

2016

Marsupialization Catheter

Hamdi Abdeen

Virginia Commonwealth University

Ananya Mishra

Virginia Commonwealth University

Lucas Olson

Virginia Commonwealth University

Jacqueline Pinderski

Virginia Commonwealth University

Follow this and additional works at: <http://scholarscompass.vcu.edu/capstone>

 Part of the [Biomedical Engineering and Bioengineering Commons](#)

© The Author(s)

Downloaded from

<http://scholarscompass.vcu.edu/capstone/145>

This Poster is brought to you for free and open access by the School of Engineering at VCU Scholars Compass. It has been accepted for inclusion in Capstone Design Expo Posters by an authorized administrator of VCU Scholars Compass. For more information, please contact libcompass@vcu.edu.



Marsupialization Catheter

Introduction

A significant issue among oral and maxillofacial surgeons is the treatment of cysts within the jaw. Cysts develop at random and in most cases asymptotically. Therefore, they may reach large sizes before being diagnosed. Large cysts can cause severe damage to teeth and deterioration or fracturing of bone. Currently, there is no device produced specifically to treat oral cysts. Instead, doctors must cut pieces of breathing tubes to size for each patient and suture those in. However this method means the tube can pop out of place, the doctor needs to do multiple procedures as the cyst heals, and it is uncomfortable for the patient.



Figure 1. Dental x-ray of a large maxillofacial cyst from "Treatment of Large Cysts of the Mandible with Autografts of Cancellous Bone from the Tibia", Malara.

