

## Why is the radiation type so important?

When a radiation source is placed on the eye or into the orbit, it not only destroys the cancer but also effects the surrounding normal tissues.

Dr. Finger says, “for eye plaque radiation therapy –ruthenium-106, iodine-125, and palladium-103 can destroy choroidal melanoma, however the plaque that delivers least radiation to the retinal macula, fovea and optic nerve will offer the patient the best chance of maintaining their vision over time.”

The best type of radiation is the one that destroys the tumor with the fewest side effects.

## For More Information

ON RADIATION THERAPY AND/OR ANYTHING RELATED TO EYE CANCER, VISIT:

[WWW.EYECANCER.COM](http://WWW.EYECANCER.COM)

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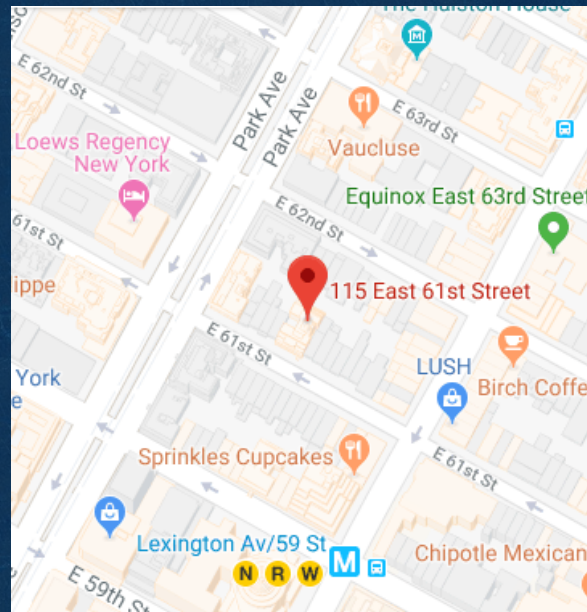
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*The Importance of*

# RADIATION TYPES

Palladium-103 | Iodine-125 | Ruthenium-106



“Radiation comes in all different types and strengths. The kind of radioactive plaque used for treatment of the tumor can make all the difference.” - Dr. Finger



**Did you know?**

The first experiments using radiation therapy can be traced back as far as 1895, soon after the invention of the x-ray!

**Palladium - 103**

Compared to Ru<sup>106</sup> and I<sup>125</sup>, Pd<sup>103</sup> for cancer treatment emit lower-energy radiation, which is more quickly absorbed by human tissue. This allows for more targeted treatment towards the tumor while minimizing radiation exposure of normal structures of the eye. Because palladium typically offers more focused treatment in treatment of choroidal and iris melanoma, better results have been reported compared to other radiation options. One study of 400 patients showed that patients who have undergone Pd<sup>103</sup> radiation are better able to maintain their vision, have less macular radiation side effects, can keep their eye (avoid enucleation). Dr. Finger notes, “better initial local tumor destruction has been shown to be associated with less systemic metastasis.”

The table below compares the results of several different types and doses of radiation therapy.

**Iodine-125 Plaque**

A precursor to Pd<sup>103</sup>, I<sup>125</sup> radiation uses the iodine-125 isotope for cancer treatment. Because of this, in 1985 it was selected for a national study of choroidal melanoma (the COMS). This made I<sup>125</sup> the most frequently used radiation type for ocular cancers. However, recurrence, side effects, enucleation, vision loss, and metastasis is still higher using I<sup>125</sup> plaques compared to Pd<sup>103</sup>

**Ruthenium-106 Plaque**

Even before Iodine, there was ruthenium-106 radiation. For example, Ru<sup>106</sup> was the frontrunner in 1966. However, since that time Ru<sup>106</sup> been discovered to provide inadequate radiation for tumors more than 5 mm tall. Ru<sup>106</sup> also have greater rates of recurrence, need for re-treatment or enucleation compared to palladium-103 or iodine-125 plaques used at The New York Eye Cancer Center.

A COMPARISON OF RADIATION TYPES						
Author	Radiation	Mean Dose	Recurrence	Enucleation	Metastasis	Vision
	Type	Gray				
Packer	I-125	91	7.8%	17.2%	15.6%	45% ≥ 20/100
Fontanesi	I-125	79	2.3%	9.7%	5.5%	41% ≥ 20/100
Giblin	I-125	97	7.2%	8.8%	6.1%	47% ≥ 20/100
Kreissing	I-125	70	10%	0%	15.7%	100% severe loss of vision
COMS	I-125	Variable	N/A	N/A	N/A	57% ≥ 20/100
Lommatzsch	Ru-106	100	15%	26%	20%	N/A
Finger	Pd-103	80.5	4%	6%	6%	73% ≥ 20/100
All Six Trials	Mean Results	86	8%	11%	11%	

\*The table above is not comprehensive. For complete results visit [www.eyecancer.com](http://www.eyecancer.com)