Materials and Methods: Factors.

China 2014, 97 patients with locally recurrent rectal cancer 1Peking University Third Hospital, Cancer center, Beijing, 1Tata Memorial Hospital, Radiation Oncology Department, Mumbai, India

Purpose/Objective: Surface mould brachytherapy (SMB) is a century old technique which can be used for various sites such as skin, nose, ear and hard palate in the head and neck region. There is scarcity of data on high dose rate (HDR) SMB. Aim of this study is to evaluate the outcomes of patients treated with SMB technique.

Materials and Methods: Patients with malignant localized early T1 or T2, node negative lesions in the head and neck region treated with SMB during 2008 – 2013 were considered. Individualized mould was prepared for all patients. Three dimensional CT based planning was carried out with the mould in situ using the Plato planning system (Nucletron). The median number of catheters was 5 (Range 3-7). Treatment was delivered using HDR 192 Ir source to a dose ranging from 39 to 52.5 Gy (mean 49 Gy) with 350 cGy per fraction, using bid regimen. Median number of catheters used were 5 (range 3 to 7). For the present analysis the data was extracted from a prospective brachytherapy database as well as from patient charts. The data was analysed using SPSS and validated by conducting further studies with larger cohorts.

Conclusions: Corrected displacement during the 4 fractions regimen of HDR monotherapy did not lead to an increase in acute nor late GI and GU toxicity confirming the feasibility of our correction protocol to ensure a safe HDR treatment regimen.

Proffered Papers: Brachytherapy 1: Rectal, head and neck, bladder, breast

OC-0037
CT-guided radioactive seed implantation as a salvage modality for locally recurrent rectal cancer
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Purpose/Objective: To evaluate the efficacy of CT-guided radioactive seed implantation for locally recurrent rectal cancer (LRRC) , and analyze the associated prognostic factors.

Materials and Methods: From September 2003 to October 2014, 97 patients with locally recurrent rectal cancer received 125I seeds implantation under CT guidance in our center. Each patient underwent three-dimensional treatment planning pre-implantation and dosimetric verification post-implantation. The range of activity of seed was from 0.40 to 0.8 mCi, and the range of seeds number was from 18 to 137. The range of D90 was from 75.91 to 165.27 Gy. Overall survival of the patients was calculated and prognostic factors were evaluated.

Results: The follow-up rate was 93.5%, the median follow-up time was 15.7 months (4.2 – 98.1 months). The response rate of pain relief was 95.2%. The overall response rate was 51.6%, in which complete response rate was 16.1% and partial response rate was 35.5%. The 1, 2 and 3 year local control rates were 32.3%, 11.3% and 11.3%, respectively. The median local control time was 8.0 month. The 1, 2 and 3 year survival rates were 67.6%, 36.0% and 7.5%, respectively. The median overall survival time was 21.5 months. Analysis using the Cox proportional hazards model suggested that patients with pre-sacral recurrence and patients who received a D90 higher than 140 Gy may survive for a longer period.

Conclusions: CT-guided radioactive seed implantation provides a safe and effective method to relieve pain, control local tumor growth and, to some extent, prolong the survival of patients with locally recurrent rectal cancer without additional complications. It is an alternative treatment option for locally recurrent rectal cancer, especially for those with previous pelvic radiation. Location of recurrent tumor and accumulated dose may be factors predictive of a favorable outcome for patients. These findings need to be validated by conducting further studies with larger cohorts.

OC-0038
Clinical outcomes with high dose rate surface mould brachytherapy in head and neck cancers
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Purpose/Objective: Surface mould brachytherapy (SMB) is a century old technique which can be used for various sites such as skin, nose, ear and hard palate in the head and neck region. There is scarcity of data on high dose rate (HDR) SMB. Aim of this study is to evaluate the outcomes of patients treated with SMB technique.

Materials and Methods: Patients with malignant localized early T1 or T2, node negative lesions in the head and neck region treated with SMB during 2008-2013 were considered. Individualized mould was prepared for all patients. Three dimensional CT based planning was carried out with the mould in situ using the Plato planning system (Nucletron). The median number of catheters was 5 (Range 3-7). Treatment was delivered using HDR 192 Ir source to a dose ranging from 39 to 52.5 Gy (mean 49 Gy) with 350 cGy per fraction, using bid regimen. Median number of catheters used were 5 (range 3 to 7). For the present analysis the data was extracted from a prospective brachytherapy database as well as from patient charts. The data was analysed using SPSS software (V18). Survival analysis was done using Kaplan Meier method.

