β-Trace: Providing Innovative Radiation Therapies for Pancreatic Cancer Patients

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The Problem

Pancreatic cancer is projected to be the second highest cause of cancer related deaths by 2040

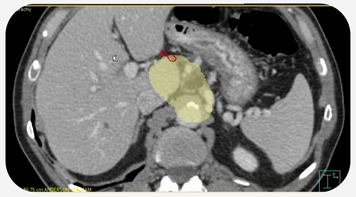
- Lack of early symptoms and effective screening strategies lead to late-stage disease at diagnosis
- 1 in 5 patients are eligible for the only curative procedure (Whipple surgery) and most of these patients will face cancer recurrence within 5 years

Presently, there are no effective strategies exist for dealing with recurrence in pancreatic cancer:

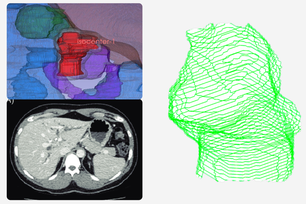
- Systemic radiotherapy is damaging to radiosensitive organs near the pancreas
- Chemotherapy does not deliver sufficient therapeutics to the hypovascular tumor environment

The Solution

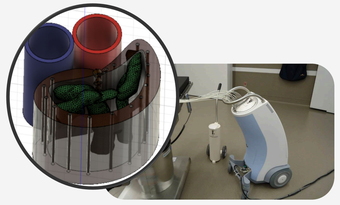
Radiation oncologists determine clinical target volume & dosimetry plan from pre-treatment CAT scans



Catheter channels are optimally placed within target volume and resulting applicator is modeled in β-Trace software:



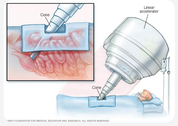
Patient specific applicator is fabricated with silicon cast in a 3D printed mold which connects with existing radiation loading systems

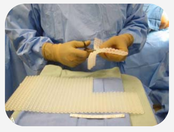


New Technical Frontier

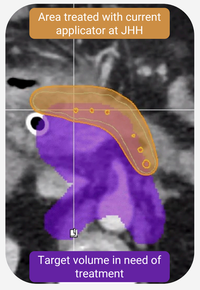
IORT (Intraoperative Radiation Therapy):

Radiation treatment of the tumor margins during surgery with a more targeted therapeutic dose delivered directly to the treatment area





- Commonly used to treat other cancers (skin, prostate)
- Radiation source placed near or directly on top of the targeted treatment site allowing for a higher dose
- Sensitive organs can be shielded or moved away



Barriers to Adoption:

The existing treatment modalities are not optimized for the complex, volumetric environment in the abdomen

- Applicator designed for flat surfaces
- No effective preplanning of treatment exists
- Device is inflexible and difficult to operate during surgery

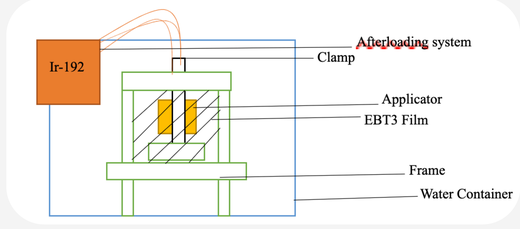
Testing and Validation

1) Dosimetry validation:

Oncentra Brachy Treatment (industry standard) will be used to compare dose coverage of β-Trace applicator to existing competitor products (Freiburg Flap)

2) Phantom Studies to Validate Dose Delivery:

Radiation (IR-192) is delivered to a water phantom (TG-43 dose formalism) using a Nucletron HDR remote afterloader system. Dosage is measured with EBT3 radioichromic films.



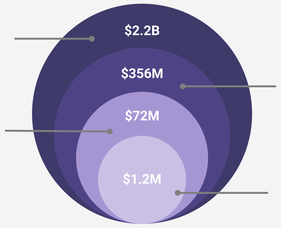
3) In-Patient Clinical Trial to Validate Fit:

Ongoing, IRB approved clinical trial (beginning in March 2022) is leveraged to confirm the fit and usability of our product in the initial patient population.

Market Opportunity

TAM
Based on expansion to estimated 5% of breast cancer procedures

SOM
Captured hospitals based in Northeast region



SAM
Based on 13000 Pancreatic Cancer Surgeries in US and 1200 hospitals with remote-afterloading systems

Beach Head Market
Locally advanced Surgeries at Hopkins

Conclusion and Acknowledgments

60.5K people are diagnosed with pancreatic cancer annually

4/5 people will lose the fight against this disease within 5 years

β-Trace is a novel, effective and affordable treatment modality for combatting recurrence in pancreatic cancer through high dose IORT. Together we can aim to provide better care to families affected with pancreatic cancer.

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