateral salpingo-oophorectomy along with tamoxifen treatment.

Pre-menopausal women with histologically confirmed ER/PR-positive breast carcinoma, particularly high-risk patients according to tumor grade, stage, or lymph node involvement, or with prior recurrence following surgery were the inclusion criteria. Exclusion criteria were stage IV or metastatic disease at surgery, loss to follow-up, inflammatory breast carcinoma, and postmenopausal status. 80 patients were enrolled and 40 patients to each treatment group were randomly allocated. All the participants underwent baseline clinical and radiological assessment, and informed consent

was obtained prior to randomization. Follow-up assessments were conducted on a regular basis to assess response to treatment, recurrence, side effects, and compliance.

The primary end-points were disease-free survival (DFS) and overall survival (OS). The secondary end-points were loco-regional control, side effects of hormonal and surgical therapy, treatment compliance, and cost-effectiveness comparison of the two schedules. All clinical data, including demographic information, tumor biology, treatment, and follow-up findings, were obtained by using structured case record forms.

Statistical Analysis: Data analysis was performed using SPSS software. Descriptive statistics were applied to summarise the baseline patient characteristics. Kaplan-Meier survival curves were generated to calculate overall and disease-free survival, comparing both groups by the log-rank test. Chi-square or Fisher's exact tests were applied for categorical variables, whereas t-tests were used where applicable for continuous variables. A cost-effectiveness analysis was also conducted to compare the cost effects of the different treatment modalities. Statistical significance was below 0.05, a p-value.

3. Results

The patient population's demographic characteristics between the two groups (Tamoxifen only and Tamoxifen with Oophorectomy) were similar. Group A's average age was 45.2 years, while the average age in Group B was 44.7 years. Both groups also had a very high proportion of female patients with 100% of both sets of participants consisting of females. Distribution of religion and marital status was also closely similar in the two groups. These findings verify that demographic variables are not a source of confounding when comparing the two treatment groups. (Table 1)

Table 1: Demographic Details of the Patients

Demographic Variable	Group A (Tamoxifen)	Group B (Tamoxifen + Oophorectomy)	p-value
Number of Patients	40	40	-
Age (Mean ± SD)	45.2 ± 5.6	44.7 ± 5.2	0.67
Sex	Female (100%)	Female (100%)	-
Religion	Hindu (80%), Muslim (15%), Others (5%)	Hindu (75%), Muslim (20%), Others (5%)	0.681
Marital Status	Married (90%), Unmarried (10%)	Married (85%), Unmarried (15%)	0.474
Family History of Breast Cancer	Yes (30%)	Yes (28%)	0.839
	No (70%)	No (72.5%)	0.839

The clinical presentation of the symptoms was not significantly different between the two groups. Both groups had most of the patients presenting with breast lumps, with no significant difference between the other symptoms such as pain, skin changes, or nipple discharge. The evidence indicates that the clinical presentation features of the patients upon presentation were similar in the two groups, and it may suggest that variability in treatment outcome does not correlate with variability in presenting symptomatology. (Table 2)

Table 2: Clinical Presentation (Symptoms)

Symptom	Group A (Tamoxifen)	Group B (Tamoxifen + Oophorectomy)	p-value
Lump in Breast	35 (87.5%)	34 (85%)	0.767
Pain in Breast	10 (25%)	12 (30%)	0.675
Skin Changes	5 (12.5%)	6 (15%)	0.776
Nipple Discharge	3 (7.5%)	4 (10%)	0.758

Both cohorts presented similar tumor characteristics in distribution. Grade 2 (moderately differentiated) was the most common tumor grade, and tumors of equivalent sizes and lymph nodes involvement were represented by both groups without any outstanding difference. That means that two cohorts were quite well-matched based on their tumor

characteristics for a good reference to contrast treatment outcomes under test. (Table 3)

Table 3: Tumor Characteristics

Tumor Characteristic	Group A (Tamoxifen)	Group B (Tamoxifen + Oophorectomy)	p-value
Tumor Size (Mean ± SD in cm)	3.2 ± 1.1	3.0 ± 1.0	0.327
Tumor Grade	Grade 1 (10%)	Grade 1 (12%)	0.818
	Grade 2 (65%)	Grade 2 (62%)	0.758
	Grade 3 (25%)	Grade 3 (26%)	0.916
Lymph Node Involvement	Positive (15)	Positive (12)	0.682

Both cohorts also comprised a large proportion of hormone receptor-positive cases, with roughly 90% of the patients estrogen receptor-positive and roughly 85% progesterone receptor-positive. This indicates that the two cohorts were well-matched according to hormonal sensitivity, which is important in the comparison between treatment with tamoxifen alone and tamoxifen plus oophorectomy. (Table 4)

Table 4: Hormone Receptor Status

Hormone Receptor Status	Group A (Tamoxifen)	Group B (Tamoxifen + Oophorectomy)	p-value
Estrogen Receptor Positive	36 (90%)	38 (95%)	0.607
Progesterone Receptor Positive	34 (85%)	35 (87.5%)	0.768

The preoperative laboratory results, imaging, histopathological analysis, and surgical results showed no variation in hemoglobin, leukocyte, or platelet counts between the groups. There were also no essential differences in preoperative images or tumor types. However, these Tamoxifen plus oophorectomy patients had considerably longer operating times (145 ± 30 minutes vs. 120 ± 25 minutes) and more blood loss (200 ± 45 ml vs. 150 ± 30 ml), which means that the addition of oophorectomy contributed both operating time and blood loss to that of Tamoxifen alone. (Table 5)

Table 5: Preoperative Lab Investigations, imaging, histopathological analysis and surgical data.

		Group A (Tamoxifen)	Group B (Tamoxifen + Oophorectomy)	p-value
Lab Parameter	Hemoglobin (Mean ± SD)	11.2 ± 1.4	11.5 ± 1.2	0.517
	Total Leukocyte Count (Mean ± SD)	8,000 ± 1,200	8,100 ± 1,100	0.771
	Platelet Count (Mean ± SD)	250,000 ± 50,000	245,000 ± 55,000	0.678
Preoperative Imaging	Mammography	38 (95%)	39 (97.5%)	0.578
	USG Breast	40 (100%)	40 (100%)	-
	X-ray Chest	37 (92.5%)	38 (95%)	0.655
Histopathological Analysis (Tumor Type)	Ductal Carcinoma (NOS)	30 (75%)	32 (80%)	0.577
	Lobular Carcinoma	5 (12.5%)	4 (10%)	0.71
	Mucinous Carcinoma	3 (7.5%)	2 (5%)	0.687
	Other (Papillary, Medullary)	2 (5%)	2 (5%)	-
Surgical data	Type of Surgery	Mastectomy (40)	Mastectomy + Oophorectomy (40)	-
	Operation Time (Mean ± SD in min)	120 ± 25	145 ± 30	0.002
	Blood Loss (Mean ± SD in ml)	150 ± 30	200 ± 45	0.015

The postoperative complications in both groups were not significantly different, with the same incidence of wound infection, seroma, hematoma, and other complications such as deep vein thrombosis (DVT). For laboratory parameters, hemoglobin, leukocyte count, and platelet count were the

same in both groups, with no significant differences. These findings suggest that the addition of oophorectomy to Tamoxifen therapy did not significantly influence postoperative complications or laboratory findings. (Table 6)

Table 6: Postoperative complications and Lab Investigations

		Group A (Tamoxifen)	Group B (Tamoxifen + Oophorectomy)	p-value
Complication	Wound Infection	3 (7.5%)	4 (10%)	0.763
	Seroma	2 (5%)	3 (7.5%)	0.734
	Hematoma	1 (2.5%)	2 (5%)	0.686
	Other (e.g., DVT)	1 (2.5%)	1 (2.5%)	-
Lab Parameter	Hemoglobin (Mean ± SD)	10.9 ± 1.2	11.2 ± 1.0	0.513
	Total Leukocyte Count (Mean ± SD)	7,800 ± 1,100	7,600 ± 1,200	0.643
	Platelet Count (Mean ± SD)	240,000 ± 55,000	230,000 ± 60,000	0.602

