

## Radical Radiotherapy with Lumpectomy (Wide excisional biopsy) for Early Breast Cancer

—A Case Report and Review of Literature—

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However, long-term results of retrospective studies suggest that, for the great majority of individuals, mastectomy or conservative surgery with radiation therapy were be equally effective. The results at 5 and 10 years from prospective randomized trials indicate that survival following primary radiation therapy for early breast cancer is equivalent to that following mastectomy. When competently performed, primary radiation therapy gives highly satisfactory cosmetic results and acceptably low rates of local tumor recurrence. A number of controversial issues remain concerning patient evaluation and selection and the optimal techniques of treatment, both surgical and radiotherapeutic.

In addition, further work is needed to clarity the best way to integrate primary radiotherapy with adjuvant systemic treatment. And further follow-up of these patients with primary radiation therapy for early breast cancer will be required for ultimate proof of the relative merits. A case which was conservative surgery and radical irradiation of early breast cancer with review of literatures will be done.

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**Key Words:** Early Breast Cancer, Conservative Surgery and Radical Irradiation.

### INTRODUCTION

The irradiation in the breast cancer has been many changes over the last decade. In especially, conservation of the breast in the treatment of early breast cancer in female has long been the aim and issue of surgeons and radiation oncologists. Still now, there is considerable evidences suggesting that primary radiation therapy is an acceptable alternative to mastectomy in the treatment of patients with early breast cancer<sup>1)</sup>.

Several retrospective studies<sup>2,3)</sup>, as well as two recent prospective studies<sup>4,5)</sup>, have shown no significant differences in freedom from distant relapse or survival when these two therapeutic approaches were compared. Primary radiation modality in the early breast cancer has the added advantage of conserving the breast. Prior studies have shown that local tumor control with good cosmetic results can be obtained in the large majority of patients modern techniques and adequate doses of radiation are important.

### CASE REPORT

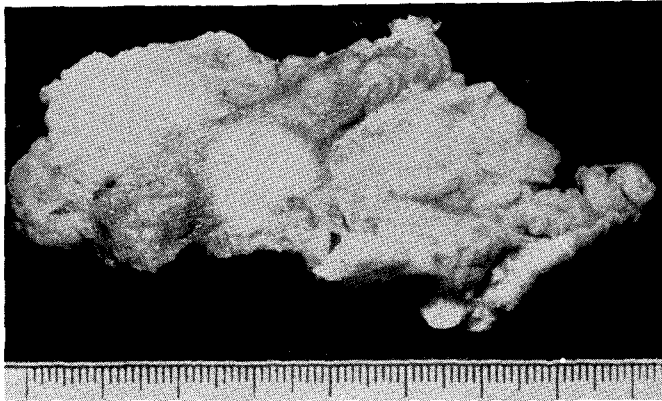
A 69 year old female patient has been palpated of mild tender mass in the upper central area of left

breast on Feb-19, '86. In the result of physical examination, it was nodular soft and well defined mass (1.5×2×2 cm in size) with radiating pain to the axilla and shoulder. But she has not complained of other symptoms and not shown any other extensive symptoms.

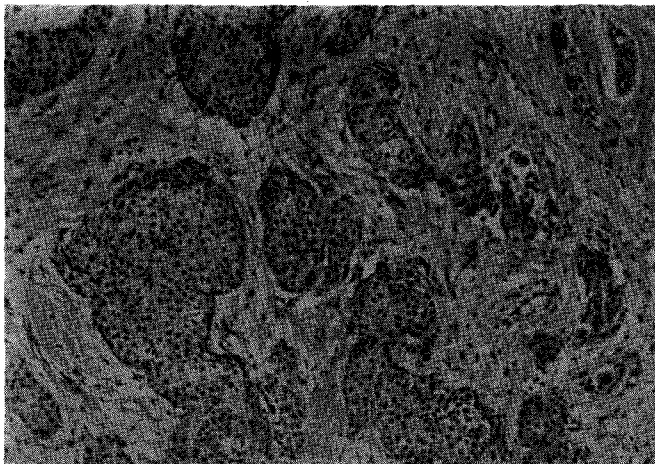
A slightly thickening change in left lower lateral field on chest PA view have showed. But mammography was not taken, its were not showed metastatic lesion on whole body bone scann and liver scann.

Aspiration needle biopsy was done at the palpated mass of left breast and it was confirmed as like, probably lobular malignancy. After 1 week from aspiration needle biopsy, wide excisional biopsy (Lumpectomy) was done and it was showed a relatively well defined nodular mass lesion, measuring 2.5×2×1.7 cm in size on gross specimen(Fig. 1). The cut surface is grayish white and homogenous containing irregularly dilated tubular structures

On the other hand, on microscopic finding(Fig. 2), the breast parenchyme discloses the lobules which are greatly enlarged and filled with closely packed relatively monotonous cells having some mitotic figures. The cells show round under with mono or hyperchromatism and abundant granular cytoplasm, appearing minimal atypia. The inter-



**Fig. 1.** Frozen section of gross specimen (7x5.5x3.8 cm in size) is a portion of breast parenchyme which attached by adipose tissue and focal covering ellipose skin. On section, it show a relatively well defined nodular mass lesion, measuring 2.5x2x1.7 cm in size. The cut surface is grayish white and homogenous containing irregular dilated tubular structures.

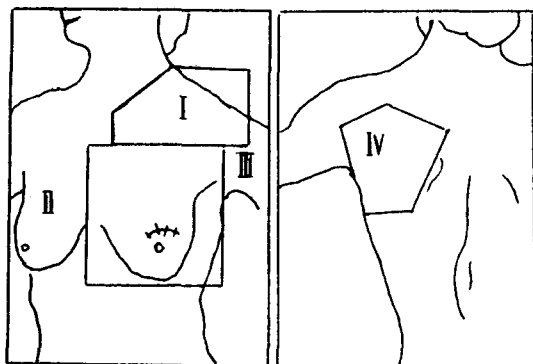


**Fig. 2.** The breast parenchyme discloses the lobules which are greatly enlarged and filled with closely packed relatively monotonous cells having some mitotic figures. The cells show round nuclei with mono - or hyperchromatism and abundant granular cytoplasm, appearing minimal atypia. The interstitial stroma is fibrous and contains group of small sized, infiltrating atypical cells. The surrounding normal parenchyme reveals excretory ducts with proliferations of ductal epithelium associated with areas of ductal invasion forming ductal carcinoma.

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arms of ductal invasion forming duct carcinoma.

Treatment consisted of wide local excision (lumpectomy) of the primary tumor with clear resection margins and radical irradiation of left



**Figs 3A and 3B.** Radiation portals showing 4 fields : tangential fields to the breast, supraclavicular, and axilla with posterior axillary field. Boost doses were also applied to the primary tumor site.

breast.

Radical irradiation was administered by Cobalt-60 (Theratron-780) teletherapy unit, externally. Radiation technique was delivered by 4 fields including tangential fields to the left breast and posterior axillary field (Fig. 3).

The treatment plan gave a dose of 5,040 cGy, delivered in 27 fractions in 6 weeks to the breast, axilla, supraclavicular and parasternal regions (Fig. 3A and 3B).

Thereafter it was 1,000 cGy of boost dose to the primary tumor site of left breast and 1,400 cGy of boost dose to the posterior axillary field with 7 fractions in two weeks.

From 3 weeks after radiation treatment, mild erythematous changes with heating sensation and dry desquamation in the skin was begun. At that time of the finishment of irradiation, moderate and severe moist or dry desquamation was showed. But about 1 month after conservative surgery with radical irradiation, its were completely disappeared and excellent cosmetic result in the irradiated left breast on 2 month FU.

## DISCUSSION

In 1924, at first, Geoffrey Keynes, a surgeon at St, Bartholomew's Hospital in London, began to treat patients with operable carcinoma of the breast with radium implantation of the breast and draining lymph nodes areas<sup>6,7</sup>. A 10 year retrospective review from St, Bartholomew's Hospital published in 1953<sup>8</sup>. For patients with disease clinically confined to the breast the 10 year survival rate

following simple surgery and radium treatment was 49% compared to 59% for radical surgery. For patients with clinical spread to axillary nodes, the 10 year survival rate following simple surgery and radium treatment was 27%, compared to 26% for radical surgery.

On the other hand, two early advocates of conservative surgery combined with radiation were Vera Peters and Sakari Mustakallio<sup>9</sup>.

Beginning in 1939, Peters at the Princess Margaret Hospital in Toronto, treated patients with T<sub>1</sub> or T<sub>2</sub>. No breast cancers with excision and radiation.

In order to compare her results to those achieved by radical surgery, she performed a matched pair analysis in which each of 184 patients treated by excision and radiation was matched by age, size of primary, and year of treatment to three patients treated by radical mastectomy and radiation.

These results carried out to 30 years do not show any significant differences in survival.

Mustakallio, in Helsinki, beginning around 1940, similarly used simple excision with radiation in patients with clinically negative axillary nodes<sup>2</sup>. The radiation therapy give by Mustakallio is considered inadequate by current standards. Using 180 KV to 250 KV equipment, he delivered 1200 rad surface dose in six fractions to the breast and lymph node areas. As a result of this technique, 25% of his patients developed local-regional recurrence by 10 years. Despite this high local recurrence rate, he observed a 5-year survival rate of 79% and a 10-year rate of 61%.

Since the mid-1950, there have been numerous reports from centers in Europe and North America on the use of primary radiation therapy to treat patients with clinical stage I and II breast carcinomas. Comparison of these series to one another is difficult for many reasons, including differences in patient selection, treatment machines, delivered dose and dose distributions, and surgical and clinical staging of patients, as well as differing methods of data presentation and analysis, and changes in treatment policies and techniques with time.

The critical issue regarding primary radiation therapy is whether it yields survival and local-regional recurrence equal to mastectomy. This issue can only confirmed by randomized prospective studies in which the treatment arms are well balanced in terms of prognostic features. There have now been several such studies<sup>3</sup>. The earliest such

trial was that of Guy's Hospital, London, beginning in 1961<sup>10,11,12</sup>. Patients with T<sub>1-2</sub>, N<sub>0-2</sub> breast cancer were allocated randomly to receive either RM or wide excision (WE), with both groups receiving postoperative radiation. Premenopausal patients were excluded from the study. All patients treated before 1968 also received adjuvant thiotepa. Patients in the WE group were treated on a 6 meV machine, receiving 3,500 to 3,800 cGy in 3 weeks to the breast and internal mammary nodes, and 2,500 to 2,700 cGy in 12 days to the axilla and supraclavicular nodes. None of the WE patients had an axillary dissection. As a result, an excess of axillary recurrences was noted in the group treated with WE.

The incidence of freedom from distant metastases and the likelihood of survival were the same in both arms for the no patients. There was a survival advantage at 10 years for the N<sub>1</sub> patients treated with radical mastectomy.

Since 1970, there have been four prospective randomized trials using better radiation therapy techniques. From 1973 to 1980, at the NCI of Milan<sup>4,13</sup>, Italy, 701 evaluable patients with primary tumors 2 cm in size and clinically uninvolved axillary nodes (T<sub>1</sub>N<sub>0</sub>) were entered. Patients were randomized to receive RM or conservative surgery and radiation. Conservative surgery consisted of a resection of the entire involved quadrant of the breast (quadrantectomy) and a full axillary dissection. Radiation was then administered to the breast alone through two opposing tangential fields, giving a dose of 5,000 cGy in 5 weeks. Another 1,000 cGy was then administered to the tumor site using orthovoltage radiation.

