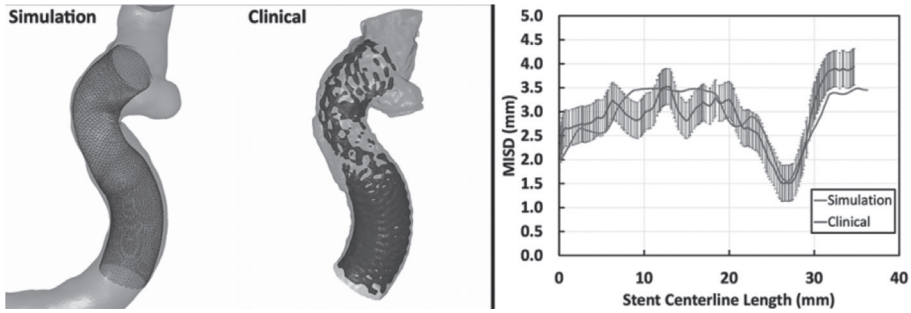

Abstract E-036 Figure 1

Introduction Flow diverters (FDs) are sized to the recipient vessel during pre-treatment planning. However, sizing can be challenging because of large changes in vessel curvature and diameter. Further, FDs can elongate by more than 50% of their labeled length after deployment, which complicates sizing. Significant complications can result from over- or under-sized devices. Here we present a finite element (FE) modelling approach for evaluating FD size and compare that approach to clinical deployments to determine its accuracy in predicting device length, diameter, and apposition.

Methods Ten patient cases treated with the pipeline embolization device were acquired from two hospitals. Pre- and post-treatment CT image data were segmented then reconstructed to form computational models of the devices and vessels. A library of pipeline FE models, which was previously validated against physical devices, was used to simulate deployment of the same devices into the pre-treatment vessels. The pipeline models were first navigated via a virtual microcatheter to the landing zones observed in the post-treatment vessels. A "push-pull" algorithm was then used to simulate device unsheathing. Three post-deployment metrics were compared: device apposition to the vessel wall along the vessel centerline, device diameter along the stent centerline, and device length.

Results Simulated and clinical deployments showed good agreement both qualitatively and quantitatively (Figure 1). Simulations captured regions where the device poorly apposed to the vessel wall and poorly covered the aneurysm neck. Mean errors between simulated and clinical deployments (as a percentage of the clinical value) were less than 5% for device length and 9% for device apposition and diameter.

Conclusion FE simulations captured post-deployment FD shape and apposition. Less than a 9% mean error was found between simulated and clinical deployment metrics. These results provide additional support for the use of FE for evaluating device size during pre-treatment planning.

Disclosures B. Chong: 4; C; Endovantage, LLC. **H. Babiker:** 4; C; Endovantage, LLC. **Y. Kalani:** None. **C. Baccin:** None. **M. Mortensen:** 5; C; Endovantage, LLC. **M. Levitt:** None. **C. McDougall:** None. **D. Frakes:** 4; C; Endovantage, LLC. **F. Albuquerque:** 4; C; Endovantage, LLC.

E-037 DIFFUSE FACIAL ARTERIOVENOUS MALFORMATION WITH LIGATED IPSILATERAL ARTERIAL SUPPLY

[1]A Dmytriw, [2]J Song, [3]S Power, [3]R Agid. *[1]Department of Medical Imaging, University of Toronto, Toronto, ON, Canada; [2]Department of Otolaryngology, University of Toronto, Toronto, ON, Canada; [3]Department of Medical Imaging, Toronto Western Hospital, Toronto, ON, Canada*

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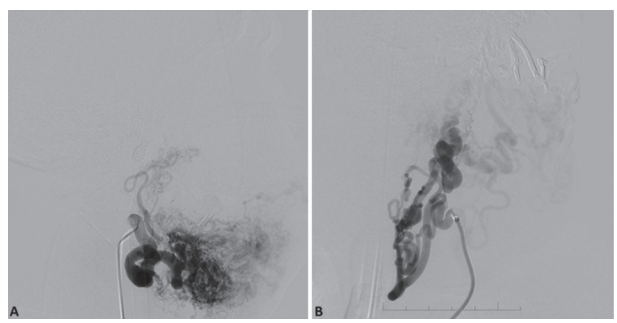
Introduction Facial AVMs are associated both with risk of hemorrhage and considerable psychosocial as well as cosmetic distress. Head and neck AVMs are the second most common outside of the brain, but despite being a richly-vascularized area, giant and diffuse lesions of the magnitude reported are rare and typically evolve from iatrogenesis.

Case presentation A 32 year-old male presented with a pulsatile facial mass which had treated unsuccessfully at numerous outside intuitions. Imaging revealed a diffuse facial AVM with extensive bilateral supply, and a ligated left external carotid artery. Though incurable, endovascular treatment was required frequently for hemorrhagic events and palliation were delivered via the contralateral supply due ligation of a direct route to the nidus.

Discussion We report a particularly complicated case of giant facial AVM which initially imparted significant psychosocial morbidity, but as a result of proximal ligation and improper embolization grew into a tremendous lesion the size and extent of which has not been reported previously. It remains absolutely essential that no attempt at palliation or cure be made that cannot directly target the nidus of an AVM, and this ever the more crucial in rich-supplied areas such as the face. Endovascular embolizations remains the first and often only option during when emergent therapy.



Abstract E-037 Figure 1

Disclosures A. Dmytriw: None. **J. Song:** None. **S. Power:** None. **R. Agid:** None.

E-038 3D CONE BEAM COMPUTERIZED TOMOGRAPHY (3D-CBCT) GUIDED SACROILIAC (SI) JOINT INJECTION: A REAL-TIME, INTERACTIVE, ACCURATE, FAST AND REDUCED RADIATION EXPOSURE TECHNIQUE

[1]S Lee, [1]S Ali, [2]J Mok. *[1]Radiology, University of Chicago, Chicago, IL; [2]Orthopedic Surgery, University of Chicago, Chicago, IL*

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