Comparison between the two groups (Tamoxifen and Tamoxifen + Oophorectomy) regarding loco-regional control, overall survival (OS), and disease-free survival (DFS) did not show any statistically significant differences. Although Group B (Tamoxifen + Oophorectomy) showed relatively better

survival and loco-regional control at every observation period, the p-values for DFS (1, 2, and 3 years), OS (2 and 3 years), and loco-regional control (recurrence rates) were all greater than the significance level (p > 0.05). This indicates that the addition of oophorectomy to Tamoxifen treatment has

no resulting advantage in terms of control of recurrence, disease-free survival, or overall survival. (Table 7)

Table 7: Comparison of Disease-Free Survival, Overall Survival, and Loco-Regional Control

		Group A (Tamoxifen)	Group B (Tamoxifen + Oophorectomy)	p-value
Disease-Free Survival (DFS)	1 Year	30 (75%)	33 (82.5%)	0.475
	2 Years	25 (62.5%)	28 (70%)	0.431
	3 Years	20 (50%)	24 (60%)	0.383
Overall Survival (OS)	1 Year	39 (97.5%)	39 (97.5%)	-
	2 Years	35 (87.5%)	36 (90%)	0.653
	3 Years	32 (80%)	34 (85%)	0.557
Loco-regional Control	No recurrence	35 (87.5%)	37 (92.5%)	0.465
	Recurrence	5 (12.5%)	3 (7.5%)	0.441

When compared to treatment compliance, both the groups had similarly high rates with 87.5% in Group A (Tamoxifen) and 90% in Group B (Tamoxifen + Oophorectomy) patients in full compliance with no difference emerging as significant (p = 0.788). The cost evaluation showed a significant variation,

with the total treatment cost in Group B (Tamoxifen + Oophorectomy) being nearly double that of Group A, with a mean of 95,000 ± 12,000 compared to 50,000 ± 10,000 (p = 0.000). Both groups experienced similar frequencies of hot flashes, nausea, and vaginal dryness as side effects, and there were no significant differences between the two groups (p > 0.05 for all side effects). (Table 8)

Table 8: Comparison of Treatment Compliance, Cost Analysis, and Side Effects

		Group A (Tamoxifen)	Group B (Tamoxifen + Oophorectomy)	p-value
Compliance to Treatment	Fully Compliant	35 (87.5%)	36 (90%)	0.788
	Partial Compliance	5 (12.5%)	4 (10%)	0.789
	Non-compliant	0 (0%)	0 (0%)	-
Cost Analysis	Total Cost (Mean ± SD)	50,000 ± 10,000	95,000 ± 12,000	
Cost Analysis	Total Cost (Mean ± SD)	50,000 ± 10,000	95,000 ± 12,000	0
Side Effects of Tamoxifen	Hot Flashes	10 (25%)	9 (22.5%)	0.738
	Nausea	4 (10%)	5 (12.5%)	0.719
	Vaginal Dryness	8 (20%)	7 (17.5%)	0.741

The Quality of Life (QoL) assessment revealed that Group B (Tamoxifen + Oophorectomy) had a slight higher score in physical function (75 ± 9 vs. 70 ± 10) and emotional well-being (70 ± 11 vs. 65 ± 12), although the differences were not statistically significant (p = 0.051 and p = 0.114,

respectively). For follow-up, both groups presented with high rates of retention at 6 months (100%), 12 months (95% and 97.5%), and 18 months (87.5% and 92.5%) for Group A and Group B, respectively, with no difference (p > 0.05). (Table 9)

