Waterless Embalming – A Valuable Technique

by Jack Adams, CFSP

Embalming failures are generally caused by underestimating or not recognizing difficult conditions in a remains. Unfortunately, not treating these conditions properly have led to far too many mental anguish litigations regarding the viewing experience. This type of litigation seems to occur on a monthly basis. Part of the reason for this is that many cases are held longer for delayed disposition because of family requests or shipping arrangements.

Often, the embalmer is not aware of when the disposition will be, or family circumstances change causing a delay in disposition. Because of this uncertainty, we should always embalm thoroughly, and not as if the case at hand will be gone in a few days. Instead of treating a shipping case quickly and with little regard to the journey or the time before disposition, this is one of the situations when we need to be extra thorough.

One of the biggest challenges for today's embalmer is recognizing the "unknown factor," or factors in each case. We may not have an accurate cause of death or a list of drugs that were used during treatment, but we have the case in front of us and we can observe the condition of the tissue. We don't need to know the cause of death to observe spongy tissue that we know will be difficult to preserve. Seeing and touching tissue will help us to recognize possible difficulties more than any signed death certificate. Embalmers who premix arterial solutions before they view the remains are taking unnecessary chances on the outcome. Every remains is unique and should be treated accordingly.

Universal Embalming Outline:

1. Analyze condition of remains, closely checking tissue.
2. Mix arterial solution according to initial tissue observation.
3. Use restricted drainage to help solution reach deep tissues.
4. *After injecting one gallon*, we should alter the solution according to the tissue condition. If no signs of initial preservation are observed, the solution should be made stronger. If the tissue is firming too rapidly, coinjection such as Restorative can be added to slow down the firming or drying action. We should see and feel changes to tissue, not just changes in color, but also changes in the texture of the tissue that are tested by feeling the tissue.
5. Raise any arteries necessary to distribute the preservative evenly into the tissue to insure proper preservation. Adjust the strength of the fluid according to the condition of each body part to insure a well-embalmed body. The head may actually be dehydrated and emaciated on the same body where the legs are extremely edematous. A moderate strength solution with humectant added might be used for the head, while a waterless solution with a coinjection added would be used for shrinking and drying the edematous tissue of the legs.
6. Following the arterial injection, an analysis should be made of the condition of the remains. We should evaluate the tissue and hypodermically inject any areas that didn't receive adequate distribution of preservative chemical. Preservative gels may be superficially applied to raw tissue or any tissue needing further treatment. Plastic wrap should be used to cover the gel to insure that the power of the preservative works on the surface it was applied to and doesn't evaporate into the prep room.

After thorough aspiration, inject two 16 oz. bottles of cavity fluid into the cavities. A large body, of course, may require more cavity fluid for preservation. In most cases, all of these extra precautions will result in a well-embalmed body.

A good embalmer makes a realistic analysis of the remains and reacts to his or her initial work plan as needed during and after the embalming. The true nightmare for an embalmer would be for the body to decompose before final disposition. While problems will occur, it is the responsibility of the embalmer to meet the standards of professionalism and do everything in their power to insure a positive outcome.

The good news is that decomposition can be avoided in most situations and the bad news is that there is definitely an increase in the number of difficult cases just by the nature of improvements in medical science and people living longer. The cases we treat today are harder to preserve. Most of us have had the experience of receiving a remains in the afternoon that died that very morning but that is already showing early signs of decomposition such as a green abdomen. Certainly not what you would expect from a remains that died only hours before. Patients are being kept alive longer and their immune systems are so weak that they begin to show signs of decomposition before they die. It is not uncommon for tissue banks to refuse donor tissue because of tissue gas being present in remains that have just died.

Waterless embalming should be considered for any case that you have concerns about. While waterless embalming has been around for a long time, chemicals today make it a better option because of a more predictable outcome.

Head freezes (injecting the head with a strong solution-primarily used to make restoration easier), injecting straight fluid, injecting very strong solutions, and waterless embalming are all methods that are proven successful to use for difficult cases. Years ago, and even today, some embalmers used straight fluid to inject into tissue that showed signs of decomposition. This type of an injection would sometimes be so harsh that it would wall itself off and not penetrate evenly into tissue. Embalmers would just raise more arteries and hypo to compensate for these negative walling off effects. Some embalmers would inject a strong cavity fluid with no water. This strong solution would be difficult to work with and quickly cauterize tissue and also wall off or limit even penetration of tissue. But, as with the other straight chemical injections, it would halt at least parts of decomposition. These early walling off or cauterizing solutions would commonly require hypodermic injection to insure the walled off surrounding tissue wouldn't go bad.

If you ask an experienced embalmer if he or she would rather have a body that is over-injected or under-injected, they will unanimously tell you that an over-injected remains is much safer. One can prevent overly firm, dry skin by adding a humectant such as Restorative to a solution, or applying a massage cream during and after all embalmings. An embalmer can rehydrate skin or use cosmetic to cover signs of over-embalming but an embalmer cannot cosmetize away decomposition.

Most manufacturers will publish guidelines or directions for a so-called normal case. They increase the strength of formulas to be used for difficult case scenarios. Some embalmers read guidelines and premix their solution before they even see the remains. Just as a doctor's patients differ, each remains is unique and needs to be treated according to the condition of the tissue. Any adverse reaction to the preservatives caused by drugs needs to be recognized, and adjustments to the solution should be made accordingly. Using a premixed solution with such a case could easily be the cause of failure. Too many viewings are not successful because the solution used and the method of delivery to the tissue is not adequate.

