First Report of the Permanently Implantable Uni-Directional Planar LDR Brachytherapy for Patients with Locally Advanced Pancreatic Cancer

Shannon S. Yoo1, Dorin A. Todor2, Brian J. Kaplan3, Jennifer M. Myers4, Emma C. Fields, MD2
Virginia Commonwealth University, Richmond, VA 1School of Medicine 2Department of Radiation Oncology 3Department of Internal Medicine 4Department of Surgery

PURPOSE

• Surgery remains the only curative option for patients with pancreatic cancer, but there is a risk of 18%-40% of margin-positive resections reported in the literature which conveys high risks of local control and poor survival.

• Even with neoadjuvant therapy there is a risk of margin-positive resection given the proximity to major vasculature.

• This is the first report demonstrating the feasibility and tolerance of this novel, uni-directional 103-palladium (Pd-103) sheet which is implanted at the time of pancreatectomy for patients with close or positive margins.

MATERIALS & METHODS

• Prior to opening the Phase I/Ii CivaTech Study, 5 pts with concern for positive margins were treated with the implantable LDR sheet at the time of surgery.

• One of the pts had surgery and sheet placement as initial therapy. The other 4 received chemotherapy, chemoradiation followed by surgery and sheet placement.

• CivaSheet® is an FDA-cleared product consisting of a matrix of Pd-103 radiation sources on a bio-absorbable membrane with a gold shield that attenuates dose on one side of the device, making the radiation distribution uni-directional.

• Dose is prescribed to 5mm depth and in this study was between 38-45Gy EQD2.

• Outcomes evaluated included procedural time, time to implant the device, procedural complications related to sheet placement, length of hospital stay, and post-operative complications.

RESULTS

Patient Characteristics

• Between 3/2017 and 5/2018, 5 patients received LDR sheets at the time of surgery for pancreatic adenocarcinoma

• The average procedure time was 7 hours and 17 minutes and the median time was 6 hours and 41 minutes

• The surgeon felt that placing the LDR sheet added only 15 minutes to the overall time

• There were no post-op complications attributable to the sheet

SUMMARY & CONCLUSIONS

• At a median follow up of 10 months, 1 patient has died related to a rare pulmonary complication of gemcitabine with no evidence of disease.

• One patient is alive with local and distant recurrence at 13 months and the other 3 are alive with no evidence of disease at 3, 10 and 13 months.

• This is the first study to report the safety and feasibility of the implantable LDR sheet in pts with a concern for close margins at the time of pancreatectomy.

• This novel, uni-directional, Pd-103 sheet provides a unique solution to the challenging problem of boosting these pts and will hopefully show improved rates of local control and ultimately overall survival in these pts.

• There is a Phase I/I study currently enrolling patients after neoadjuvant chemotherapy then chemoradiation or SBRT who have a risk of a close margin at the time of resection

Contact information  emma.fields@vcuhealth.org (email) (804) 828-7232 (phone)