

## Written Design Defense

The team wanted to create a more effective and less scarring form of stitches. In order to create such a product, we had to follow the engineering design process. In step 1, we tried to define the problem, as well as survey the customers in order to make it consumer friendly. We asked questions such as “Would you see this product as family friendly?” and “would you be interested in colors or patterns on the product?” By doing this, we were able to get a better insight into what our clients would want in our product.

For design step 2, we needed to generate alternative concepts. The goal of this is to get strong concept ideas, which are to be evaluated in step 3 to determine the most efficient prototype. By doing this, we are able to see possible design flaws, as well as strong points. We decided to test 5 designs on functionality, flexibility, waterproof ability, and durability. We tested our original design, a zip tie box design, a button design, a hook design, and a zip tie box + corset design. Ultimately, we determined that our original design was the most effective and functional.

In design step 4, we conducted a series of tests and experiments. We determined the durability and waterproof ability of 3 types of strings. By doing this, we were able to find the string that worked best for our prototype. Next, we tested which hole spacing would most effectively close a wound. We tested  $\frac{1}{4}$ ,  $\frac{1}{2}$ , and  $\frac{1}{8}$  inch spacing, and determined due to the width of the hooks that a spacing of  $\frac{1}{2}$  inches would be best.

Using design steps 1-4, we were able to construct a working prototype. By pulling the strings, the silicone is pulled, pulling the skin as well. Once the wound is closed, we have hooks at the end to hold the strings in place.

The biggest issue with our product is lack of testing. We tested our prototype on fake skin, and while similar to real skin, we could not do real tests as it would require a wound.

