

Proton Therapy for Patients with Breast Cancer

Talk to your doctor about 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 brain, prostate, head and neck, central nervous system, lung, breast, sarcoma, gastrointestinal and many pediatric cancers.

Particularly effective in treating breast cancer

Proton therapy significantly reduces radiation to normal tissues. 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 heart will receive no radiation at all with proton therapy.

These remarkable results show that proton therapy is a great 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
- Have other risk factors that indicate the inclusion of lymph node irradiation
- Will be receiving cardiotoxic chemotherapy
- Have preexisting vascular comorbidity, 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 recent 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.¹

Visit Protonbenefits.com for more information.

Breast Clinical Benefits

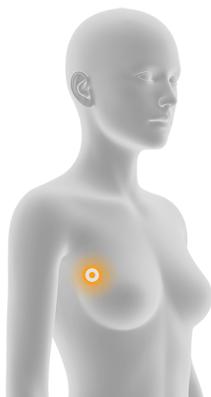
Delivers 8-18 times less overall radiation to the heart than IMRT

50-83% less relative risk of heart attack or another major coronary event depending on age

50% reduction of clinically significant radiation doses to the heart

97% of partial breast irradiation patients experience

no breast tumor recurrence at 5 years
90% of cases result in good to excellent cosmetic outcomes at 5 years



**References available upon request. 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.*

PROTON THERAPY BENEFITS

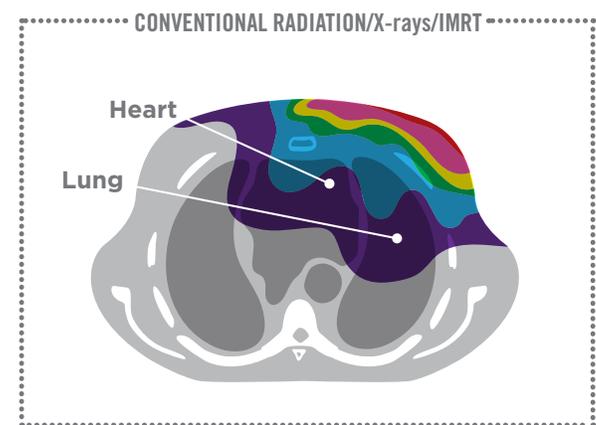
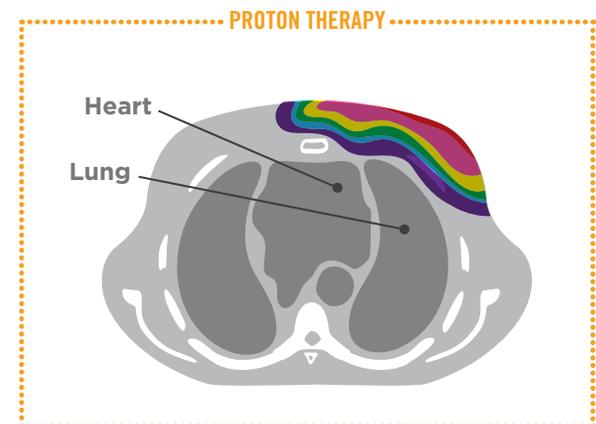
Breast Cancer treatment with protons compared to treatment with conventional radiation/X-rays/IMRT

Proton therapy has unique attributes that reduce radiation exposure to normal, healthy organs.^{1,2}

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 the lungs.

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

BREAST CANCER TREATMENT COMPARISON



LESS RADIATION MORE RADIATION

¹ MacDonald S, Specht M, Isakoff S, et al. Prospective pilot study of proton radiation therapy for invasive carcinoma of the breast following mastectomy in patients with unfavorable anatomy - first reported clinical experience. Int J Radiat Oncol. 2012;84(Suppl 3):S113-S114. Abstract 281
² Moon SH, Shin KH, Kim TH, et al. Dosimetric comparison of four different external beam partial breast irradiation techniques: three-dimensional conformal radiotherapy, intensity-modulated radiotherapy, helical tomotherapy, and proton beam therapy. Radiother Oncol. 2009;90:66-73.