Current MRI procedures such as biopsies are inefficient and require further improvement. The biopsies require large amounts of time from the MRI scan to the tissue sample taking. In addition to this, the process is often repeated due to mistakes from the physician depending on a still MRI-image of the tissue in question. A hydrostatic actuator has been created to answer these problems but the prototype currently moves with sudden twitches and is too large to fit in an MRI with a patient. The research will improve on the hydrostatic actuator and make its movements more fluid by replacing syringes with rolling diaphragm cylinders. The rolling diaphragm cylinders will provide gentler and smoother movement and possible further compact the system. This experiment will test and quantify the stiffness and the friction involved in the system to determine and compare the smoothness with the previous plastic syringe system. The experiment will involve a using a force gauge and a distance measurement device. Graphing these quantities will produce a force vs distance graph. The graph for a glass syringe will be the baseline and goal to reach or surpass. The cylinder should start to displace with less force and the graph should have a steeper slope. The goal of this research is to be able to employ autonomous mechanized systems inside the MRI that are capable of performing minimally invasive surgeries while exploiting the MRI imaging capabilities. Before the hydrostatic actuator can be deployed in hospitals, it must be further compacted.