Research Article

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MODREN METHODS OF USING PLASTINATION IN TEACHING ANATOMY. Short review

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Abstract

Plastination is an anatomical preservation process Samples by precise technique of compulsory impregnation by processable polymer such as silicone, epoxy or polyester Resins that have wide usages in the medical field. The tissue reservation technology was developed by Dr. Gunther von Hagens in 1978. By this method we can store and preserve the body and wipes it for the aim of learning. Current there are new and various kinds of plastination used the learning and in museums. This review aims to explain the main steps of soft plastination used either techniques or methods and their implementation for the medical and veterinary educations.

Keywords: Plastination, Cadaver, Education.

Introduction:

Educational technology is intended to use the ethical facility for education and perfections of a new methods. administration of certain technological modes and resource. many new learning materials occurs by developed techniques (1). Plastination is a process of a long-term reservation for the biological specimens with a Fully evident surface and high durability. It was invented by Dr. Gunther von Hagens in 1978 at the Heidelberg University in Germany. The theory of this method is that water and lipids are removed with curable polymers, The cadaver are preserved by impregnation by the polymer which is solidified after that (2). The silicon and polyester are frequently used, the results are dry and odorless specimens with easy and simple handling (3, 4). Plastinated cadaver is save for hurtful influences of formaldehyde and considered as a good choice for education for medical and biological learning. the plastination is a good method to study the sectional anatomy such as the use of medical tomography that needs a well understood technique for cross sectional anatomy(5, 6).

There are many processes applied for that technique. They include the Silicone, epoxy sheet, and polyester sheet methods (2). There are different processes of plastination in which we select the silicone resin (7). Silicone is the most multi used materials employed for cadaver, organ, or sheets. The chemicals employed in this process include fixative materials (mostly formaldehyde,), acetone, silicone polymer (3).

Plastination Technique:

Soft method:

To obtain samples prepared by soft plastination method the following steps should be followed:

1- The Fixation: the cadaver should be fixed by using a suitable fixative. The formalin is used by injection via the common carotid artery to ensure a fully fixation. After that, the cadaver is immersed in a basin containing 10% formalin, and kept for 2-4 weeks according to the size of the specimen.

2- Dehydration: After a complete fixation the cadaver immersed in 100 % acetone after washing with tap water the acetone concentration is checked by acetone meter (Fig:1) every three days and changed continuously changed until its constant at 96% to ensure its completely free from water (Fig :2)

3- Immersions: The cadaver is submerged by glycerin for 2 days at room temperature. The glycerin substitutes the acetone completely. (Fig :3)

3- Hardening: The samples then are transferred into sufficient quantity of cornstarch in which completely covered the samples for 5-7 days, Then the sample is cleaned from the excessive corn starch to be ready as a demonstration model for learning. (9,10,11). (Fig 4)

Conclusions:

1- The use of soft Plastination technique makes us avoid the harmful effects of the rest of the traditional methods used in preserving and studying anatomical samples.

2- the use of soft method gives the desired results such as ease of handling and flexibility of samples, which facilitate their transportation and handling.

3- the soft method is better than the hard methods in terms of the flexibility of outer surface of the samples, as well as it is less expensive and shorter in time than hard method.

4- the soft method is an inexpensive process for organs preservation and the chemical material which is use is available and locally made.

Recommendation:

1- it is a great help for students and teachers, It also gives a new opportunities for practical experience in practical classes in wide range of disciplines.

2- Suggestions for the use of plastination in medical education would include hiring highly trained technicians to ensure the continued production of high quality samples and safe handling of solvents and chemicals.

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Conflict of Interest

The authors report no conflicts of interest.

Fig1: Acetonmeter that used for test the acetone concentration.