Preliminary Designs

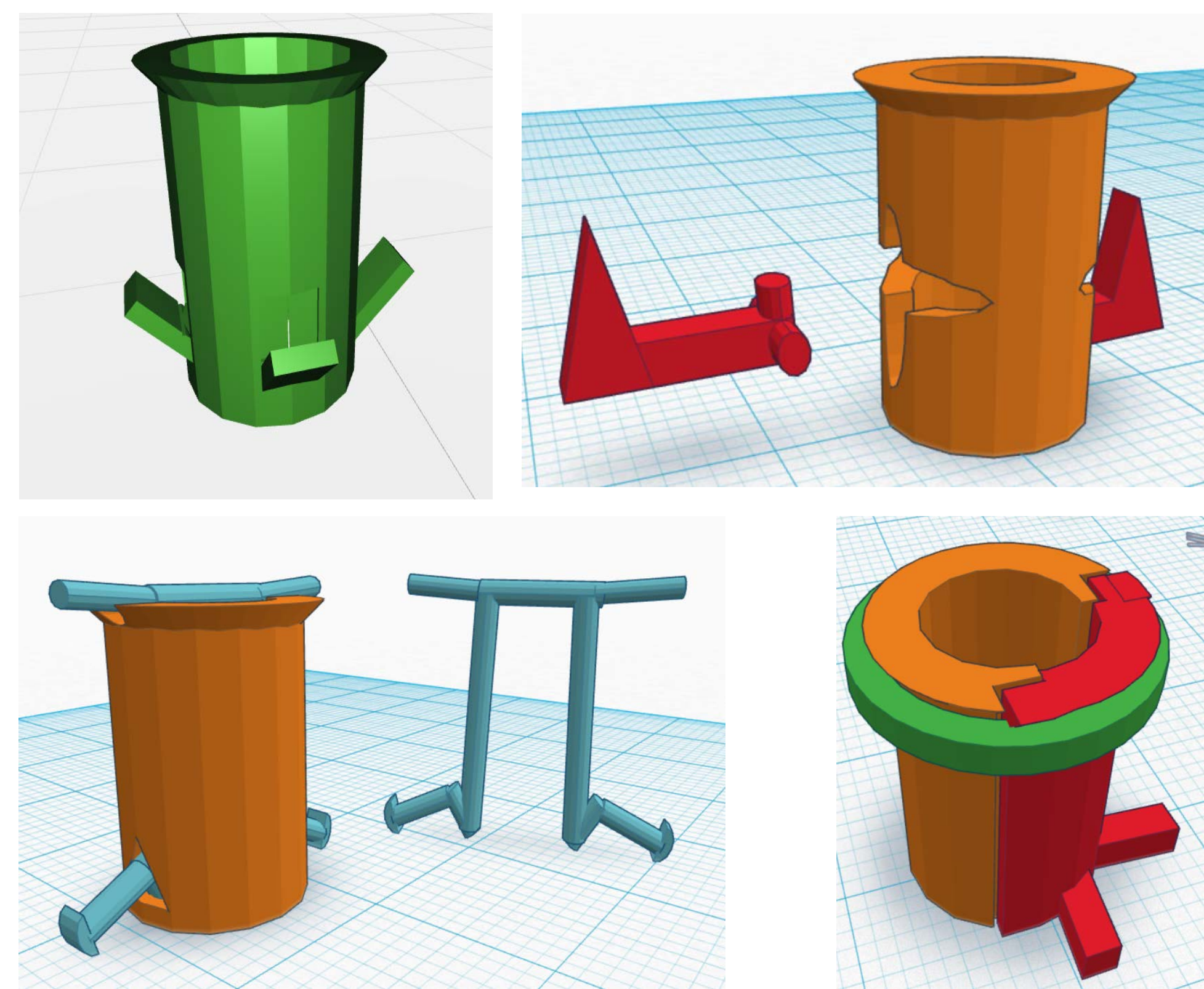


Figure 2. Preliminary catheter designs

Methods

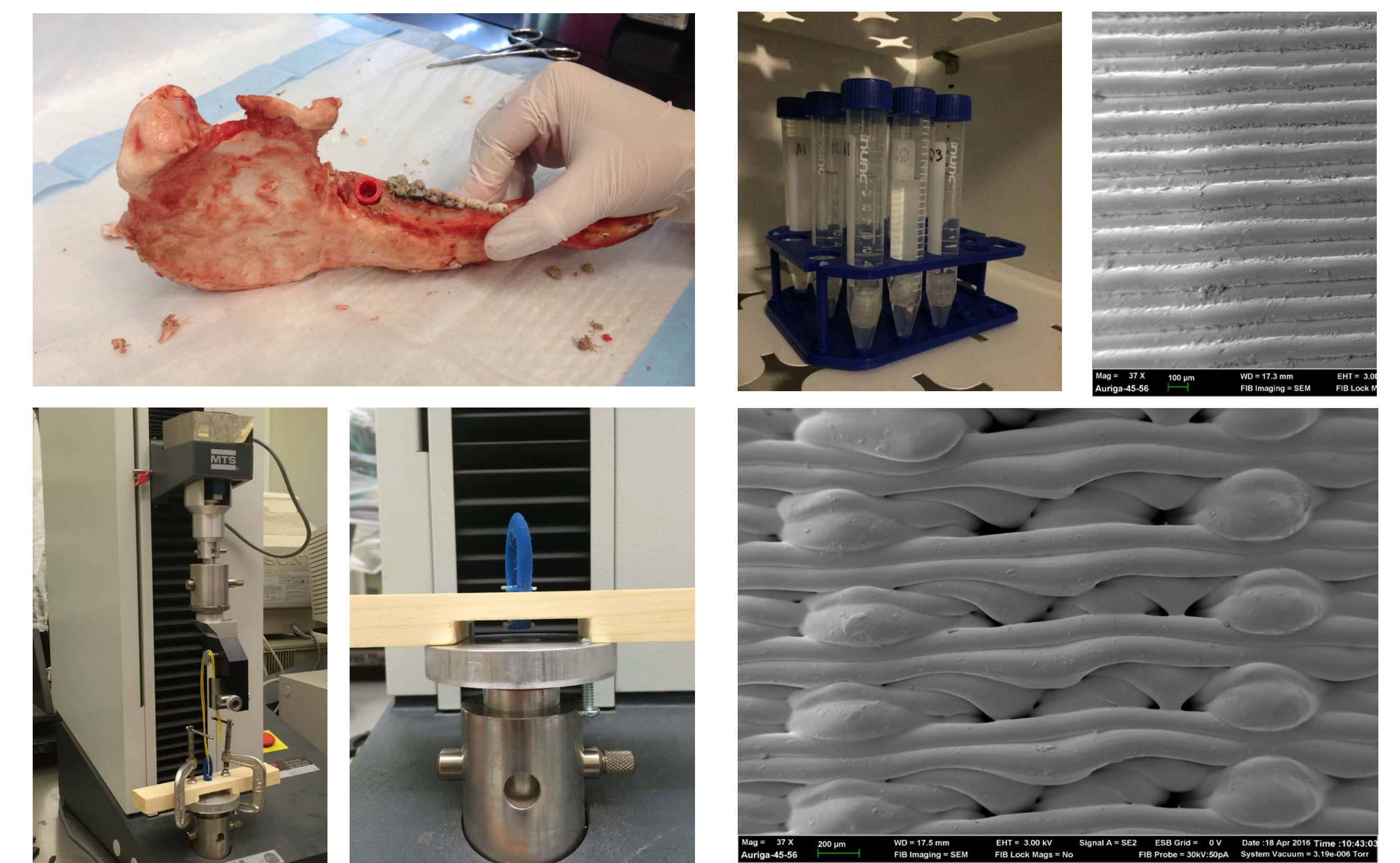


Figure 3. Mechanical testing

Figure 4. Degradation testing

Project Objective

The objective of this project is the treatment of cysts that form in human jaw bones through creation of a tube-like structure that will serve as a conduit between the cyst and the inside of the mouth in order to equalize pressure between the two spaces and allow healing to occur.

Design Requirements

- High retention
- Easy to maintain
- Biodegradable
- Easy to insert

Final Design



Figure 5. Final design of prototype

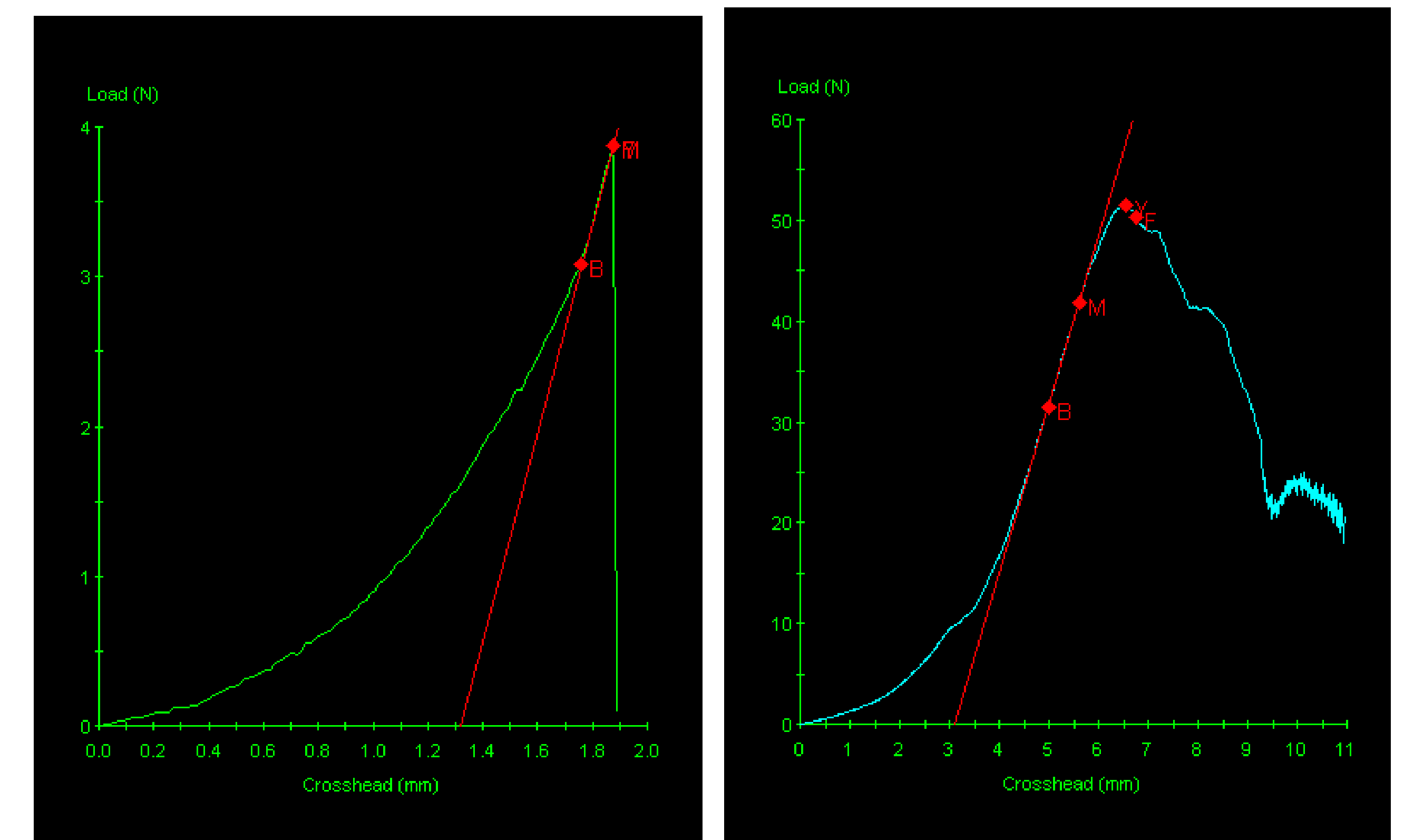


Figure 6. Mechanical test data for final design