

## Poster: Brachytherapy track: Head and neck

PO-0964

High-dose-rate interstitial brachytherapy as monotherapy for locally limited mobile tongue cancer

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**Purpose or Objective:** In order to evaluate the usefulness of high-dose-rate interstitial brachytherapy (HDR-ISBT) as monotherapy for locally limited mobile tongue cancer, we analyzed our clinical experience.

**Material and Methods:** We investigated 29 locally limited mobile tongue cancer treated by HDR-ISBT as monotherapy at National Hospital Organization Osaka National Hospital between February 2001 and August 2012. The median age of the patients was 60 years (range: 34-84 years). All patients had histologically confirmed squamous cell carcinoma. According to the UICC classification of 2007, 3 T1, 18 T2 and 8 T3 were classified, respectively. The median tumor thickness of the patients was 10 mm (range: 2-45 mm). Ten (34%) medically poor risk patients (more than 80 years of age or severe intercurrent disease) were included. One patient had previous irradiation history. All but one patients received 54 Gy in 9 fractions. The other patient reduced his treatment doses (48 Gy in 8 fractions) because of previous irradiation history. We used three-dimensional planning for later 7 patients and delivered the prescribed doses to CTV (clinical target volume). Gross tumor volume (GTV) was defined with metal markers positions, applicator positions, intraoral ultrasonography and CT image. The GTV was equal to the CTV.

**Results:** The median follow-up time was 47 months (range; 10-171 months). The median V100(CTV) were 100%prescribed dose (range; 99.6-100%) for 7 evaluable patients. The 4-year local control rates were 100%, 73% and 88% for T1, T2 and T3. The 4-year overall survival rates were 67%, 66% and 31% for T1, T2 and T3. The 4-year local control rates were 88%, 83% and 60% for tumor thickness of <10 mm (12 patients), 10-19 mm (12 patients) and ≥20 mm (5 patients). The 4-year overall survival rates were 63%, 67% and 40% for tumor thickness of <10 mm, 10-19 mm and ≥20 mm. Four (14%) patients showed moderate to severe radiation ulcer.

**Conclusion:** Our treatment result of HDR-ISBT as monotherapy showed good local control result although there were many medically poor risk patients. Overall survival rate was worse for patients who had T3 tumor or tumor thickness of ≥20 mm.

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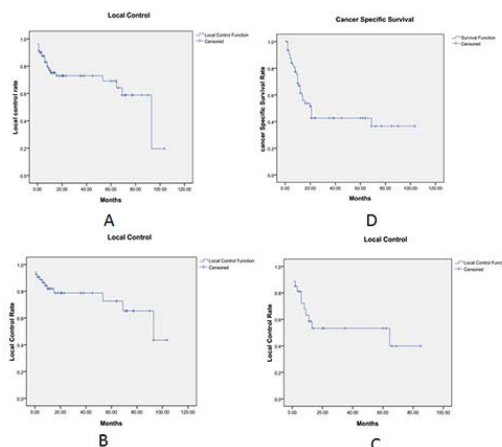
125I seeds implantation under ultrasound guidance for local recurrent tumor of head and neck

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**Purpose or Objective:** To evaluate the efficacy and safety of interstitial permanent low dose rate 125I seeds implantation under ultrasound guidance for local recurrent tumor of head and neck.

**Material and Methods:** A total of 70 patients (median age, 60years; range, 4-94 years) with malignant mass in head and neck were retrospective -y studied ( from Jan. 2004 to Oct. 2014). 6 were lost to follow-up, and 64 met the inclusion criteria. 81 lesions in head and neck implanted 125I seeds were evaluated. And 54 of 81 lesions were diagnosed cervical lymph node recurrence and another 27 lesions were local recurrence of primary or residual after first management. All the patient underwent 125I seed implantation guided by ultrasonography (Color Doppler Ultrasound with high frequency probe and guiding stabilization devices, Alokaα-10, Figure 1) with adequate local anesthesia. Postoperative dosimetry was routinely performed by TPS (3D treatment planning system; Beijing Fei Tian Industries, Inc.) for all patients. The actuarial D90 of the implanted 125 I seeds ranged from 100Gy to 160Gy (median:130Gy). The activity of 125 I seeds ranged from 0.3mCi to 0.8mCi (median: 0.69mCi). The total number of seeds implanted ranged from 3 to 89 (median: 20). The follow-up period ranged from1 to103.5 months (median: 14months).The survival and local control probabilities were calculated by the Kaplan-Meier method (SPSS 16.0).

**Results:** Among all the 81 lesions, totally response rate was 80.2% , 22 lesions had complete remission CR (27%) and 43 had partial remission PR (53%) . The 1- ,3-and 5-year tumor control rates were all 75.2% , 73% and 69.1%respectively. The results of cervical lymph node recurrence shows better than the recurrence or residue of primary head and neck neoplasm, with the local control of 5 year was 72.7% and 39.9% respectively. As of the date of follow-up, 22 of 64 patients still alive , The 1- and 3-,5-year overall survival rates were 57.4% , 31% , 26.6% respectively, with a median survival of 20 months. Grade 4 side effects of skin ulceration was seen in 2 patient; grade 1 or 2 skin reactions were seen in 11 patients (17%) who had received external beam radiation therapy before. Other severe complications were not seen.



(A) Local control curve of 81 lesions, (B) Local control curve of 54 cervical lymph node recurrences, (C) Local control curve of 27 recurrence or residue of primary, (D) Cancer specific survival curve of 64 patients

**Conclusion:** Interstitial permanent implantation of 125 I seeds under ultrasound guidance is feasible, efficacious and safe for refractory head and neck metastasis or recurrence.

## Poster: Brachytherapy track: Physics

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Dose planning of intraluminal brachytherapy for esophageal cancer using MR imaging

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**Purpose or Objective:** A new methodology using magnetic resonance (MR) imaging for brachytherapy dose planning of esophageal cancer has been developed. The main objective