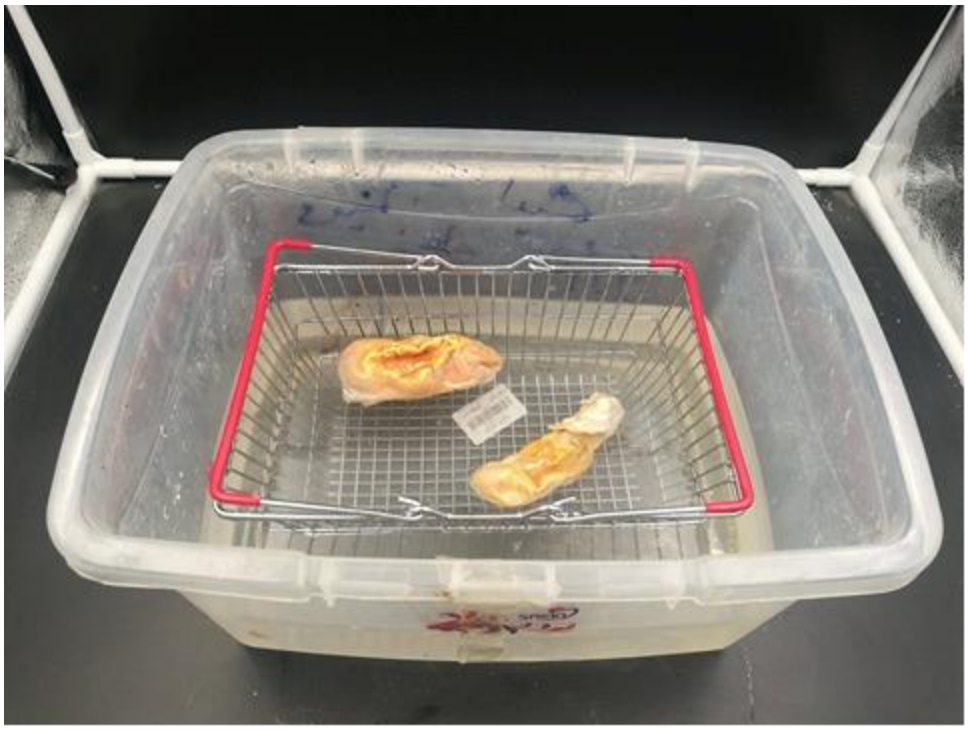

Fig 2: dehydration by concentrated acetone

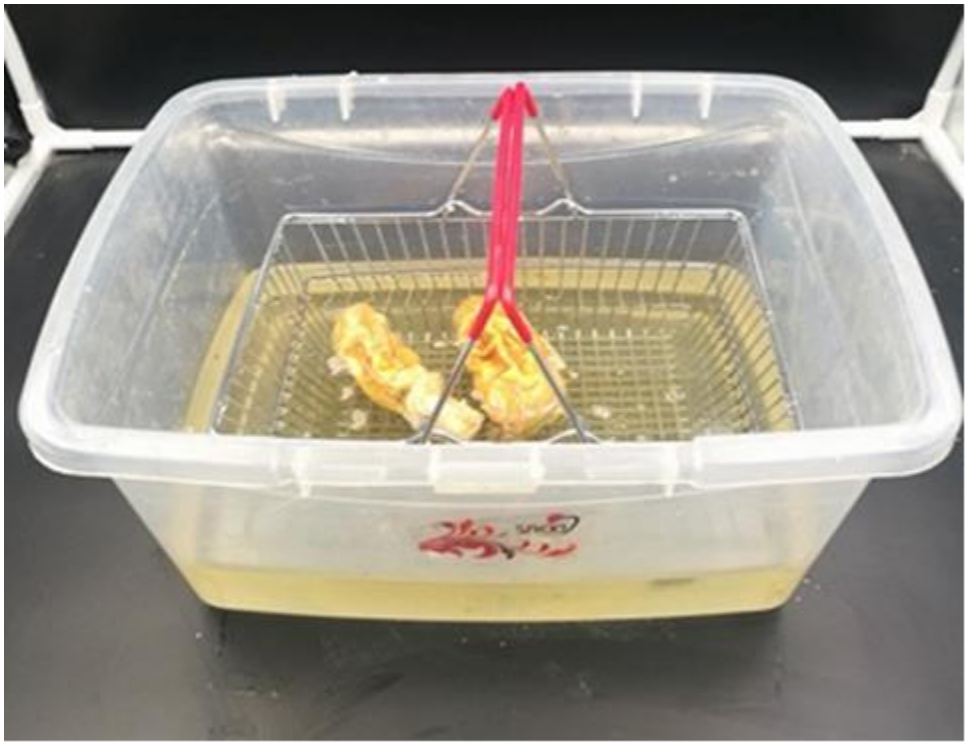

Fig 3: impregnation using liquid glycerin.

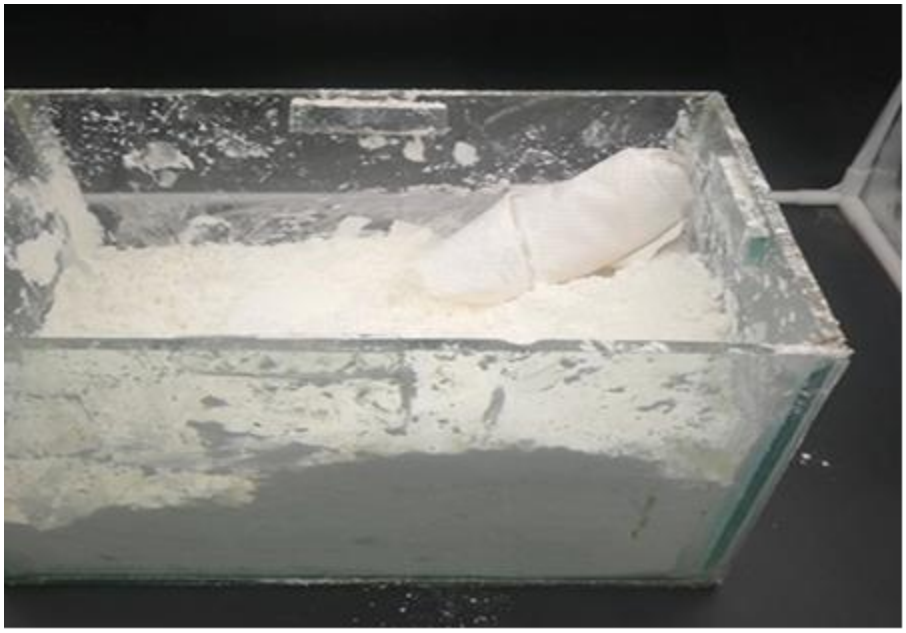

Fig 4: hardening by using starch corn

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الطرق الحديثة لاستخدام البلستكة في تدريس علم التشريح . مراجعة قصيرة

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**قسم تقنيات الاشعة،كلية الهادي الجامعة ، بغداد ، العراق.

البلستكه هي عملية حفظ العينات التشريحية بتقنية التشريب الإجباري بواسطة بوليمر له القابلية على المعالجة مثل السيليكون أو الإيبوكسي أو راتنجات البوليستر والتي لها استخدامات واسعة في المجال الطبي . تم تطوير تقنية حفظ الأنسجة من قبل الدكتور فون هوغن عام 1977 .يوجد حاليًا أنواع جديدة وواسعة من اللدائن المستخدمة في التعليم والعرض في المتاحف. هدفت هذه المراجعة إلى شرح الخطوات الرئيسية لطرق تقنية اللدائن اللينة وأهميتها في التعليم الطبي والبيطري.