

Proton Therapy for Patients with Breast Cancer

Talk to your doctor or call Provision to learn how Proton Therapy can help you.

Precision Therapy. Fewer side effects.

Proton Therapy is an advanced form of radiation therapy that precisely targets the tumor utilizing proton particles. Proton particles stop inside the body and do not deposit radiation beyond the tumor they are targeting, causing less damage to healthy tissue. Proton therapy is effective in treating a broad range of tumors including prostate, head and neck, central nervous system, lung, breast, gynecologic, sarcoma, gastrointestinal, pediatric cancers, and others.

Effective in treating breast cancer

Proton therapy significantly reduces radiation to healthy tissue. Compared to intensity modulated radiation therapy (IMRT) and 3-D conformal radiotherapy (3-D CRT), radiation dose to the heart and lungs is significantly reduced when treating with proton therapy. In many cases, the impact on the heart from proton therapy is expected to be the same as women who have never received radiation therapy. Proton therapy is an excellent treatment option for patients who are concerned about potential side effects from radiation treatment.

Proton Therapy may be a better option if you:

- Have stages I-III breast cancer, especially if the cancer is located on the left side of the body
- Lymph node irradiation is part of the treatment plan
- Will be receiving chemotherapy
- Have preexisting vascular disorders, cardiac disease, lung disease, or increased risk of developing a secondary malignancy
- Have unfavorable anatomy that places normal organs at elevated risk of radiation exposure

In a study of women with locally advanced, left-sided breast cancer post-mastectomy, proton therapy showed excellent sparing of the heart and the lung, potentially decreasing the risk of side effects.¹⁰

Visit Protonbenefits.com for more information.

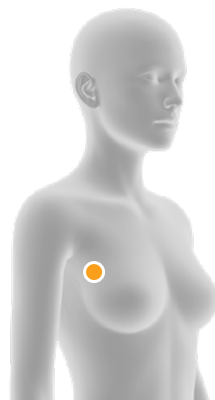
Proton Therapy Clinical Benefits

88% less radiation dose to the heart for left sided breast cancer^{9,10}

44% reduction in clinically significant radiation doses to the lung¹⁰

90% of partial breast irradiation cases result in good to excellent cosmetic outcomes at 5 years¹¹

Well tolerated - **Less than 4%** serious side effects (grade 3) in locally advanced breast cancer¹⁰



Results from separate studies compared in some instances. The benefits of proton therapy for each individual patient will vary based on their individual diagnosis. A personal consultation with a proton-experienced radiation oncologist is recommended in all cases. Reference material and sources can be found on the "Proton Therapy Clinical Benefits Sources and Citations" sheet or at ProtonBenefits.com.

PROTON THERAPY BENEFITS

Breast Cancer treatment with protons compared to treatment with conventional radiation/X-rays/IMRT

Proton therapy has unique attributes that reduce radiation exposure to normal, healthy organs. This is important for either breast with respect to sparing damage to the lungs, but especially important in left-sided breast cancer, as the cancer is close to critical organs such as the heart and important blood vessels like the left anterior descending artery (LAD), which feeds most of the left side of the heart.

In the chart below, the grey and white areas indicate no radiation exposure, while the colored areas indicate radiation exposure.

Notice the left ventricle of the heart and the LAD are inside the radiation field with conventional radiation therapy.

BREAST CANCER TREATMENT COMPARISON

