in regular fixed jaw delivery mode with FW of 2.5 cm for nasopharyngeal carcinoma (NPC) treatments.

**Materials/Methods:** Eight patients with NPC previously treated with HT in fixed jaw delivery mode with FW of 2.5 cm were replanned using HT dynamic jaw delivery mode with preset FW of 5 cm. As in the previous plans, all nasopharynx, left, and right nodal planning target volumes (PTVNR, PTVLN, PTVBR) were aimed to achieve a volume of 95% covered by the prescribed dose. The maximum dose was limited to less than 115% of the prescribed dose. To evaluate the plan quality, PTV coverage, dose conformity and homogeneity were reported by the dose received by 95% of the target volumes (D95), conformity number (CN), and homogeneity index (HI), respectively. For organs at risk (OARs), the maximum dose (Dmax) and near-maximum dose (D2) of brainstem, spinal cord, optic chiasm, left and right lens, and optic nerves were reported while mean dose (Dmean) of pituitary, left and right parotid glands were also reported according to ICRU 83. The number of monitor units (MU) required was used to evaluate the delivery efficiency. Wilcoxon signed rank test was used to investigate significance of differences in the results between the two treatment modes. A 2-tailed P<0.05 was considered statistically significant.

**Results:** For PTVNR, PTVLN, PTVBR, there was no statistical significant difference in all PTV coverage, dose conformity, and homogeneity between the two treatment modes. With regard to critical organ sparing, the Dmax and D2 of optic chiasm and Dmean of pituitary, left and right parotid glands were statistically lower using dynamic jaw delivery mode, with a mean decrease of 51.1% ± 22.0%, 51.1% ± 22.4%, 40.8% ± 23.9%, 7.0% ± 6.9%, 7.2% ± 6.6%, respectively (P = 0.008, 0.008, 0.039, and 0.039, respectively). However, there was no statistical significant difference in Dmax and D2 of brainstem, spinal cord, left and right lens, and optic nerves between the 2 planning techniques. The number of MUs required was significantly lower for dynamic jaw delivery mode, with a mean decrease of 47.9% ± 2.3% (P = 0.008).

**Conclusion:** Our results showed that HT planned with dynamic jaw delivery mode with preset FW of 5 cm provided statistically no difference on plan quality, but with better sparing of optic chiasm, pituitary and parotid glands compared with HT in fixed jaw delivery mode with FW of 2.5 cm. A significant better delivery efficiency was also achieved.

**Author Disclosure:** W. Lam: None. H. Geng: None. C. Kong: None. Y. Ho: None. W. Wong: None. B. Yang: None. K. Cheung: None. S. Yu: None.

### 2772

**Proton Versus Conventional Radiation Therapy for Pediatric Salivary Gland Tumors: Acute Toxicity and Dosimetric Characteristics**

S. Grant,1 D.R. Grosshans,2 A. Mahajan,2 S. Bilton,2 J.A. Garcia,2 M. Amin,2 M. Chambers,2 S.L. McGovern,2 M.F. McAleer,2 W.H. Morrison,3 W. Huh,3 and M.E. Kupferman; 1 Baylor College of Medicine, Houston, TX, 2 MD Anderson Cancer Center, Houston, TX, 3 The University of Texas MD Anderson Cancer Center, Houston, TX

**Purpose/Objective(s):** Adjuvant radiation therapy (RT) is often a component of treatment for high-risk salivary gland tumors. Minimizing irradiation of surrounding normal tissues is particularly important for pediatric patients. We compared acute toxicity profiles, clinical outcomes, and dosimetric data for children with parotid or submandibular tumors treated with adjuvant photon/electron-based RT (X/E RT) or proton RT (PRT).

**Materials/Methods:** We retrospectively identified 24 patients who had received adjuvant RT for salivary gland tumors (20 parotid, 4 submandibular) at a single institution. Demographic, disease control and survival data were extracted from the medical records and dosimetric data from the treatment planning systems. Toxicity was scored according to the Common Terminology Criteria for Adverse Effects version 4.0.

**Results:** Eleven patients received X/E RT and 13 PRT. The median prescribed dose was 60 Gy for each group. PRT was associated with significantly lower mean doses to the thyroid (1.5 vs 22.5 Gy, P < 0.05), oral cavity (4.6 vs 20.7 Gy, P < 0.05), and larynx (11.3 vs 44.3 Gy, P < 0.05); and the contralateral parotid (0.0 vs 4.6, P < 0.05), hemi-mandible (0.0 vs 11.9 Gy, P < 0.05), and submandibular gland (0.0 vs 13.5 Gy, P < 0.05). In the PRT RT group, 27% had acute grade 3 dermatitis, 18% grade 3 mucositis, and 9% grade 3 dysphagia, and the median weight loss was 5.3%. No patient in the PRT group experienced acute grade 3 toxicity, and a median weight gain of 1.2% was noted. At a median follow-up time of 35 months, no disease recurrence or deaths were observed in either group.

**Conclusion:** Compared with X/E RT, PRT significantly reduced the radiation dose to many surrounding normal tissues, with associated reductions in acute clinical toxicity. Continued follow-up is needed to identify potential differences in long-term toxicity and disease control.


### Table 1

<table>
<thead>
<tr>
<th>Tissue</th>
<th>Mean Dose, Gy</th>
<th>Maximum Dose, Gy</th>
<th>P Value*</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Photon/electron Therapy n = 8</td>
<td>Proton Therapy n = 13</td>
<td></td>
</tr>
<tr>
<td>Parotid gland</td>
<td>4.6</td>
<td>0.0</td>
<td>&lt;0.05</td>
</tr>
<tr>
<td>Hemimandiblebuccal</td>
<td>1.9</td>
<td>0.0</td>
<td>&lt;0.05</td>
</tr>
<tr>
<td>Submandibular gland</td>
<td>13.5</td>
<td>0.0</td>
<td>&lt;0.05</td>
</tr>
<tr>
<td>Oral cavity</td>
<td>20.7</td>
<td>4.6</td>
<td>&lt;0.05</td>
</tr>
<tr>
<td>Thyroid</td>
<td>22.5</td>
<td>1.5</td>
<td>&lt;0.05</td>
</tr>
<tr>
<td>Larynx</td>
<td>44.3</td>
<td>11.3</td>
<td>&lt;0.05</td>
</tr>
</tbody>
</table>

c contralateral to tumor *P values from Mann-Whitney tests.

### 2773

**Phase 2B Trial Comparing Two Concurrent Chemotherapy Schedules in Locally Advanced Head and Neck Squamous Cell Carcinoma**

R.R. Kumar,1 C.T. Kainickal,1 L.M. Nair,1 M. Rafi,1 B.M. Azariah,2 and R. Kunnambath3; 1 Regional Cancer Centre, Trivandrum, India, 2 Regional Cancer Centre, Trivandrum, India, 3 Regional Cancer Centre, Trivandrum, Kerala, India

**Purpose/Objective(s):** Concurrent chemoradiation is one of the standards of care in locally advanced head and neck squamous cell carcinoma (LAHNSCC). Single agent cisplatin once in 3 weeks along with radiation therapy (RT) is the most widely accepted chemoradiation regimen. However, weekly cisplatin provides more dose intensity and is purported to have better tolerability. The main objective of the study was to compare 2 chemotherapy schedules, weekly cisplatin at 40 mg/m2 and 3 weekly cisplatin at 100 mg/m2 concurrently with radiation in the treatment of LAHNSCC in terms of disease-free survival (DFS) and toxicity.

**Materials/Methods:** This study was conducted between June 2013 and April 2014 at a regional cancer center. Fifty-six patients with LAHNSCC were randomized either to cisplatin 100 mg/m2 every 3 weeks (Arm1) or cisplatin 40 mg/m2 every week (Arm2) after getting an informed consent.

**Results:** Eleven patients received X/E RT and 13 PRT. The median prescribed dose was 60 Gy for each group. PRT was associated with significantly lower mean doses to the thyroid (1.5 vs 22.5 Gy, P < 0.05), oral cavity (4.6 vs 20.7 Gy, P < 0.05), and larynx (11.3 vs 44.3 Gy, P < 0.05); and the contralateral parotid (0.0 vs 4.6, P < 0.05), hemi-mandible (0.0 vs 11.9 Gy, P < 0.05), and submandibular gland (0.0 vs 13.5 Gy, P < 0.05). In the PRT RT group, 27% had acute grade 3 dermatitis, 18% grade 3 mucositis, and 9% grade 3 dysphagia, and the median weight loss was 5.3%. No patient in the PRT group experienced acute grade 3 toxicity, and a median weight gain of 1.2% was noted. At a median follow-up time of 35 months, no disease recurrence or deaths were observed in either group.

**Conclusion:** Compared with X/E RT, PRT significantly reduced the radiation dose to many surrounding normal tissues, with associated reductions in acute clinical toxicity. Continued follow-up is needed to identify potential differences in long-term toxicity and disease control.