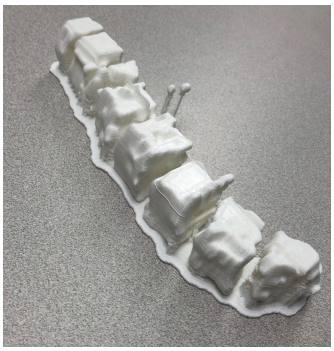
MEDNET

Model Exchange & Development of Nursing & Engineering Technologies



Spine MRI

MEDNET File: Pre-Surgery.zip

After_Surgery.zip

Description

An MRI image of a compression fracture was converted into a stl. file and 3D printed.

Features

Once the stl. file is printed, you can see each individual vertebra as well as the difference in the compressed vertebrae. The compressed vertebrae can also be printed on its own. The two files allow you to print the whole spine with the fracture, or just the fracture.

Development Information

PLA filament ≈ 0.06 of a roll (0.005 for just the fractured vertebrae)
Production time ≈ 6 hours (30 minutes for just the fractured vertebrae)
Approximate materials cost: $1.40 ($0.15 for just the fractured vertebrae)

Instructions for Use

The MRI of the spine with a compression fracture was uploaded to the 3D Slicer software. In this 3Dslicer software, the area of the spine fracture was taken from the rest of the MRI to be turned into an stl. file. You can also use the 3Dbuilder software to repair/close holes in the mesh and slice files you have created. This model can be used to show nursing students in The College of Nursing at the University of Alabama in Huntsville what a compression fracture looks like, how to identify one, and why the fracture occurred.

Material Procurement Information

Filament: Hatchbox Filament 1.75mm - $22.99/roll (prices vary per color)
https://www.amazon.com/HATCHBOX-3D-Filament-Dimensional-Accuracy/dp/B00J0ECR5I/ref=sr_1_4?crid=2GJUX43SIM4TP&dchild=1&keywords=pla+filament+1.75mm&qid=1590077168&sprefix=pla+filament%2Caps%2C178&sr=8-4

*The model was obtained through an MRI using 3Dslicer.
*citations: Gunter, S. Spine MRI. MED-NET. Retrieved from uahmednet.org.