The NSABP began a three-arm trial (Protocol B-06) in 1976 comparing mastectomy with segmental mastectomy, with or without radiotherapy<sup>14</sup>. A total of 1,843 evaluable patients with clinical stage I or II carcinoma, with the primary clinically measuring up to 4 cm in size, were entered.

Radiotherapy was delivered to the breast alone with supravoltage equipment, using opposed tangential fields (often without wedge filters to compensate for the slope of the breast), to a dose of 5,000 cGy to 5,300 cGy in 5 to 6 weeks. The regional lymph nodes were not treated, and no boost was given to the tumor site.

The 3rd, from 1972 to 1979 at the Institut Gustave Roussy in Villejuif France<sup>15</sup>, under the sponsorship of the World Health Organization (WHO).

This included 179 patients with tumors pathologically 2 cm or smaller, with either clinically

involved or uninvolved lymph nodes. They were randomized to receive either modified RM or conservative surgery.

The consisted of removal of the tumor with a surrounding margin of 2 cm of grossly normal breast tissue (tumorectomy). All patients underwent low axillary dissection. If involved lymph nodes were detected, this was extended to a complete axillary dissection. Radiotherapy was given with Cobalt 60 to a dose of 4,500 cGy in 18 fractions over 1 month, treating the breast four times weekly. A boost of 1,500 cGy was given to the tumor bed in six fractions.

The fourth and most recent prospective randomized trial was begun by the US National Cancer Institute in 1979<sup>5</sup>. By September 1984, 165 patients with clinical stage I or II breast cancers had been entered and randomized to receive either modified RM or conservative excision, full axillary dissection, and radiotherapy to the breast. With a median follow-up of 27 months, there was no significant difference in outcome between these two groups.

These randomized prospective trials demonstrate two important points. First, the techniques of radiation therapy have an important bearing on the likelihood of local recurrence, and this in turn appears likely ultimately to have an impact on survival, at least in some patient groups. Second, when adequate treatment techniques are used, there is no significant difference in survival between patients treated with radical surgery and those treated with primary radiation therapy. Although longer follow-up will be necessary to verify these results, at present they confirm the evidence of the retrospective trials as to the value of using primary radiation therapy for patients with early breast cancer.

Still now, there are numerous controversies and unsolved problems in the use of primary radiation therapy for early breast cancer as the followings<sup>11</sup>.

1. Patient selection and the extent of surgical resection for the primary radiation therapy.
2. Radiation techniques and time-dose fractionation.
3. The role of extent or level of axillary dissection and the treatment of other regional lymph nodes.
4. Integration with adjuvant systemic therapy.
5. Salvage of breast failure.

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= 국문초록 =

## 초기 유방암의 근치적 방사선치료

국립의료원 치료방사선과

오 원 용 · 황 인 순

초기 유방암의 치료는 근치적 절제술이 오랫동안 주된 치료방법으로써 선택되어 왔으나, 근래에는 여성의 유방을 보존하고 미용효과를 기대할 수 있는 보조적 절제술후 근치적 방사선치료법이 개발되어 지대한 관심과 상당한 논란이 거듭되어 왔다.

이러한 논란을 해결하기 위하여 그동안 세계적으로 많은 후향성 또는 전향성 분석을 시행하여 두 치료방법사이의 치료효과를 비교하여 본 결과, 국소치료를, 재발율, 그리고 생존율에 있어서 큰 차이를 보이지 않았다.

이와같은 치료성적의 결과를 토대로 하여 최근에는 보조적 절제술후 근치적 방사선치료법이 여성들의 유방을 보존하고 미용효과를 향상시킬 수 있을 뿐만 아니라 국소치료를, 재발율, 생존율도 근치적 절제술의 성적과 대동소이하므로 초기 유방암의 치료에 활발히 이용되기에 이르렀다.

본원에서도 이러한 추세에 따라서 보조적 절제술후 근치적 방사선치료를 시행한 초기 유방암 1예를 보고하면서 아울러 많은 문헌고찰과 함께 향후 치료방침을 세우고자 한다.