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Preservation of human tissues by room-temperature resin casting technique: an effective teaching tool in human anatomy

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Objectives: The objective of this study were to develop a durable technique to preserve human tissues in a manner that detailed anatomy and almost all relevant properties are retained and to develop a cost effective method to preserve human tissues

Methods: The tissues are initially preserved using formalin to stop the decaying since soft tissues are subjected to rapid decomposition. The water content significantly removed using series of 99.9% pure acetone baths while maintaining the original tissue architecture. Dehydrated tissue part is embedded in a degassed clear liquid resin after mixing with the catalyst, which will be polymerized into a solid resin cast. The human specimens were taken from the cadavers that were donated to the Department of Anatomy, FMS, USJP with written consent obtained prior to death to use the cadaver for medical teaching and research.

Results: In this invention, dehydrated human tissues, while preserving the original shape and volume are embedded in a clear synthetic resin cast having zero exposure to formalin when students are handling the specimens. This is an appropriate method for preserving human body cross-sections at specific vertebral levels. The specimens are more durable than other specimen preservation methods used in Sri Lanka, tissue waste is minimum and there by the cost of preservation and maintenance of cadavers are reduced drastically. Currently these resin casts are used for teaching/learning anatomy at FMS, USJP.

Conclusions: Detailed anatomy is best learned by cadaver dissections. Resin casting is a highly successful, cost effective supplementary method of teaching/learning gross and cross sectional Anatomy with no exposure to formalin.