THREE-DIMENSIONAL PRINTING OF A HEMORRHAGIC CERVICAL CANCER MODEL FOR POSTGRADUATE GYNECOLOGICAL TRAINING

Michael Bartellas, Stephen Ryan, *MD Student*; Gregory Doucet, *Engineering Work-Term Student*; Deanna Murphy, *Discipline of Obstetrics and Gynecology*; Jacqueline Turner, *Clinical Learning and Simulation Centre*

ABSTRACT: Oral Presentation

Purpose: To design and manufacture a realistic, low-cost hemorrhagic cervical cancer model with 3D Printing to enhance gynecological postgraduate medical training.

Methods: Computer-assisted design (CAD) software was the platform of choice to create and refine the cervical model. Once the prototype was finalized, another software allowed for the addition of a neoplastic mass, which included openings for bleeding from the neoplasm and cervical os. 3D printing was done using two desktop printers and three different materials. An emergency medicine simulation case was presented to obstetrics and gynecology residents who were at varying stages of their training. The scenario included history taking and physical examination of a standardized patient. This was a hybrid simulation; a synthetic pelvic task trainer that allowed the placement of the cervical model was connected to the standardized patient. The task trainer was placed under a drape and appeared to extend from the standardized patient's body. At various points in the simulation, the standardized patient controlled the cervical bleeding through a peripheral venous line. Feedback forms were completed, and the models were discussed and evaluated with staff.

Results: A final cervical model was created and successfully printed. Overall, the models were reported to be similar to a real cervix. The models bled well. Most models were not sutured during the scenarios, but overall, the value of the printed cervical models was reported to be high.

Conclusion: 3D-printed cervical models are an economical and anatomically accurate option for simulation training and other educational purposes. Feedback from this study has highlighted areas that can be improved upon to enhance this educational tool.