Development of a Step-By-Step Freeware Solution for 3D Rendering of Congenital Heart Disease Images

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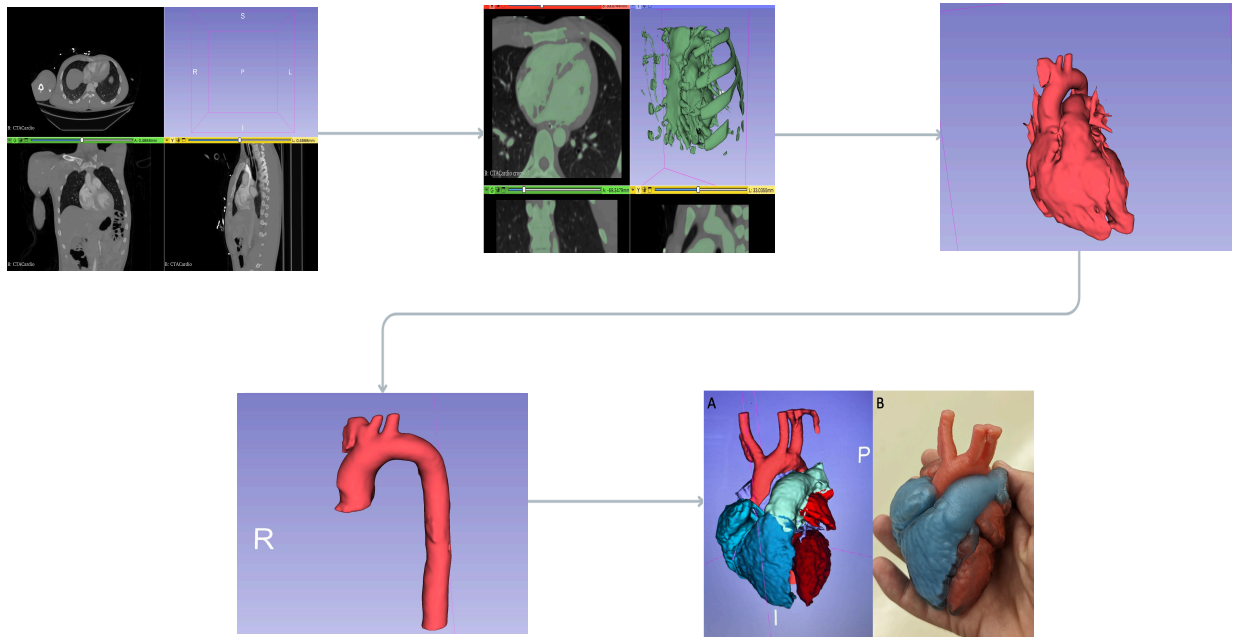
Introduction

- 3D models of congenital heart defects have been shown to be useful for both surgical planning and parent/provider education.
- Segmenting these files is a labour intensive process and the aim was to produce a clear, replicable and optimised workflow using freely available software.

Methods

- Digitalised and anonymised CT and MRI scans of congenital heart defects were segmented using 3D Slicer, a freely downloadable program.
- Collaboration with a printing team helped to determine the ideal printing and file exporting formats.



Results

- The process of creating a replicable workflow culminated in the production of a free to download step-by-step guide to image segmentation – see QR code.
- The models printed were colour-coded cardiac chamber blood pools that can be printed as such from separate .stl files or encased in a softer myocardium shell digitally grown from the model.

Conclusion

- Stl files ready for printing can be quickly and efficiently produced using freely available software, following a simple step-by-step guide.

References

Fedorov et al, Magn Reson Imaging. 2012 Nov; 30(9): 1323–1341.

The free to download step-by-step guide is available via the QR code: