

KADAVRA BAĞIŞ FORMU

Ad-Soyad :

T.C. Kimlik No :

Öldükten sonra vücudumun **Tıp**

Fakültesinde kadavra olarak kullanılmasına kendi rızam ile izin veriyorum.

İMZA :

TARİH :

ADRES :

TEL:

MEDICAL EXAMINER EMBALMING CERTIFICATE

Office of the Iowa State Medical Examiner

Department of Public Health

321 E. 12th St.-Lucas Bldg. 5th Floor

Des Moines, IA 50319-0075

ph# 515-281-6726 / F# 515-242-6579

County of _____

Under the provisions of Chapter 331, of the Code of Iowa, I hereby certify that
on _____

(Date)

I viewed the body and made an investigation of the death of

(Name of Decedent) (Age) (Sex)

who died on _____ at

(Date) (Street & No. or Rural Route)

and

herewith give my permission to

(City or Town) (County)

(Embalmer) (City or Town)

_____ to embalm the body of the above-
named decedent.

(Signature of Medical Examiner)

(City or Town)

(County)

(Date)

One copy each to the embalmer and county medical examiner.

Note: This certificate must be accompanied by permission of the family, or
evidence a diligent search was made to find the family, prior to embalming.

Form ME-2 [Rev. 8/00]

AJ'S MORBID EMBALMING TECHNIQUES (of decay prevention)

This web page was originally created by John W. Evans (former director of the UCI Willed Body Program) and has since undergone extensive revisions by staff of the Department of Anatomy and Neurobiology, not to mention being stolen and hacked up by a certain boy named AJ.. for his own personal gain.

<http://www.geocities.com/morbidaj/embalm.htm>

INTRODUCTION TO EMBALMING

A successful embalming procedure is necessary for a long-lasting preservation of the cadaver for anatomical study. The procedure consists of arterial embalming with a gravity-tank apparatus fixed approximately three to four feet above the body. The embalming fluid is prepared from propylene glycol which keeps the muscles moist; 10% buffered formalin used as a fixative; isopropyl alcohol used as a preservative; and liquefied phenol, which is used as a mold preventative. Coloring of the blood vessels is useful in their identification with a small amount of amphyll, which is also used as a disinfectant.

Dissection of human cadavers is essential in learning the major structures of the body in a three-dimensional relationship. It is extremely important to fix and preserve cadavers adequately not only for the sake of anatomical study but also for the financial justification.

Various embalming procedures have been used by embalmers for different purposes. In funeral homes, the emphasis is on preserving the natural appearance of the deceased person for cosmetic reasons, which may be at the expense of long lasting preservation. On the contrary, embalmers employed by the UCI medical school put a great deal of effort into improving the quality of the embalming so that specimens can withstand varying degrees of handling, drying, and the extended periods of time the cadavers are exposed during dissection in medical anatomy courses. The cadavers are kept at room temperature for study and dissection for one to five years.

EMBALMING TECHNIQUE

The modern practice of embalming utilizes the so-called "Arterial embalming" technique (Spriggs, 1971). Arterial embalming consists of the injection of an embalming fluid into the arterial system of the cadaver and utilizing the whole vascular system. The embalming procedure used at UCI is as follows:

Arterial Embalming

The cadaver is washed with antiseptic soap and rinsed thoroughly with running water. The external genital area is covered with a piece of cloth or towel. The body is set in the anatomical position with hands turned downward. The nasal and buccal cavities may be filled with cotton to avoid any leakage during or after embalming. This is done to retain all chemicals and fluid for better fixation.

A small incision is made on the superior border of the sternoclavicular notch. The common carotid artery is exposed by cleaning the fascia of the artery to allow movement and space for the cannula which is inserted into it. When the carotid artery is raised with aneurism hooks, two (10") pieces of ligature are placed around the artery with forceps to hold the cannulas in place while embalming. This is done to help avoid leakage or release of the tube due to pressure exerted by the embalming apparatus. The common carotid artery is incised about 4 mm long and any blood

clots present are removed with forceps. Two cannulas are used in the same slit made into the artery for better saturation of the tissues in the head. An L-shaped cannula is then inserted into the carotid via the slit and tied securely with string.

The L-shaped cannula is connected to polyethylene tubing which is connected to the gravity embalming tank located above the cadaver. Before the embalming fluid is injected, air is removed from the connecting tube to avoid any possible airlocks produced by the vessels of the cadaver during the injection of the fluid. Injection periods vary in each case taking 8 to 24 hours. This variability is due to the ability of the body to accept the fluid at its own rate.

