Jack Adams

Embalming the Jaundice Case

Part I

by Jack Adams, CFSP

As far as embalming is concerned, jaundice is still one of the most difficult conditions to treat and overcome. Jaundice is a clinical phenomenon characterized by a yellow discoloration of the skin and mucous membranes. It is caused by an increase of bilirubin (a bile pigment) in the body fluids and tissues. The following are the three common classifications for jaundice:

1. Prehepatic: Hemolysis or an increase in bilirubin in the blood due to a metabolic disturbance. This condition usually causes a mild to medium jaundice.
2. Hepatic: Hepatitis or Hepatocellular disease of the liver causes a more intense jaundice coloration, characterized by a rapid onset of an orange-tinted jaundice.
3. Cholestatic: This type of jaundice is caused by failure of the bile to reach the duodenum. Prolonged cholestasia (blockage of bile flow) causes an intense jaundice which can turn into a green pigment or biliverdin. This is usually caused by cancer or drugs.

Although there are numerous causes of jaundice, most cases are due to viral hepatitis, drugs, alcoholic hepatitis, chronic liver disease, cholelithiasis (gallstones), and malignant diseases such as pancreatic cancer. The diseases that cause this condition are often treated with drugs that can cause jaundice themselves, thus adding to the intensity of the discoloration. As medical science entered into the antibiotic and chemotherapeutic era, post-mortem incidences of jaundice sharply increased.

Dr. Jerome Fredrick explored in depth the adverse effects of chemotherapeutic agents on modern embalming in his article "The Mathematics of Embalming Chemistry." One thing that all chemotherapeutic agents have in common is that they're all toxic. No matter which of these drugs is administered, cellular changes occur when they are used. These drugs cause deterioration of the circulatory system (including the heart, major vessels, and minor capillaries), the hepatic system (the liver and accessory organs), and the eliminatory system (the kidneys and related structures).

These cellular changes can be minor in nature, limited to slight discolorations which readily respond to cosmetic treatment. But when they assume major proportions such as acute jaundice, or when they saturate the body tissues with uremic poisons, the preservative action of embalming chemicals becomes seriously impaired. Edema and spongy tissues saturated with nitrogenous wastes and ammonia often accompany jaundice. Here again, these built-up toxins in the tissues neutralize the preservative action of the embalming chemicals.

This neutralizing effect on our preservatives is the reason we should never make correction of jaundice coloration a priority over thorough embalming of the body. Before the advent of chemotherapeutic drugs, embalmers would commonly treat jaundice with a weak solution of low index chemical. The theory here was that the formaldehyde would turn the yellow bilirubin into green biliverdin. As with all methods of treating jaundice, this weak solution procedure had its successes as well as its failures. It was back in this pre-chemotherapy era that embalmers could talk reasonably about bodies and refer to them as "normal" or "average." With advances in medical science, modern embalmers have witnessed the near-total disappearance of the "normal case."

Never make correction of jaundice coloration a priority over thorough embalming of the body.

Embalming the jaundice case is the same as embalming any case. Disinfection and thorough preservation is the most essential part. The use of a weakened preservative solution on a jaundice case or any case could have severe consequences due to early decomposition. There are excellent opaque mortuary cosmetics available to you that can cover any discoloration—including severe jaundice. In those *uncommon* instances when a good jaundice chemical like Metasyn or Jaundofiant fails to clear jaundice

or even causes a severe green reaction, a conscientious practitioner will still be able to apply these cosmetics and produce a natural appearance. However, *there are no cosmetics that will stop the decomposition process.*

There is no embalming chemical that will solve the difficulties of jaundice 100% of the time.

As far as I know, there is no embalming chemical that will solve the difficulties of jaundice 100% of the time. Through the years, each embalmer develops his or her own preferences for treating jaundice. One's ability to handle a jaundice case can be measured by that embalmer's success ratio in achieving a well-embalmed, pleasant-appearing remains with natural coloration and skin tones. The following are just three of the various methods I know of for treating jaundice. As you'll be able to tell, I do not advocate the first two.