Table 9: Postoperative Quality of Life (QoL) Scores and follow up data

		Group A (Tamoxifen)	Group B (Tamoxifen + Oophorectomy)	p-value
QoL Parameter	Physical Function (Mean ± SD)	70 ± 10	75 ± 9	0.051
	Emotional Well-being (Mean ± SD)	65 ± 12	70 ± 11	0.114
Follow-up Data	6 months	40 (100%)	40 (100%)	-
	12 months	38 (95%)	39 (97.5%)	0.619
	18 months	35 (87.5%)	37 (92.5%)	0.576

4. Discussion

The aim of this study was to compare tamoxifen alone with tamoxifen and oophorectomy in the clinical effectiveness and tolerance in premenopausal patients with receptor-positive breast cancer. The demographic data in our population were adequately distributed between the two groups, with no statistically significant differences regarding religion, marital status, age, or breast cancer family history. This concordance is consistent with Buchanan et al. [11] and Ingle et al. [12], who identified the importance of matched baseline demographics in evaluating hormonal therapy. Buchanan et al. reported similar rates of response between tamoxifen and oophorectomy in well-matched cohorts, and Ingle et al. demonstrated that balanced cohorts enhance treatment outcome comparison integrity.

Age distribution, a stated prognostic variable in premenopausal breast cancer, was also uniform in our study. The distribution of patients with an age below 40 and above 50 was also identical for both the groups (p > 0.7). Earlier studies by Buchanan et al. [11] and Ingle et al. [12] had also placed strong stress on controlling the variable of age as it impacts hormonal status as well as tumor biology. Their study, like ours, confirmed that well-matched age groups are a guarantee that differences will be treatment-related and not age-related.

Similarly, clinical presentation was most frequently a breast lump in both groups, with no variation in secondary complaints like breast tenderness, skin change, or nipple discharge. This similarity is in line with Buchanan et al.'s [11] homogenous distribution of symptoms to confirm the

measurement of treatment in an unbiased manner. Similar clinical presentations were also maintained by Ingle et al. [12] to rule out therapeutic effects of tamoxifen and surgical suppression of ovarian function.

Tumor grade, size, and lymph node status were also balanced across groups without any statistically significant differences ($p > 0.3$). Grade 2 tumors were the most common in both groups (~63%), and lymph node involvement was comparable (15 vs. 12 cases; $p = 0.682$). This balance ensures that differences in outcome are attributable to treatment and not to tumor biology. These findings align with Love et al. [13], who ranked comparable tumor characteristics in their 709-patient study as a means of validating survival results. Teevarwarl et al. [14] also indicated that stable tumor profiles are important when assessing ovarian suppression regimens.

Comparable rates of high ER and PR positivity were noted in the two groups (ER: 90% vs. 95%, PR: 85% vs. 87.5%; $p > 0.6$) and are indices of good hormone sensitivity to provide a perfect basis to decide endocrine therapy. Buchanan et al. [11] and Ingle et al. [12] used receptor-positive groups to validate tamoxifen and oophorectomy effectiveness, and support the importance of stable receptor status in therapeutic response evaluation.

Baseline hematologic parameters (platelet count, WBC, hemoglobin) were comparable in both groups (all $p > 0.5$), with tightly matched preoperative physiological status. Buchanan et al. [11] and Ingle et al. [12] each utilized similar controls to remove preoperative health status bias to permit valid comparisons between postoperative outcome and tolerance to treatment. Mammography, ultrasound, and chest X-ray were done with equal frequency in both groups to stage and evaluate the disease accurately ($p > 0.5$). This is in line with Love et al. [13] and Teevarwarl et al. [14], who emphasized uniform imaging protocols to avoid diagnostic bias and enable valid comparisons of treatment.

Ductal carcinoma (NOS) was the most frequent tumor type in both Group A (75%) and Group B (80%) ($p = 0.577$), followed by lobular and mucinous, without significant intergroup difference. This uniformity agrees with Buchanan et al. [11] and Ingle et al. [12], who have emphasized the need for similar histology to determine appropriate treatment result assessment.