The gravity-tank is filled with embalming fluid consisting of:

- 1 gal. isopropyl alcohol
- 2 gal. propylene glycol
- 1/4 gal. amphyl
- 1/2 gal. 10% buffered formalin
- 50 oz. liquefied phenol

After the fluid is added, the gravity tank is filled with water to reach the tank capacity of ten gallons. When all preparatory procedures have been completed, the peacock is turned on to allow the embalming fluid to flow through the tubing, cannula and into the common carotid artery, thus dispersing the fluid into the vascular system. During embalming, a number of small whitish splotches appear on the skin in the region most effectively embalmed and then they spread peripherally. This splotching effect of embalming can be used to determine the effectiveness of the embalming condition at any given time. Splotches usually disappear within several hours without leaving any trace. Any region of the body not exhibiting this typical splotching is directly injected with embalming fluid with a hypodermic needle under pressure until the tissue in that region becomes hard enough (Bradbury, 1978). During embalming, a number of blisters may appear over certain areas of the body surface. When blisters do appear, it indicates that the pressure of the injecting fluid is too high and later it is injected with a fluid filled hypodermic needle to ensure preservation of that area. Any areas not receiving enough embalming fluid arterially is injected by hand or injected using a porta-boy embalming machine. Commonly the lower extremities, back, and gluteal area require additional treatment. With a 10 CC syringe and a 14 gauge needle, each finger and toe may be injected with extra fluid. An additional two gallon solution may be placed into the porta-boy embalming tank consisting of the following:

- 52 oz. isopropyl alcohol
- 34 oz. propylene glycol
- 13 oz. 10% buffered formalin
- 10 oz. liquefied phenol

Fill tank to 2 gallon capacity with water

The porta-boy machine pressure is set to 20 lbs. with the rate of flow at 3/4 open. The body is turned on its side using wood blocks to prop it up so it will not slide on the table. The gluteal area and perineum are injected with one-half gallon on each side. The needle is placed up along the lower lumbar region and then injected with approximately one-fourth of a gallon on each side of the spine. This is done due to the pressure exerted on the back during embalming which may reduce the saturation of fluid to this area.

The body is then turned on its back. The feet, legs, thigh, hand, forearm, abdomen, thorax, and face are then injected as needed. When injecting these areas it is best to insert the needle at a higher point than the injecting area to keep the fluid from leaking out. While doing this protective glasses, a mask, and impervious gloves are worn. The exposure of harmful chemicals to the embalmer is greater at this time due to the direct injection and leakage that may occur. To help clear the fumes from the

embalming fluid, water is kept running on the table at all times during the hypodermic embalming.

Wetting Agent

Without a well-fixed body and preserved cadaver, the study of a dissected cadaver is difficult to undertake. Additional care is taken to facilitate better preservation of cadavers for future anatomical studies. A wetting agent is used to saturate the tissues because it helps prevent drying during dissection. The wetting agent consists of the following:

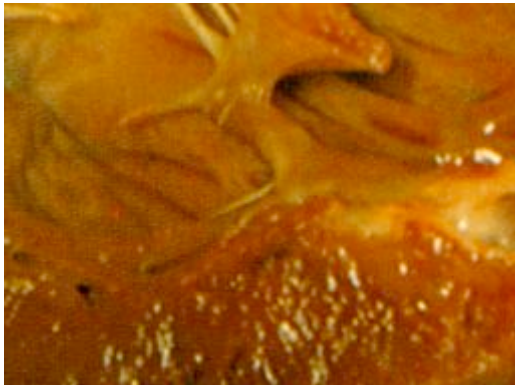
80 oz. propylene glycol

20 oz. liquefied phenol

10 oz. isopropyl alcohol

Fill tank to 4 gallon capacity with water

This wetting agent is made available to all anatomy laboratory students to allow them to keep their specimen's tissues soft and flexible for study in the anatomy laboratories.



Get used to it! its GUTSSSSS. .

INJECTION POINTS

The UCI Anatomical Preparation Personnel believe that there are only two efficient primary injection points, the femoral and common carotid arteries. Each injection site is considered on a case by case basis.

- The femoral artery is a continuation of the external iliac artery. It extends from the inguinal ligament down through the center of Scarpa's triangle to Hunter's canal, where it becomes the popliteal artery. The femoral artery is the primary injection point of choice because it is the largest vessel available. When used, the arms of the cadaver are placed at the sides and the lower part of the body, including viscera, seem to receive good fluid saturation.