1. Use a weak preservative solution. Again, this treatment was very popular in the pre-chemotherapy era. It is still used by some embalmers, but it is considered risky by many including myself because it often results in poor preservation. When using these weak solutions, embalmers are also tempted to use large quantities of water. This can naturally mean edema, bloating, and swelling. If you make this mistake, the family will probably not be back.
2. Use cavity fluid for the arterial injection. This idea actually makes weak solutions sound pretty good. Some embalmers employ the method, however, in the hope that the cavity chemical will bleach the jaundice coloration. Cavity chemicals are made to firm, dry, and cauterize the viscera. Their PH is not suitable for arterial injection. In fact, they are poorly suited for arterial injection in many respects. Cavity fluids injected arterially will sear off tiny vessels before proper penetration and preservation can take place. There are good reasons why cavity chemicals are made for cavity treatment and arterial fluids are made for arterial injections.
3. Use pre-injections and co-injections. Pre-injections can be beneficial in treating jaundice, if one does not already have too much water in the body. The pre-injection can enhance the flushing out action of the embalming process in those cases where there is difficulty removing blood discolorations. Co-injections are particularly valuable tools when embalming the jaundice case. The goal in using both pre-injections and co-injections is not only to help in the flushing action, but also to allow for even distribution and penetration of the arterial solution and dye.

   I prefer using a pre-injection if I feel the tissues can easily absorb it. In other words, if the jaundiced tissues seem to have a normal moisture level, I would choose to use a pre-injection. If the tissues are moist and spongy (or when extreme edema is present), I'll choose not to pre-inject. In such cases, a pre-injection will be likely to further waterlog the already saturated tissues.

Over the years, my own methods for treating jaundice have changed because of advice and suggestions from colleagues and because of my own experimentation trying to find new and better ways to cope with jaundice. I'd like to share some of the methods that I have used to achieve good results. I sure don't claim to know all the answers nor do I know of a method that will always work. I do, however, feel that I have been able to increase my success ratio through the years in treating these cases. Again, I measure success in terms of well-embalmed remains with natural skin tone.

Sometimes, the natural skin tone is the result of a counter-stain. By a counter-stain, I mean a stain from a dye that covers over the stain of some other color such as jaundice. It is not difficult to achieve this effect in many cases. It's done by distributing a dominant dye solution evenly and deeply enough to "out-stain" the undesirable pigment. The result can be a red-brown coloration which is, of course, more desirable than the green or even green-black tone that might otherwise occur. In other cases, when the dye is not completely dominant over the jaundice stain, cosmetics can be used to achieve a natural effect.

When I use a pre-injection solution, I find it can be very beneficial in clearing mild jaundice and removing obstacles for a deep penetration of dye systems which can be dominant over green stains. I've had success injecting a mixture of two bottles of Metaflow and two bottles of Rectifiant to a quart of warm water. I've also had excellent results using three bottles of Metaflow and three bottles of Rectifiant with no water. These pre-injections can not only produce a flushing action; they are also valuable tools for clearing pathways to deliver the jaundice arterial chemical and dye.

When you've determined a pre-injection is sensible (when the tissues are not saturated with fluids), I'd suggest pre-injection using a pulsator, a low rate of flow, and whatever pressure is necessary to achieve good distribution. I find that using intermittent drainage during the pre-injection is beneficial for insuring deep penetration and maximum flushing action.

Using intermittent drainage during the pre-injection is beneficial for insuring maximum flushing action.

In the next issue, we'll discuss what to look for in a jaundice arterial chemical, and ways of dividing jaundice into categories to help determine the best treatment. I'll also share a very aggressive method for treating jaundice cases.

Jack Adams

Embalming the Jaundice Case

Part II

by Jack Adams, CFSP

When embalming a jaundice case, the strength of the embalming solution should always be decided by the condition of the body and not the color of the tissue. I might start by mixing eight to twelve ounces of Metasyn Accelerated with eight to twelve ounces each of both Metaflow and Rectifiant—all in enough warm water to make up a gallon of injectable solution. To this solution, I'd add whatever amount of dye (Inr-Tone Blond or Icterine Regular, usually) I thought I might need to dominate the jaundice coloration. I prefer Icterine Regular for the more severe jaundice cases. As in any embalming, after injecting the first gallon of solution, the embalmer should make a judgment on whether to strengthen the mixture, or add more dye, or whatever in order to generate a well-embalmed, natural-appearing remains.

Edematous juandice bodies or decomposing cases with jaundice will demand more powerful injection solutions. The degree of difficulty will dictate the solution content. On a jaundice case which is going to be very difficult to preserve, I prefer to use waterless arterial solutions, as I would on any very difficult case. This waterless solution would consist of equal amounts of Metasyn Firming arterial, Metaflow, and Rectifiant—plus whatever amount of dye might be necessary to overcome the jaundice. So really, embalming the jaundice case is very similar to embalming any other case except that extra dye is likely to be needed.

