



Case Report

# A Case of 10-Year Survival after Adrenalectomy for Isolated Adrenal Metastasis of Breast Cancer

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**Abstract:** Isolated adrenal metastasis of breast cancer is very rare, so adrenalectomy for breast cancer metastasis is rarely performed. The case of a breast cancer patient with five-year survival after resection of a left isolated adrenal metastasis is presented. A 70-year-old woman underwent left modified radical mastectomy and axillary lymphadenectomy for invasive ductal carcinoma (T2N1M0) 9 years earlier. At regular follow-up, a left adrenal mass, 4 cm in diameter, was seen on ultrasound examination and computed tomography (CT). Endoscopic adrenalectomy was performed. Pathological examination confirmed isolated adrenal metastasis of breast cancer. After surgery, hormone therapy was given for 5 years. Ten years after adrenalectomy, no metastatic lesions in other organs have been found on CT. Adrenalectomy for a metastatic adrenal tumor of breast cancer may provide survival benefits when combined with systemic hormone therapy and chemotherapy, particularly in patients with disease confined to the adrenal glands.

**Keywords:** breast cancer; metastasis; adrenalectomy

## 1. Introduction

Metastasis to the adrenal glands is not rare among patients with systemic metastases from breast cancer. However, isolated adrenal metastasis of breast cancer is very rare, so adrenalectomy for breast cancer metastasis is rarely performed. Resection of adrenal metastasis of cancers other than breast cancer has been reported. There are few reports about isolated adrenal metastases of breast cancer and their treatment. In addition, the indications of adrenalectomy for isolated adrenal metastasis of breast cancer remain unclear. In lung cancer, a good prognosis is expected after removal of an adrenal metastatic tumor. The case of a breast cancer patient with 10-year survival after resection of a left isolated adrenal metastasis is presented.

## 2. Case Presentation

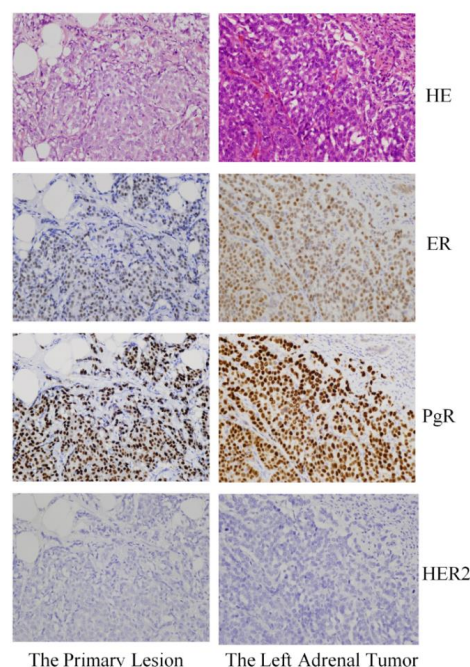
A 70-year-old woman underwent left modified radical mastectomy and axillary lymphadenectomy for invasive ductal carcinoma (T2N1M0) 9 years earlier, followed by chemotherapy with 5'-deoxy-5-fluorouridine for 3 years and hormonal therapy with tamoxifen for 5 years. Nine years after the first surgery, a 4-cm left adrenal mass was seen on ultrasound examination and computed tomography (CT) at regular follow-up (Figure 1). No other metastatic tumors were found. The serum levels of adrenal hormones were within normal limits. Tumor markers were also within normal levels. Gastroendoscopy and colonoscopy showed no abnormal findings. It was difficult to determine

whether this tumor was primary or metastatic. Endoscopic adrenalectomy was performed. A skin incision of 4 cm in length was made in the flank, running obliquely on the distal end of the 12th rib. The posterior aspect of the Gerota's fascia was dissected and a single port was placed in the incision. Then, the Gerota's fascia around the adrenal gland was dissected and the perinephric fat between adrenal gland and kidney was transected. Finally, the left adrenal vein was ligated and excised, and adrenalectomy was completed. Informed consent was obtained from the patient.



**Figure 1.** Computed tomography and ultrasound examination show a 4-cm left adrenal tumor.

Pathological examination showed that this was metastatic adenocarcinoma. Both estrogen and progesterone receptors were positive, and over-expression of the HER2 oncogene was negative; these were the same as those of the breast cancer that had been resected nine years earlier. Thus, the final diagnosis was isolated as adrenal metastasis of breast cancer (Figure 2).



**Figure 2.** Pathological findings of the primary lesion (100× magnification): invasive ductal carcinoma, solid tubular carcinoma, estrogen receptor(ER)(+), progesteron receptor(PgR)(+), and human epidermal growth factor receptor 2 (HER2) score: 0. Pathological findings of the left adrenal tumor (100× magnification): metastasis of invasive ductal carcinoma of the breast, ER(+), PgR(+), and HER2 score: 0.

After removal of the left adrenal tumor, second-line hormonal therapy (anastrozole) was given for 5 years. Ten years after adrenalectomy, no metastatic lesions in other organs have been found on CT (Figure 3).



**Figure 3.** Ten years after removal of the left adrenal tumor, there are no abnormal findings on CT.

### 3. Discussion

The finding of metastasis of cancers of the adrenal glands is not rare, especially at the time of death. In autopsy studies, 58% of breast cancers had adrenal metastases [1]. However, isolated adrenal metastasis is very rare, and there are few reports of adrenalectomy for metastatic breast cancer with long-term survival after resection [2,3]. As for solitary metastasis in the adrenal gland, lung cancer is the most common primary tumor, followed by renal cell and colorectal cancers, and good long-term survival with adrenalectomy for metastatic lung cancer, renal cell cancer, colorectal cancer, and melanoma has been reported [4]. In patients treated nonsurgically, long-term survival was difficult. Steve et al. reported that median survival was 15 months, and 5-year survival was 21%, but no breast cancer patients were included in their series [4]. They demonstrated that both complete resection and a disease-free interval of greater than 6 months were significant independent predictors of long-term survival in patients after adrenalectomy [4]. For an isolated adrenal metastasis from non-small-cell lung cancer, patients with a synchronous metastasis who underwent adrenalectomy had a shorter median overall survival than those with a metachronous metastasis [5]. In the present case, the disease-free interval was 10 years, and complete resection with negative surgical margins was performed.

Recently, minimally invasive surgery, such as laparoscopic or portless endoscopic adrenalectomy, has become widespread. Laparoscopic adrenalectomy is a safe alternative to open adrenalectomy, with equivalent oncologic outcomes [2]. However, laparoscopic adrenalectomy for adrenal metastasis requires strict observation of sound oncological criteria to avoid distant metastasis and port site recurrence. Feliciotti et al. emphasized that these criteria are as follows: early ligation of the main venous vessel; minimal instrumental manipulation of the tumor-bearing gland; specimen removal inside a specimen-retrieval bag [2]. In the present case, gasless single-port access endoscopic adrenalectomy was performed using a specimen retrieval bag, which might lead to no port site recurrence in the present case [2]. In our series, no port site recurrence has been seen in endoscopic surgery of metastatic adrenal tumors from lung, kidney, and breast cancers. Port site recurrence may be due to the aggressive biologic behavior of the metastatic tumor rather than to an incorrect choice of surgical technique [6].

Generally, metastatic breast cancer is regarded as a systemic disease, so it is rare to consider resecting adrenal metastasis. Adrenalectomy for metastatic adrenal tumors may lead to a survival benefit when combined with systemic hormonal therapy and chemotherapy, particularly in patients with disease confined to the adrenal glands. Adrenalectomy should be considered when isolated adrenal metastasis is found and complete resection can be achieved.

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