The disadvantages of the femoral artery is that the vessel is deep in obese cases, making it difficult to locate and difficult to raise. Its many branches and tributaries create possibilities of leakage. When this procedure is used, there is a danger of short circuiting the arterial chemical before areas of collateral circulation are filled. This may lead to poor fluid distribution and a poorly embalmed body.

- The common carotid arteries are the principle arteries that supply blood to the head and neck. Both arteries ascend in the neck and divide into two branches. The external carotid supplies blood to the exterior of the head, face, and most of the neck while the internal carotid supplies blood to most of the areas within the cranial and orbital cavities. The right common carotid artery begins at the bifurcation of the innominate artery behind the sternoclavicular articulation and is confined to the neck. The left common carotid artery is at the highest point of the aortic arch on the left of and posterior to the innominate artery and consists of both thoracic and cervical portions.

An injection through the right common carotid artery is recommended and care is taken not to push the canula beyond the bifurcation which could lead to short circuiting and lack of fluid distribution in the shoulder, hands, and arms. The advantage of this injection point is that it ensures direct fluid distribution to the face. The fluid can be injected downward where pressure is not as much of a factor. The upper extremities, thorax, viscera, and lower extremities can be embalmed properly if there is no blockage within the vascular system.

FORMALDEHYDE

It is known that too much formalin causes unnecessary irritation of the skin, nose, and eyes of the person dissecting and may create mold. Formalin (37% *formaldehyde*) hardens tissues quickly and tends to make the embalmed body stiff and hard if used in excess. Formalin is diluted at UCI with a 10% buffer of water. The embalming fluid provides the embalmed body with moderate degrees of mobility of the neck, shoulder, pelvic girdles, and limbs and at the same time, yields an adequate degree of hardness of the muscles for dissection (Bradbury, 1971).

Cautions regarding formaldehyde: Individuals who work with human cadavers after or during embalming may be exposed to a variety of hazardous materials including various organic vapors and bodily fluids. Formaldehyde has been recognized for some time as an irritant affecting the mucous membranes of the respiratory tract and eyes. Some individuals may develop increased sensitivity to formaldehyde after initial exposure. More recently formaldehyde has been shown to cause nasal squamous cell carcinoma in exposed rats. Based on toxicological and epidemiological evidence, the Occupational Safety and Health Administration (OSHA) has found that exposure to formaldehyde may be associated with cancers of the lung, brain, and bone marrow. Although the data were deemed to be inconclusive, OSHA determined formaldehyde should be treated as a potential occupational carcinogen and lowered the 8-hour permissible exposure limit (PEL) to 0.75 ppm and the short-term exposure limit to 2 ppm. The U.S. Environmental Protection Agency (EPA) classifies formaldehyde as a probable human carcinogen.

- More information on formaldehyde
 - Information on a formaldehyde air sample test conducted at the UCI embalming laboratory
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FACTORS INFLUENCING THE STABILITY OF FLUIDS

Temperature: Extremes in temperature have a detrimental effect on the shelf life of embalming fluids. Elevated temperatures accelerate polymerization of formaldehyde and cause decomposition of its disinfectant and preservative components. Depressed temperatures cause precipitation of the endothermic solutes.

Time: All organic compounds exhibit a tendency to form polymers. Methanol is incorporated into embalming fluids as an antipolymerization agent for formaldehyde. Nonetheless, the average shelf life of fluids is between two and five years.

pH: One of the purposes of adding buffers to embalming fluids is to prolong their shelf life. Strongly alkaline solutions cause decomposition of formaldehyde. Highly acid solutions promote polymerization.

Light: Light has been cited as a factor influencing the speed of chemical reactions. Light has two effects on embalming fluids: (1) it causes a color change, thus interfering with the eventual reaction of the cosmetic dyes; and (2) it increases polymerization of the formaldehyde. As a result, some manufacturers have adopted tinted containers to prolong the shelf life of their products.

The three essential components of the definition of embalming are *disinfection, preservation, and restoration*. Chemical means are employed to achieve these goals, since existing physical methods are too uneven in their effects. For example, steam-pressure sterilization could achieve excellent disinfection and preservation, but would be counterrestorative.

Preservative chemicals will generally double as disinfectants. However, supplementary germicides are included in embalming fluid formulations and modifying agents are added in order to augment restoration.

Linkler:

<http://www.springerlink.com/index/k4620423628m6284.pdf>

<http://www.geocities.com/morbidaj/embalm.htm>

<http://en.wikipedia.org/wiki/Embalming>

http://en.wikipedia.org/wiki/Image:The_Thing_2.JPG

<http://www.amsocembalmers.org/docs/embalming-process.pdf>