As with other difficult cases, I prefer injecting using both carotids when treating the jaundice case. I'd begin by injecting the arterial solution downward through the right carotid, while clamping off the left carotid to avoid the major flow to the left side of the head. If the left carotid is snipped above the clamp, this will restrict most of the collateral circulation to the head.

The use of a pulsator seems to me to give the best results in terms of removing discolorations such as jaundice.

The use of a pulsator is highly recommended for the injection. Its ability to make the liquid "vibrate" (when used in conjunction with high pressures and low, controlled rates of flow) seems to me to give the best results in terms of removing discolorations such as jaundice. Hopefully, one has a machine which allows the pressure to be adjusted to whatever is needed to overcome vascular resistance. An increase in pressure should always be balanced by a reduction in the rate of flow to avoid swelling. A slow, deep-penetrating and saturating injection is desirable in treating jaundice.

I like to use a drain tube and the right internal jugular vein for drainage on any case with discolorations. The tube makes it easy to restrict drainage which is essential to enhance penetration. Good drainage is needed if one is going to be successful in treating jaundice.

At the completion of the downward or trunk injection, the embalmer must check both the embalming results and the tissue coloration. This evaluation will dictate if any additional preservative or dye is needed to achieve desirable results. If the jaundice intensity has not been removed or dominated by a more natural coloration, we should naturally add more dye to our solution before injecting the head.

The question is always asked: How much dye is enough?

For that reason, I've drawn up the following chart. It is intended that the chart be used as a basic guideline; it

Jaundice Intensity/Dye Quantities Chart

Pre-Embalming Shade of Jaundice	Undesirable Color Change	Amt. of Icterine Per 1 Gal. Soln.	Amt. of Inr-Tone Per 1 Gal. Soln.
1. Off-Color	Yellow	½ oz.	1 oz.
2. Yellow	Green	1 oz.	2 oz.
3. Yellow-Green	Intense Green	2–3 oz.	4 oz.
4. Green	Greenish-Black	4–5 oz. +	8 oz. +

should not be adhered to blindly when the embalmer's common sense dictates otherwise. For example, when confronted with the most severe cases, one can only say that the embalmer should use as much dye as needed to counterstain. The maximums listed in the table may just not be enough. Incidentally, jaundice at stages 2 and 3 in the table can sometimes be cleared enough to apply transparent—rather than opaque—cosmetics.

When confronted with the most severe cases, one can only say that the embalmer should use as much dye as needed to counterstain.

I'd like to discuss a little further the four categories of jaundice which I've described in the table above. The first category is the off-color body. A remains which I'd put in this category would have a chalky gray pallor sometimes accompanied by a faint hint of yellow. This is a common shade in cancer patients. If left untreated or treated as a normal case, a jaundice-like coloration may appear the day following the embalming. Generally, one-half ounce per gallon of a highly concentrated dye such as Icterine or one ounce per gallon of a moderately concentrated dye such as Inr-Tone will be sufficient to correct any discoloration difficulties in this category.

The second category on the intensity chart is yellow jaundice. This condition might change to a deep yellow or green jaundice by the day following the embalming. Treat this condition by adding about one ounce to the gallon of concentrated dye. If you prefer to use a dye like Inr-Tone which is a little less concentrated than Icterine, you'll probably want to use about two ounces per gallon for a body of this kind.

In the third category are bodies which are received with a skin coloration somewhere between yellow and green. A body such as this will most often turn green, even intense dark green, following the embalming if it

The reddish-brown won't be a natural skin tone, but it's a lot better than the greenish-black.

is embalmed with an ordinary arterial chemical. This degree of jaundice is difficult but not impossible to flush out. Even if it does not flush out completely, two or three ounces per gallon of Icterine or perhaps four ounces of Inr-Tone will allow the embalmer to effectively dominate the jaundice stain so that the tissues appear a more natural reddish-brown. The color of the skin will then be tinted to a reasonable blending color and can easily be cosmetized so that the skin tone is completely natural.

The fourth and most severe category consists of bodies which are actually green when received. These are likely to turn greenish-black following embalming. When embalming a body of this color, I'd start with four to five ounces or more of Icterine or eight ounces or more of Inr-Tone to the gallon. When I say "or more," I mean just that. Use any amount of dye that is needed to dominate the green.