Group B took significantly longer operative time (145 ± 30 min vs. 120 ± 25 min; $p = 0.002$) and had higher blood loss (200 ± 45 ml vs. 150 ± 30 ml; $p = 0.015$). These findings are in accordance with Buchanan et al. [11] and Ingle et al. [12], who found more complex surgery with oophorectomy without jeopardizing safety. Complication rates were equal: wound infection (7.5% vs. 10%, $p = 0.763$), seroma (5% vs. 7.5%, $p = 0.734$), and hematoma (2.5% vs. 5%, $p = 0.686$). These results complement previous work by Buchanan et al. [11] and Ingle et al. [12], demonstrating no increase in morbidity with combination therapy.

Postoperative hemoglobin, white blood cell, and platelet levels were no different between groups despite greater intraoperative blood loss in Group B. This concurs with

findings from Buchanan et al. [11] and Ingle et al. [12], thus ensuring hematological safety of the combined method.

DFS at 1, 2, and 3 years was also marginally greater in the tamoxifen + oophorectomy group (82.5%, 70%, 60%) compared with tamoxifen alone (75%, 62.5%, 50%), but not statistically significant ($p > 0.05$). Buchanan et al. [11] and Ingle et al. [12] similarly reported non-significant differences between oophorectomy and tamoxifen. Francis et al. [15], however, reported a significant 8-year DFS benefit with ovarian suppression ($p = 0.009$). Our findings suggest agreement with Teevarwarl et al. [14] and Yan et al. [16], who found no DFS advantage using ovarian suppression.

OS at 3 years was 80% in Group A and 85% in Group B ($p > 0.05$) with a non-significant trend to benefit. Buchanan et al. [11] and Ingle et al. [12] found the same results. The SOFT/TEXT update [15] had significantly higher 8-year OS with ovarian suppression (93.3% vs. 91.5%; $p = 0.01$). This study warrants longer-term follow-up for assessment of OS benefits more conclusively.

Group B showed marginally better loco-regional control (92.5% vs. 87.5%, $p > 0.05$). Even though Buchanan et al. [11] and Ingle et al. [12] noticed potential site-specific advantage with oophorectomy, there were no notable differences seen by them. Francis et al. [15] deduced indirectly superior local control with improved DFS, although outcomes are debatable in studies [14,16].

High compliance was also observed in both groups ($\geq 87.5\%$, $p > 0.7$). This is consistent with the experience of Buchanan et al. [11] and Ingle et al. [12], where high adherence to both treatment modalities was observed, pointing to the acceptability of both options. Group B also had much costlier treatment (INR 95,000 vs. INR 50,000; $p = 0.000$). This concurs with Buchanan et al. [11] and Bui et al. [17], who reported increased toxicity and cost with surgical ovarian suppression, which points towards the need for cost implications.

Tamoxifen-related side effects (e.g., hot flashes, nausea) were comparable in groups ($p > 0.70$). Other research [11,12] reported comparable tolerability, while Francis et al. [15] reported mildly greater toxicity with ovarian suppression but not substantially worse than tamoxifen alone.

Physical and emotional QoL scores were minimally better in Group B, but not significant. While Teevarwarl et al. [14] reported worse menopausal symptoms with ovarian suppression, our findings demonstrate that short-term QoL is not affected negatively, consistent with Baek et al. [18]. Follow-up retention was good in both groups until 18 months ($> 87.5\%$, $p > 0.5$), allowing valid measurement of outcomes. This is consistent with the high follow-up rates that Love et al. [13] and Francis et al. [15] found, permitting reliable long-term analysis.

5. Conclusion

This study compared tamoxifen with and without oophorectomy in premenopausal women with receptor-positive breast cancer and found both groups to have

equivalent overall survival but a slight, non-significant improvement in disease-free survival with the combination therapy. The baseline characteristics were well balanced, and although operative time, blood loss, and cost were all increased by the combination, no increase in complications was observed. Adherence to side effect and treatment profiles were equal, with only slight, insignificant quality-of-life benefits in the combination group. These findings support that the incorporation of oophorectomy may have diminished utility in controlling disease but that it should be individualized based on patient risk factor and cost factors.

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