

# SBRT after neoadjuvant chemotherapy (NAC) for Locally Advanced Pancreatic Cancer (LAPC): Local control, Resectability, Survival.

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## ABSTRACT

ΣΤΕΡΕΟΤΑΚΤΙΚΗ ΑΚΤΙΝΟΘΕΡΑΠΕΙΑ ΣΩΜΑΤΟΣ, (SBRT) ΜΕΤΑ ΑΠΟ ΝΕΟΕΠΙΚΟΥΡΙΚΗ ΧΗΜΕΙΟΘΕΡΑΠΕΙΑ (NEX) ΓΙΑ ΤΟΠΙΚΑ ΠΡΟΧΩΡΗΜΕΝΟ ΚΑΡΚΙΝΟ ΠΑΓΚΡΕΑΤΟΣ (ΤΠΚΠ) : ΕΓΧΕΙΡΗΣΙΜΟΤΗΤΑ, ΤΟΠΙΚΟΣ ΕΛΕΓΧΟΣ, ΕΠΙΒΙΩΣΗ.

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## INTRODUCTION

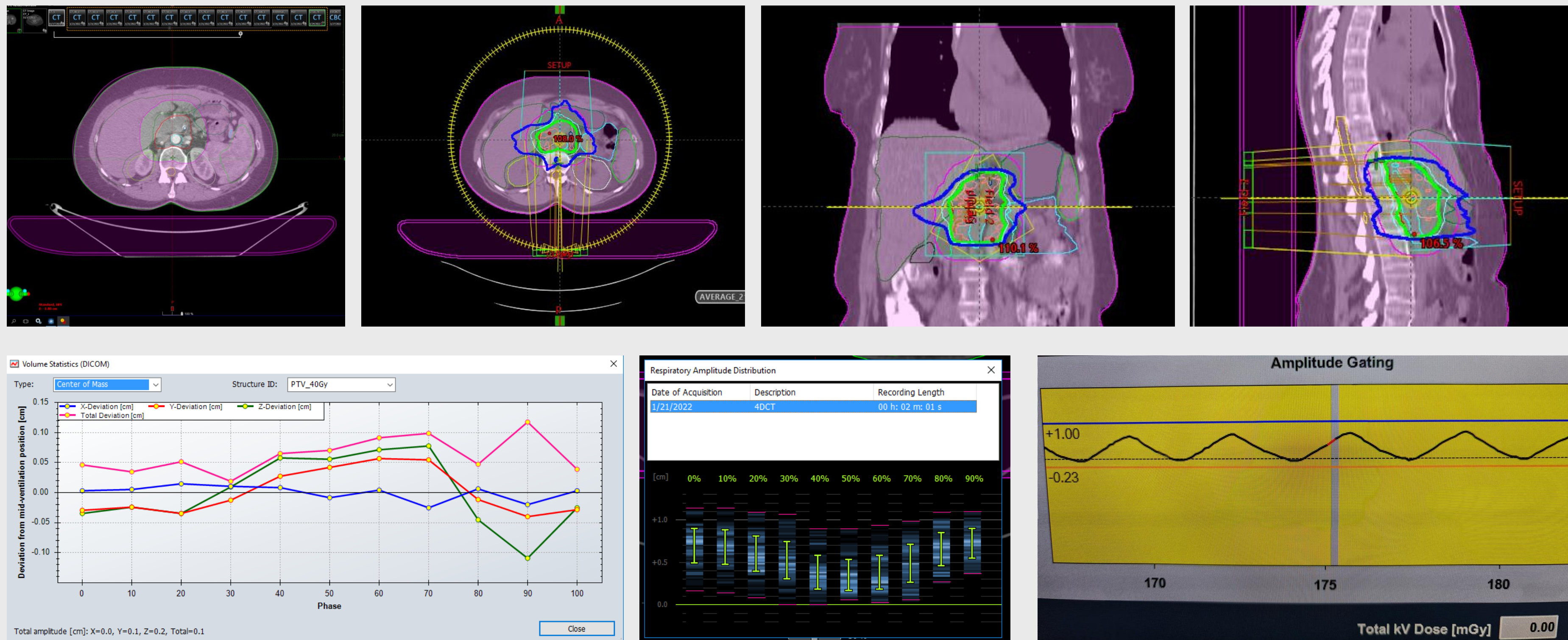
NAC for tumor downstaging, better local/distal disease control, and higher R0 resection rate, followed by pancreatectomy are the two pillars of the management of LAPC. The potential additional role of SBRT remains controversial.

## METHODS AND MATERIALS

In our tertiary referral center, patients with BRPC and LAPC undergo a complete course of NAC (mostly FOLFIRINOX), cross-sectional imaging reevaluation in 2 weeks and exploration for possible resection when the tumor looks resectable, en-block with the involved major vascular structure(s). Recently, when such a resection did not look feasible and there was no disease progression, radiotherapy was delivered through SBRT technique 5fr/ 8Gy/ 40Gy total dose, with no concurrent chemotherapy. Treatment was performed using FFF arc therapy, patient was immobilized with abdominal compression and breathing motion was tracked with surface guidance. Irradiation was limited to specific breathing phases. CBCT was performed prior and at the end of each fraction. A month after SBRT, patients were restaged (CT with pancreatic protocol) for possible resection.

## RESULTS

**Twenty-six** patients (**10** males/**16** females, median age: **59**, ECOG-PS score: 0-1) with LAPC underwent SBRT a median of **27** days following NAC (Aug. 2019 – **June 2023**). No SBRT-related side effects occurred. Follow-up was complete (**Dec. 2023**) with a median of **18** months. **Twelve** patients (**46%**) were subsequently explored for possible resection, a median of **2** months after SBRT, and in **8** of them (**75%**, or **31%** of the total) a pancreatectomy was performed. R0 resection was achieved in **7 (88%)**. **Five** patients are alive and well at **11, 14, 19, 21, and 31** months since diagnosis and **three** patients died at **13, 22, and 27** months.



## RESULTS

The **4** patients explored, but not resected, had complete encasement of the common and proper hepatic artery from its origin to its bifurcation (**2** patients), or micrometastatic liver, or peritoneal disease (**1** patient each). The **13** patients not subjected to pancreatectomy were followed closely and received further chemotherapy when appropriate. They had a median survival of **15** months since diagnosis. Local control was achieved in **9 (69%)**. **Seven** patients are alive for a median of **15** months and **6** patients died at a median of **15** months.  
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## DISCUSSION

Patient inclusion criteria: age≥18years, histologically proven unresectable primary adenocarcinoma, neo-adjuvant chemotherapy, lesion diameter<5cm, Karnofsky Performance score≥70.  
Patient immobilization: supine position, Deep Inspiration Breath Hold technique, barium meal given 15min prior to CTsim for stomach and duodenum visualization.  
Clinical Target Volume (CTV) delineation: using the arterial phase of the planning CT scan (1mm slice thickness) with registered MR & PET images.  
Planning Target Volume (PTV) delineation :  
CTV+ 5mm in the left-right  
5mm in the anterior-posterior  
10mm in the cranial-caudal direction  
Dose prescription: 40Gy in 5 fractions delivered over a two weeks period (2fractions per week) (BED>100Gy).

## CONCLUSIONS

Our initial experience shows that SBRT following NAC for BRPC or LAPC is safe, is associated with a high rate of local control and may render resectable about one fifth of patients considered unresectable after NAC alone.