This final degree of green is probably going to be impossible to flush out, but it's not impossible to counterstain or dominate with a more powerful stain. A reddish-brown color can be achieved, and if you can dominate a green this severe, it's quite an achievement. The reddish-brown won't be a natural skin tone, but it's a lot better than the greenish-black. With external cosmetics, you can tone the reddish-brown down and create a natural appearance.

I can't emphasize enough how important it is to evaluate the amount of dye (and the amount of arterial) you are using after each gallon. In fact, you should consider altering proportions between *half* gallons. It's a good idea when adding dye to a solution to allow it to mix thoroughly before you start injecting.

Do not underestimate the importance of using enough Metaflow and Rectifiant in order to achieve a desirable coloration. Regardless of whether you dilute with water or go waterless, I've found the best results are achieved using equal amounts of Metasyn, Metaflow, and Rectifiant anytime I encounter jaundice. In the next issue, we'll discuss a promising aggressive way to treat jaundice and the cavities.

Jack Adams

Embalming the Jaundice Case

Part III

by Jack Adams, CFSP

So far in this series we've discussed traditional, successful methods for treating jaundice. Now I'd like to review a more aggressive method which I've had enough success with that I think it's important to share with you. The procedure involves a pre-injection.

First of all, we need to determine whether a pre-injection is practical to use. In other words, if the tissue is jaundiced but not edematous, a pre-injection may be considered very valuable in eliminating the jaundice discoloration. Personally, I choose not to pre-inject edematous tissue, because I don't want to further saturate the tissue. Many embalmers shy away from any pre-injection. They do so because they feel the arterial injection itself may cause distention, and that a pre-injection would only introduce more fluids into the tissues to compound their problems.

Most swellings that occur during any type of arterial injection are caused by too high a rate of flow.

The majority of swellings that occur during any type of arterial injection are caused by too high a rate of flow. Because of this fact, I feel it is important to review rate of flow before we continue with the discussion of pre-injection for jaundice cases.

Controlling the rate of flow is an absolutely critical element to any successful arterial injection. This fact doesn't change when a pre-injection is made. Tissues vary from body to body. Each remains has its own capacity rate for absorbing fluids. Forced injections at rates above this capacity cause problems such as over-injections and swelling. Don Sawyer recommends injecting at a rate between 10 and 14 ounces per minute. Don shared with us an easy way to determine one's approximate rate of flow. The method is to set the flow where you normally do, and inject into a 16-ounce chemical bottle for 30 seconds. You then measure the amount in ounces and simply double that to arrive at your rate of flow in ounces per minute. Too great a rate of flow in the pre-injection will cause the exact same problems that a high flow rate causes during regular arterial injection.

I find that the easiest and most precise way to control rate of flow is with the use of a rate-of-flow meter. The flow meter can be easily adapted to most injection machines. This simple device can take the guesswork out of embalming. Once you've embalmed with the flow meter, you will realize a new control over the entire process. Embalming without a flow meter is equivalent to flying without radar. Eyeballing and guesswork are replaced with a controlled constant monitoring of the rate of flow.

There are always certain uncontrolled factors in the embalming process. Unseen circulatory obstructions can cause slow-downs or shut-downs in the arterial injection. These slow-downs are immediately noticeable on a flow meter. A simple adjustment can stabilize the flow within the recommended range of ounces per minute. Another example of an unseen embalming factor would be blood clots. When these clots break up or disperse, an increase in the rate of flow is commonly the result. This increase could be enough to double the rate of flow and cause oversaturation of the tissues and swelling. These increases in flow can be spotted immediately with the flow meter. Now that we are all on the same wavelength about rate of flow, let's return to the discussion of jaundice pre-injection.

Using water and dye alone as a pre-injection will cause a textbook case of blotchies.

I'd begin by mixing a waterless pre-injection consisting of three bottles of vascular conditioner (Metaflow), three 16-ounce bottles of a demineralizing, drug-neutralizing water corrective (Rectifiant), and dye. The dye is what makes this pre-injection unique. The amount of dye used would be approximately the amount indicated on the jaundice category chart in the last issue. Here again, the amount of dye needed would vary according to the severity of the jaundice. The bottom line would be to use as much dye as necessary to dominate or overcome the jaundice discoloration.

On severe cases, I've experienced the best results using Icterine Regular dye in the pre-injection solution. Using water and dye alone as a pre-injection doesn't cut the mustard. This mixture will cause a textbook case of the blotchies. This blotchy appearance may consist of uneven red, brown, and green eruptions on the skin surface.

