Tissue Engineering

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Abstract- This paper is going to talk about what Tissue Engineering is and the different ways to use it.

I. INTRODUCTION

Tissue engineering is a field of Biomedical Engineering that focuses on the creation of new cells in order to heal or improve an organ. Basically, the main goal of tissue engineering is to be able to replicate organs from scratch, in order to improve a person’s life. If this technology can be developed enough to actually be able to create organs from scratch, then it would get rid of the need to have organ donors and countless lives would be vastly improved.

II. METHODS

The first step in tissue engineering is to actually extract live cells. This is usually done by extracting them from blood cells or from solid tissues. These cells are listed into different types depending on where they were extracted from. These types are autologous, allogeneic, xenogenic, syngenei, primary, secondary and stem cells. Like most things, each group of cells has its benefits and negatives. These cells are then put into a scaffold, which there are also different types of scaffolds. These types are, nanofiber self-assembly, textile technologies, solvent casting & particulate leaching, gas foaming, emulsification/freeze-drying, thermally induced phase separation, electrospinning and CAD/CAM technologies. The final step is obviously getting these newly constructed cells or organs into the person that needs them. The problem with this is that the cells tend to die before they can be placed because of the lack of nutrients. This problem may have been solved through with the recent developments in organ printing technology which allows for cells and organs to be created with blood vessels in them. Another way that these cells are grown into full organs is through the use of bio reactors. Bio reactors attempt to simulate realistic physiological environment in order to all the cells to grow in the correct manner.

III. CONCLUSION

I personally believe that the future of tissue engineering is very bright and promising. The fact that they have overcome what I believe to be the greatest hurdle, which was keeping the cells alive after they have been made, then I think we’re only a couple of years away from being able to produce full sized organs. This technology is still very young, but we have made great strides in being able to reproduce the organs that are vital to surviving.

References