Because every case is unique, the guidelines written by manufacturers are just that, ***guidelines***. They may give you a place to start, but it's always up to the embalmer to make sure that the solution being used is strong enough to preserve the case at hand and to adjust the solution as needed to insure this will happen. Waterless embalming can be used for any case, including the most difficult. Using this technique can give embalmers more control over embalming to avoid extreme conditions such as dehydration or decomposition.

Metaflow is a coinjection that disperses arterial obstacles and stimulates drainage. It helps increase the removal of waste products left by chemotherapeutic drugs which allows the preservative solution to work with full effectiveness.

Rectifiant neutralizes the adverse embalming effects of chemicals found in the water supply and dissolved in the body fluids. The use of these coinjections enhances the action of the arterial fluid by evenly delivering the preservative to all tissues. Last but not least, Restorative (a humectant) actually restores the hydration layer on emaciated cells. It improves the appearance of facial features and can restore characteristic expressions. It can control the contour of dehydrated lips, eyes, hands, and neck areas. Many embalmers use Restorative on all cases except edematous ones. These coinjection chemicals, along with the arterials, allow the embalmer to take control of the embalming and adjust the solution as necessary for the case at hand. Difficult cases are treated more successfully by using less water and adding coinjections or a waterless solution with coinjections for a more even distribution of the preservative. The results are what we'd expect for a viewing of our own family member.

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Waterless embalming, as we know it today, has come to mean injecting a solution of arterial chemical mixed with coinjections with no tap water added. The combination allows the solution to penetrate more evenly into tissue for superior embalming results. One of the most valuable uses of waterless embalming is on cases with advanced putrefaction and/or tissue gas. It usually stops decomposition immediately. It is also very effective for thoroughly embalming the delayed disposition case that we don't want to dehydrate or over-firm. Waterless embalming can be the factor that allows the embalmer to successfully control the difficult case rather than have the difficult case control the embalmer. The difference might be in viewing the body rather than having to close the casket. Significant testing has proven that a waterless solution has far superior preservative qualities with even saturation and distribution into tissue than a solution with water as a primary ingredient. As with all embalmings, facial skin should be treated with massage cream during and after injection.

Guidelines ONLY — Guidelines Change with Embalmer Preference.

Normal Case: Possible delayed disposition.
1 btl. Arterial
4 btls. Metaflow
4 btls. Rectifiant
1 btl. Restorative
Repeat as necessary.

A restricted cervical injection, utilizing both carotid arteries, is recommended for all difficult cases. This allows for maximum head control.

Moderately Difficult Case: Chemotherapy, autopsied, some putrefaction, or dead a few days.
2 btls. Arterial
4 btls. Metaflow
4 btls. Rectifiant
Repeat as necessary.
Add humectant as necessary.

Very Difficult Case: Advanced putrefaction, gas gangrene, skin slip, heavy chemotherapy.
3 btls. Arterial (my choice is Introfiant w/Dynachrome)
3 btls. Metaflow
3 btls. Rectifiant
Repeat as necessary.

Edema: Same guidelines as ***Very Difficult Case*** with the addition of 1 ½ btls. Edemaco.

Extreme Edema: Use for whatever body parts indicate an extreme edematous condition: the head, one side of the head, an extremity, trunk or sidewalls. The remainder of the body can be treated with a very strong solution or the waterless solution used for the difficult case.
1 or 2 btls. Introfiant w/Dynachrome
1 btl. Metasyn 35
1 btl. Rectifiant
1 or 1 ½ btls. Edemaco

These solutions would be repeated and made stronger or modified with coinjection as needed. Modify solutions with more preservative or more humectant as necessary for the case at hand. The embalmer on duty is always the best source for making decisions about changing solutions because he or she can see and feel the tissue to be treated. Remember to reevaluate after each gallon injected!

Continuous, substantial, digital pressure can be applied to the facial tissue directly following the injection to the head. If the head is injected first utilizing a restricted cervical technique, the pressure applied during the remainder of the injection of the body can often eliminate the swelling of the head by the time the body is embalmed.

Fear is a factor that seems to work against embalmers who find it difficult to try new procedures or to work out of their comfort zone. The condition of the remains we deal with today are not only difficult, but they are often "out of the box," or more difficult than the cases of the past. We can either do business as usual and risk closing caskets for decomposition or showing a body that isn't recognizable, or we can kick it up a notch and do the right thing. The right thing for an embalmer to do is to do whatever it takes to allow the family a peaceful, pleasant, and recognizable viewing experience. The family deserves the opportunity to say goodbye without any negative mishaps.

A well-embalmed body is the basic goal for all cases and this goal is within reach, barring unforeseen circumstances, when utilizing waterless embalming, when and where necessary. Mastering this technique can only increase your skill level and help you through these changing and challenging times. I believe that understanding and utilizing waterless embalming is a basic technique we all need to know for insuring well-embalmed remains for all families. Learning this procedure will also allow the embalmer to get a good night's sleep rather than worrying all night about what we may discover in the morning.

Each remains we have the honor to embalm is an opportunity to meet new challenges. Families deserve to be able to say goodbye to a loved one that they recognize and in many cases an embalmer is the only person able to give them that peace of mind. The family chose your firm, or maybe you specifically, to do this very important job of embalming. Doing that job to the best of your ability is vital to the future of funeral service and embalming.

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