I prefer injecting this pre-injection solution using both carotids the same as in the regular arterial injection. This type of injection allows for the greatest control of the head area, which is vital in treating jaundice. I'd begin the pre-injection by using approximately 50 pounds of pressure, a low rate of flow, and the pulsator. Unlike the "Fill 'em up, Joe" approach to embalming, controlled techniques such as using both carotids (head control), low rate of flow, and a pulsator allow the embalmer to be in charge of the embalming procedure, instead of having the body control the process.

After injecting about ½ of the pre-injection, we should notice a substantial positive color change to parts of the lower body. If not, we should add more dye and continue the injection until we witness the color change. The fingertips and palms of the hands usually are first to accept the dye, followed by the chest and sidewalls. When adding dye, make sure it is mixed well in the machine before injecting.

It is recommended that you set the rate of flow between three and five ounces per minute for injecting the head. Pressure should be reduced to about twenty pounds.

It is not necessary to achieve a thorough color breakthrough to the lower body during this pre-injection. The idea here is to inject about ⅔ of the waterless pre-injection and dye downward—until we can establish the right amount of dye to use for injecting the head. So, beginning with a trunk or downward injection is a sort of test to establish a solution with enough dye so that jaundice in the face can be dominated.

It is recommended that you set the rate of flow between three and five ounces per minute for injecting the head. Pressure should be reduced to about 20 pounds. These pressure and rate of flow measurements are only starting guidelines; adjustments may be needed to achieve distribution. The embalmer must remember that increases in pressure will automatically increase the rate of flow. So, increases in pressure should be accompanied by decreases in rate of flow until a desired balance is reached.

The key to this pre-injection is to deliver the solution containing dye to the cellular level. The use of a drain tube and intermittent drainage can be beneficial. By injecting into a closed circulatory system and using a slow, controlled rate of flow and pulsator, we can effectively penetrate the tissues of difficult-to-embalm jaundice bodies. This pressure build-up, followed by opening the drain tube, helps provide even distribution and produces a flushing action.

The jaundice case is more common today than ever before. This is due mostly to the widespread use of chemotherapeutic agents which are known to be jaundice activators. Waterborne chemicals in the body, and in the water used in our embalming solutions, trigger the unwanted effect of the bile pigment bilirubin turning into green biliverdin. Rectifiant breaks through and neutralizes these chemical effects.

The dye from the pre-injection will begin to surface on the skin with small pink or red colorations interspersed in the jaundice. The pulsing action and low flow accompanied by light and patient massage will establish the desirable color in the face. If the color is not dominating the jaundice, more dye needs to be added to the solution. The key is to use as much dye and pre-injection as needed to overcome the jaundice. Once you've established the more desirable coloration in both sides of the head, mix the arterial preservative solution for the head. Up to this point, we haven't injected any preservative chemicals at all. I prefer to use Metasyn Accelerated for this injection. Generally, I'd add equal amounts of Metasyn Accelerated, Metaflow, and Rectifiant to warm water and dye. What makes this technique different is injecting the waterless pre-injection and dye until we establish a more desirable color in the face. We then follow this immediately by embalming the head with the preservative solution. This seems to have a locking-in effect on the established coloration.

Commonly, embalmers will experience a breakthrough of the desired coloration into the hand and even the face during the normal embalming procedure with or without a pre-injection. Unfortunately, the jaundice may reappear before the embalming is completed, or the undesirable green may become present on the day following the embalming.

I've achieved consistently good results by using this pre-injection with dye to the head followed directly by preservative arterial injection. The vessels would then be tied off to finish the locking-in process in the head before continuing the embalming of the remainder of the body. I tie the vessels off to maintain the vasular pressure so that penetration of the preservative chemical and dye is enhanced. Dye should always be added to the remaining injection solution to further dominate the jaundice and to avoid any color changes by way of collateral circulation to the head.

Could this technique be the complete answer to solving the jaundice problem? I don't think so, but I do think it looks like a method that will increase your success ratio in treating these cases. In the next issue, we'll discuss ways of treating edematous and decomposing jaundice cases, as well as procedures for treating the cavities of such cases.