Results: Thirty one patients were treated with SMB. The median age at presentation was 53 years (range 25-82 years). Most of the patients were males (n=24). The most common site was hard palate in 14 (45%), followed by nose in 7 (22.5%), soft palate in 5 (16%), tonsil in 2 (6.5%), skin over face in 2 (6.5%) and pinna in 1 (3.5%). The histology was squamous carcinoma in 27 patients, while the rest were basal cell carcinoma. The median tumor size was 2 cm. Treatment was given in the primary setting in 29 and recurrent setting in 2 patients. Twenty three patients received the SMB as definitive, radical treatment while in 8 it was used as boost after external beam radiotherapy. Acute skin toxicity was seen in 17 patients of which 10 were grade II reactions. Acute mucosal reactions were seen in 19 with grade II in 10 and grade III in 1. Median follow up was 29 months (range 4 to 78 months). Eight patients had recurrent disease (4 primary, 3 isolated nodal recurrences and 1 primary and nodal recurrence). Two patients had died at 4 months and 14 months. Three year DFS was 70% and 3 year overall survival was 91%. Grade 1 mucosal atrophy was seen in 22. Grade 1 xerostomia was seen in 6 and grade II for 1 patient (all of them had received external radiotherapy). On long term follow up osteo- necrosis was seen for 2 of which 1 recurrence had at the primary site. Skin hypopigmentation was seen in 3 while telangiectasia was seen in 9 patients.

Conclusions: Surface mould brachytherapy results in acceptable locoregional control rates and good overall survival with excellent organ and function preservation.

OC-0039
Local recurrence after interstitial radiotherapy in bladder cancer
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Purpose/Objective Background: Bladder preservation combining surgery and radiotherapy could maintain quality of life without compromising tumor control in selected patients with bladder carcinoma. Several reports confirm good results. Prognosis of patients presented with recurrence after primary treatment with this regimen is not well known. We report the long term results of treated recurrences after bladder preservation treatment with brachytherapy. 

Materials and Methods: Between 1989 and 2011, 192 selected patients with muscle-invasive bladder cancer were treated with a combined regimen of preoperative external radiotherapy, and subsequent surgical exploration with or without partial cystectomy and interstitial brachytherapy. Data of patients presenting with local recurrence after this regimen were retrospectively collected. The primary end points were local recurrence-free survival (LRFS) and overall survival (OS) (after the treatment of recurrence). Complications of the secondary treatment were reported. 

Results: The median follow-up after primary treatment was 105 months (6-212 months). In 40/192 (20.8%) patients a local recurrence was detected. Four patients were excluded because of lack of data. Treatment of the local recurrence was performed in 28/36 (78%) patients. For 18 patients a salvage cystectomy was performed; 10 patients were treated with transurethral resection followed by intravesical BCG. In 4 patients cystectomy procedures were discontinued. The local recurrence was muscle invasive in 19 patients; mostly treated by salvage cystectomy (14/19). The LRFS after the treatment of recurrence was 70% and 55% after 2 and 5 years, respectively. The OS 2 and 5 years after treatment was 71% and 34%, respectively. The LRFS of the 18 patients treated with salvage cystectomy 71% after 2 years as well 5 years and the OS was 67% and 36% after 2 and 5 years, respectively. In 11/18 (61%) patients treated with cystectomy, surgical complications were reported, 6/11 patients with Clavien Dindo complications grade ≥ 3. 

Conclusions: The LRFS of patients treated for local recurrence after bladder-sparing regimen using brachytherapy offers good long-term oncological outcome. Salvage cystectomy gave the best long term local control, unfortunately with more surgical complications.

OC-0041 PBI with interstitial high-dose-rate brachytherapy: results of a phase II prospective study

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Purpose/Objective: To investigate the outcome after PBI with 103Ir interstitial HDR brachytherapy in patients with early breast cancer. 

Materials and Methods: From August 2003 to May 2014 260 patients aged 42-85 years (median 67) were enrolled. There were 237 infiltrating tumors and 23 DCIS (median tumor size 9 mm, range 1.25-28) ER and PgR were positive in 236 and 210 cases respectively. Axillary nodes were negative in 257 patients; 3 patients had the sentinel positive node, 1 with micrometastasis. 29 patients received adjuvant chemotherapy, 221 hormonal therapy. Treatment schedule was 4 Gy twice a day for 4 days, up to a total dose of 32 Gy with an interval between fractions of at least 6 hours. Survival was analyzed by Kaplan-Meier estimator. Cosmetic results were evaluated, using the Harvard criteria, by radiation oncologists and patients, Cohen’s k-test of inter-rater agreement (k-value ranging from 0 to 1) estimated concordance between patients and physicians. 

Results: Median follow-up was 74 months (range 2-128). Four local relapses (1.5%) were observed 12, 24, 48, 96 months after PBI. One regional relapse was observed in the