

Design of an Endoscopic Biopsy Needle

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This paper summarizes the design and testing of a biopsy needle to be used through a flexible endoscope. There is a need for a

biopsy needle that can be used through the endoscopic channel to perform zero invasive biopsies on the gastrointestinal system and other organs. In this project, a novel biopsy needle is designed, tested, and compared with an Olympus EZShot single use aspiration needle. The new needle was found to have a higher ratio of mass removed versus removal force.

Design and Performance of Plastic Modular Adaptors for External Transtibial Prostheses

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There is a very large need for prosthetic components in developing countries, where such devices are imported and prohibitively expensive. The present work explores the possibility of developing and manufacturing prosthetic components locally in Venezuela, preserving high quality and function. We aimed to develop a kit of plastic modular adaptors for external transtibial prostheses. The project was divided in four stages that covered design, stress analyses, manufacture, and function assessment of

the components. The design process is presented in detail, resulting in a prototype that comprises four adaptors of simple design. Their response was studied with stress analysis using the Finite Element Method applying static loads for different instants of gait during the stance phase. Then, five kits of adaptors were manufactured with thermoplastic material using conventional metal-working machines. The resulting components were lighter and cheaper than equivalent imported metallic ones. The kits were adapted to four patients and assessed via gait analysis. A very good function was observed with no significant differences in spatiotemporal gait parameters.