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Optimizing Cardiac Perfusion Fixation: Effects of Time Duration on Tissue Fixation

Introduction

Fixation is an important method of arresting autolysis and bacterial composition in tissues, which allows them to be preserved in a life-like state for further processing. Formalin is the most commonly used fixative since it forms cross-links between proteins by creating a gel to retain cellular components in their in vivo relationship to each other. Fixation is important to the healthcare field for research, education, and disease diagnosis. The purpose of this study was to analyze the effects of fixation duration on tissue fixation.

Materials and Methods

Swine hearts ($n = 16$) were obtained from the local butcher and were randomly placed into four categories for fixation: fresh, 12 hours, 24 hours, and 48 hours. The hearts were stored in the refrigerator for 24 hours before further processing to avoid processing tissues still in rigor. Each heart was weighed before and after fixation. Hearts that were to be fixed for 12, 24 or 48 hours were cannulated and placed in a fixation chamber that uses pressure to pump formalin through the four chambers of the heart. Each heart was sliced using a microtome blade to form 12 slices; two slices were sampled from each right ventricle, left ventricle, right atrium, left atrium, anterior septal wall, and posterior septal wall. These slices were processed using standard histological methods. Microscopic analysis of the slides will allow cell size and gross changes in tissue structure and coloring to be compared among each of the four fixation categories.

Results

The weight of the hearts will be compared from pre-fixation to post-fixation. Additionally, cell size and gross changes in tissue structure and coloring will reveal if any differences due to fixation duration exist.

Conclusion

Collection of data will be completed in April 2008 and data will be analyzed by May 2008. The results of this study will provide insight to the effects of fixation duration on whole heart specimens.



Poster Number: Session: