Purpose or Objective: Reducing overall treatment time has advantages for patient convenience, but also for local control as shown by former studies. Critical organs in the neck cause concern in relation to long-term morbidity and quality of life, but with recent advances with high-precision image-guided and intensity-modulated radiotherapy (IMRT) techniques, avoidance of the organs at risk has become possible. The purpose of this study is to develop an image-guided high-dose hypofractionated vocal cord irradiation technique to treat patients with early stage glottic cancer.

Material and Methods: Eligible patients with early stage glottic cancer provided with informed consent will receive hypofractionated radiotherapy to the larynx with a simultaneous boost to the gross tumor. The fraction size will be stepwise increased from 3.5Gy (total dose 59.4Gy) to 9Gy (total dose 45Gy). To proceed to the next dose level, at least 7 patients should be confirmed that they have no toxicity more than grade 2 after 3 month post-RT. The organs at risk include the larynx, contralateral vocal cord, arytenoids, carotid arteries, inferior pharyngeal constrictor muscle, and spinal cord.

Results: Four patients were enrolled to receive 59.4Gy with 3.5Gy per fraction until July 2015. None of the patients developed toxicity more than grade 2 after 1 month post-RT. The mean equivalent dose in 2Gy fractions (EQD2) to contralateral arytenoid, thyroid gland, inferior pharyngeal constrictor muscle, and larynx were in average 69.5Gy, 12.3Gy, 50.8Gy, and 66.5Gy, respectively. No portion of the carotid arteries were irradiated more than 50 Gy (EQD2) in the IMRT plan. After 3 months of follow-up, all 4 patients demonstrated no more than grade 3 toxicities. Also, all patients showed complete remission by laryngoscopy.

Conclusion: The high-dose hypofractionated IMRT technique provided good sparing of critical structures and resulted in no severe toxicity after a short term follow up. We will continuously perform this phase I clinical trial to stepwise increase the fraction size up to 9Gy.

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High dose-low energy intraoperative radiotherapy in the treatment of malignant H&N tumors
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Purpose or Objective: Objective: The aim of this study was to investigate the feasibility of high dose-low energy intraoperative radiation (IORT) therapy using INTRABEAM© (Carl Zeiss Surgical, Oberkochen, Germany) in the treatment of malignant Head & Neck tumors.

Methods and Materials: Between March 2014 and July 2015, 12 patients with head and neck cancers (seven with primary malignant parotid tumors and five patients with previously treated recurrent head and neck cancer) received intraoperative radiation therapy after surgical resection at Loyola University Medical Center (Maywood, IL). The median dose prescription was 66Gy (range, 5-146Gy) prescribed to 5mm