commonly employed variations of the rabbit model in the literature, our modification yields aneurysms that are larger and within the size range of treated human aneurysms.

Results Software based measurements resulted in different device dimension suggestions in 92.7% (38/41 cases). In 56% (23/41), a shorter length was suggested by the algorithm, in 20% (8/41) a longer length and in 24% the same length, whereas a shorter diameter was suggested in 37% (15/41), a longer diameter in 31.5% (13/41) and the same diameter in 31.5% (13/41). Agreement between conventional and computer based measurements was low (Cohen’s K=0.125 for length; K=0.239 for diameter, p<0.05).

Conclusions The low agreement between conventional and software based calculations confirms that the choice of proper device dimensions is challenging. Since the software based solution allows virtual simulation of multiple device sizes and prediction of their endovascular behavior easily within a few seconds, it potentially allows a decrease in procedure time and cost. Furthermore, it may remove uncertainty related to proper device sizing by accelerating the neurointerventionalist’s learning curve and confidence. This work is part of continuing evaluation of the simulation and its translation into clinical practice.

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P-012 COMPARISON OF ENDOVASCULAR DEVICE SIZING BASED ON CONVENTIONAL TWO-DIMENSIONAL MEASUREMENTS AND USING NUMERICAL SIMULATION SOFTWARE

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Background Proper sizing of intraarterial devices for aneurysm treatment is crucial to provide safety and ease of deployment while limiting torque, coverage of perforator branches and thrombogenicity. The behavior of an intraarterial device (wall apposition and foreshortening, for example) depends on several factors, including its original length, the relationship between the diameters of the device and recipient vessel as well as on the target vessel’s anatomy. Usually, the choice of device dimensions is made based on manual two-dimensional measurements from the 3D rotational angiography images and the operator’s individual experience. However, proper device dimensions and landing zones are poorly predictable. A numerical computer-based simulation model (Sim and Cure; Grabels, France) has been shown to provide accurate and fast prediction of endovascular distention, wall apposition and final length of different sized devices based on 3D rotational angiography DICOM data.

Purpose The aim of this study was to evaluate whether use of a computer based simulation model results in selection of different device dimensions than the ones chosen by neurointerventionalists based on conventional methods.

Material and methods In a retrospective multi-center cohort study of 41 cases undergoing aneurysm treatment using the Pipeline Embolization Device (PED), device dimensions selected by experienced neurointerventionalists based on manual 2D measurements taken from rotational angiography were compared to PED dimensions calculated by the simulation model. Agreement between the different calculation methods was evaluated by calculating Cohen’s Kappa.
Conclusion Based on our single center retrospective review, incorporation of radial access for outpatient cerebral angiography is associated with shorter patient stays, lower cost, and no major complications. This time savings could increase case volume, while decreasing recovery room staffing.

Abstract P-013 Table 1

<table>
<thead>
<tr>
<th>Years</th>
<th>Femoral Access (% total)</th>
<th>Radial Access (% total)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014</td>
<td>57.24</td>
<td>42.76</td>
</tr>
<tr>
<td>2015</td>
<td>45.86</td>
<td>54.14</td>
</tr>
<tr>
<td>2016</td>
<td>40.62</td>
<td>59.38</td>
</tr>
<tr>
<td>2017</td>
<td>37.09</td>
<td>62.91</td>
</tr>
<tr>
<td>2018</td>
<td>7.54</td>
<td>92.46</td>
</tr>
<tr>
<td>Grand total</td>
<td>49.11</td>
<td>50.77</td>
</tr>
</tbody>
</table>

Results A total of 10 patients were enrolled in this study. The VOI CBCT and conventional CBCT images were successfully obtained for all patients. The median overall image quality score for VOI CBCT showed no significant difference compared with that of conventional CBCT (p>0.05). For the dedicated image quality measures, there were no significant differences between the ratings for VOI CBCT and conventional CBCT. The equivalent radiation dose for eye lens by conventional CBCT (22.49 mSv) was significantly reduced compared to VOI CBCT (0.97 mSv, p<0.05).

Conclusion This study suggested that the VOI CBCT prototype software could reduce radiation dose without changing image quality in comparison with conventional CBCT in cases of cerebral aneurysms treated with flow diverter placement.

Disclosures S. Satti: 2; C; Stryker Neurovascular, Penumbra Neurovascular. P. Krishna Reddy: None. T. Eden: None. V. Ansar: None.

Background and purpose Contrast enhanced cone-beam CT imaging has been increasingly used for the assessment of vessel structures and implanted devices in endovascular procedures. However, long scan time increases radiation exposure. A new ‘Volume of Interest’ cone-beam CT prototype software (VOI CBCT) with low-dose acquisition technology was developed to overcome this problem. The aim of this study was to assess image quality of VOI CBCT images in comparison with conventional CBCT images in cases of cerebral aneurysms treated with flow diverter placement.

Method Patients treated with a flow diverter for an internal carotid artery aneurysm were enrolled in this study. Patients received both conventional CBCT acquisition and VOI CBCT acquisition with intra-arterial injection of 20% contrast medium during the procedures. VOI CBCT reconstruction algorithm was applied to the acquired VOI data in order to compensate for missing information due to the collimation.

Image quality was independently evaluated in each case using a five-point scale by two physicians experienced in neuro-endovascular therapy. The physicians rated the overall image quality, as well as dedicated image quality measures of stent struts visibility, stent apposition to the vessel, parent artery, branch of parent artery, aneurysm, bone structure and brain parenchyma. The reduction of equivalent radiation dose was assessed with five fluorescence glass dosimeters placed around each eye position on a head phantom.

Conclusion This study suggested that the VOI CBCT prototype software could reduce radiation dose without changing image quality in comparison with conventional CBCT in cases of cerebral aneurysms treated with flow diverter placement.

Disclosures M. Hiramatsu: 1; C; SIEMENS Healthineers Japan. K. Sugiu: 1; C; Siemens Healthineers Japan. T. Hishikawa: None. S. Nishihiro: None. N. Kidani: None. Y. Takahashi: None. S. Murai: None. I. Date: None.

Abstract P-014 Figure 1

Background and purpose Contrast enhanced cone-beam CT imaging has been increasingly used for the assessment of vessel structures and implanted devices in endovascular procedures. However, long scan time increases radiation exposure. A new ‘Volume of Interest’ cone-beam CT prototype software (VOI CBCT) with low-dose acquisition technology was developed to overcome this problem. The aim of this study was to assess image quality of VOI CBCT images in comparison with conventional CBCT images in cases of cerebral aneurysms treated with flow diverter placement.

Method Patients treated with a flow diverter for an internal carotid artery aneurysm were enrolled in this study. Patients received both conventional CBCT acquisition and VOI CBCT acquisition with intra-arterial injection of 20% contrast medium during the procedures. VOI CBCT reconstruction algorithm was applied to the acquired VOI data in order to compensate for missing information due to the collimation.

Image quality was independently evaluated in each case using a five-point scale by two physicians experienced in neuro-endovascular therapy. The physicians rated the overall image quality, as well as dedicated image quality measures of stent struts visibility, stent apposition to the vessel, parent artery, branch of parent artery, aneurysm, bone structure and brain parenchyma. The reduction of equivalent radiation dose was assessed with five fluorescence glass dosimeters placed around each eye position on a head phantom.

Conclusion This study suggested that the VOI CBCT prototype software could reduce radiation dose without changing image quality in comparison with conventional CBCT in cases of cerebral aneurysms treated with flow diverter placement.

Disclosures M. Hiramatsu: 1; C; SIEMENS Healthineers Japan. K. Sugiu: 1; C; Siemens Healthineers Japan. T. Hishikawa: None. S. Nishihiro: None. N. Kidani: None. Y. Takahashi: None. S. Murai: None. I. Date: None.

Abstract P-015 Figure 1

Background and purpose Contrast enhanced cone-beam CT imaging has been increasingly used for the assessment of vessel structures and implanted devices in endovascular procedures. However, long scan time increases radiation exposure. A new ‘Volume of Interest’ cone-beam CT prototype software (VOI CBCT) with low-dose acquisition technology was developed to overcome this problem. The aim of this study was to assess image quality of VOI CBCT images in comparison with conventional CBCT images in cases of cerebral aneurysms treated with flow diverter placement.

Method Patients treated with a flow diverter for an internal carotid artery aneurysm were enrolled in this study. Patients received both conventional CBCT acquisition and VOI CBCT acquisition with intra-arterial injection of 20% contrast medium during the procedures. VOI CBCT reconstruction algorithm was applied to the acquired VOI data in order to compensate for missing information due to the collimation.

Image quality was independently evaluated in each case using a five-point scale by two physicians experienced in neuro-endovascular therapy. The physicians rated the overall image quality, as well as dedicated image quality measures of stent struts visibility, stent apposition to the vessel, parent artery, branch of parent artery, aneurysm, bone structure and brain parenchyma. The reduction of equivalent radiation dose was assessed with five fluorescence glass dosimeters placed around each eye position on a head phantom.

Conclusion This study suggested that the VOI CBCT prototype software could reduce radiation dose without changing image quality in comparison with conventional CBCT in cases of cerebral aneurysms treated with flow diverter placement.

Disclosures M. Hiramatsu: 1; C; SIEMENS Healthineers Japan. K. Sugiu: 1; C; Siemens Healthineers Japan. T. Hishikawa: None. S. Nishihiro: None. N. Kidani: None. Y. Takahashi: None. S. Murai: None. I. Date: None.