MEDICAL 3D PRINTING

PROJECT 1258

OPERATIONALIZATION AND APPLICATIONS

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LITERATURE REVIEW

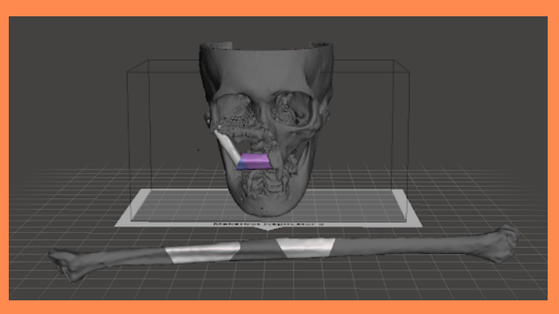
- Literature review on:

- Existing Maxilla Reconstruction methods
- Existing methods and techniques to design a fibula cutting and drill guide
- Various designs of surgical guide
- Sterialisable materials suitable to be used for surgical guides

- Familiarise with the Medical terms used in this project

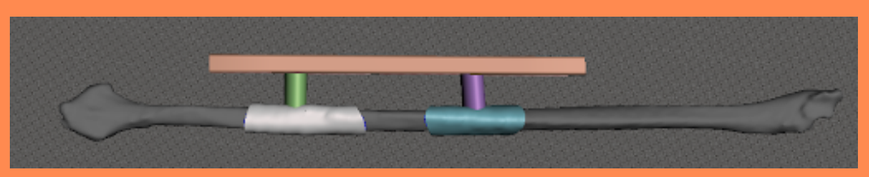
EXPLORATION

- Trying out and exploring various free software (3D Slicer, MeshMixer, Blender)
- Attempts to create a guide by following existing methods



MeshMixer

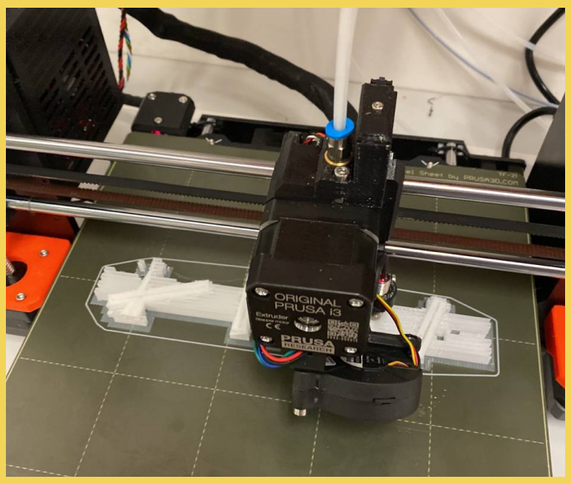
3D Slicer



First Design of the Surgical Guide

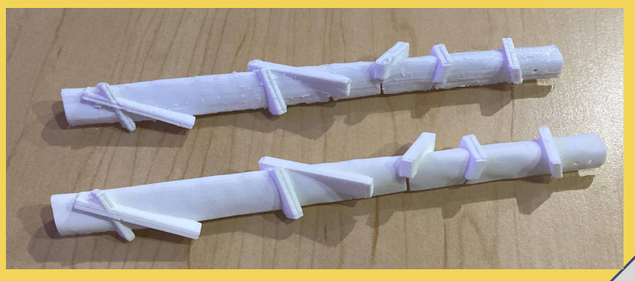
3D PRINTING & CLINICIAN REVIEW

Cycle of
- Interacting with clinicians to find out their needs and the existing problems they faced
- 3D printing of various models of the surgical guide we had designed
- Receive feedback from clinicians and further improve the design



3D Printing the guides we designed

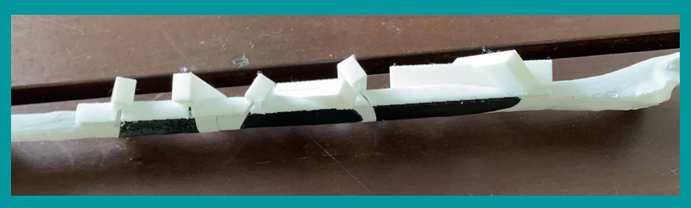
Gathering feedback from Dr Chew



Models of our first few versions of the surgical guides

FINAL DESIGN

After multiple process of refining, the final design was printed in 4 different materials



Guide printed in Nylon 12 material (SLS), aligned nicely with the coloured section on the fibula

Guide printed in Dental Resin material placed on a PLA printed fibula