Jack Adams

Embalming the Jaundice Case

Part IV

by Jack Adams, CFSP

I'll begin this installment by referring to the closing topic in the last issue. That is the treating of jaundice cases by pre-injecting a waterless solution with dye until more natural coloration is achieved in the head. This step is directly followed by injecting a solution containing arterial and dye, also into the head. This technique produces a freezing or locking-in of the preservative and the dye.

Since writing that article, I've been involved with two more jaundice cases of the difficult yellow-green and green varieties. Both were treated using the same technique. One case I embalmed personally, and on the other I was a long-distance consultant. In both cases, the jaundice was severe enough so that I believe the bodies would have turned a dark green or even a green-black by the day following embalming if they had been treated normally. In both cases, a natural skin tone was achieved which required only light cosmetic treatment. To be more specific, I can honestly say there were no remaining jaundice colorations, and that transparent tints were all the cosmetics necessary in order for the funeral home to be able to present a well-embalmed, pleasant, recognizable remains for viewing.

If there were only one visitor at a viewing, that would be reason enough to consider the embalmer's task a very important one. Making the last memory picture and experience a pleasant one is the embalmer's obligation. Those who have lost loved ones soon realize the importance of the viewing presentation. A viewing experience can be good or bad, and whether you hear about it directly or not, don't kid yourself: A good viewing is very good for business, and an unpleasant viewing is *very* bad for business. The care and presentation of the body is still the most important element of the traditional funeral process.

Don't kid yourself: A good viewing is very good for business, and an unpleasant viewing is *very* bad for business.

In the last issue, I made the statement that I didn't think the method I have outlined was the answer to all jaundice problems. However, I said the technique would certainly increase your success ratio in dealing with jaundice. As I have continued to compile data since I wrote that piece, what I'm finding is making me edge still further toward claiming near-universal success for the method. It may still not be the complete answer, but it is successful in a *very* high percentage of cases.

On many bodies, it's very clear that waterless embalming is the way to go. If the case is edematous, decomposing, frozen, traumatized, or has undergone a "difficult" autopsy, using a waterless solution is obvious. In order to determine whether or not a jaundice case warrants a waterless approach, judge more by the condition of the tissues, not by the jaundice coloration. Is gas present? Are there any areas of decomposition or skin slip? Are the tissues edematous? Is there a good chance that chemotherapeutic drugs were used in treating the case?

On these difficult jaundice cases, we need to deliver our powerful solution and dye deeply in order to overcome any embalming difficulties as well as the jaundice color. Always remember that job one is achieving a well-embalmed remains. If our color isn't natural, we can fix that with cosmetics. Problems with leakage and decomposition can't be solved with cosmetics.

Once we have decided that the jaundice case at hand will be difficult to preserve, we then go on to determine exactly how to mix the solution.

Always remember that job one is achieving a well-embalmed remains. Problems with leakage and decomposition can't be solved with cosmetics.

I often prefer that the solution contain equal parts of Metasyn Firming, Metaflow, and Rectifiant. The firming variety of Metasyn has the preservative punch necessary to achieve a well-embalmed body that still retains natural skin tone. To this waterless

Please turn to page 24

THE JAUNDICE CASE

continued from page 7

solution, I'd add whatever amount of dye (Icterine Regular) might be necessary to dominate the jaundice. The regular shade of Icterine produces a lighter pinkish red tone which seems to me to reach through the jaundice better than dyes containing brown blends. Many jaundices are bronzy to begin with, and brown-toned dyes can sometimes intensify and darken that color.

Once I classify a jaundice body as a difficult case, I usually also make the decision not to pre-inject. The cellular deterioration in such cases will predispose the body to swell during regular injection. A pre-injection will only add more volume and possibly waterlog damaged tissue.

What is needed instead is a low volume of a powerful solution with enough dye to dominate the jaundice. I begin the arterial injection by injecting the head directly through both carotid arteries. I like to begin on the left side of the head. By using a pulsator and a low rate of flow, we'll soon be able to see if we need to add more dye to break through the jaundice. Once we've achieved a desirable tone, we duplicate it on the right side of the head by injecting through the right carotid artery. By the way, I'm convinced the pulsator is an important part in this process. Its liquid vibration effect allows for a deep saturating and penetrating delivery of our preserving dye solution to the cellular level.

The injection process is completed when thorough preservation has been achieved and a more natural color has been established. Tying off the carotids completes the locking-in process. This procedure can be facilitated with light massage to the facial tissues, using an application of Kalon Cream to protect the skin. I should point out that achieving preservation is not just important for its own sake; without thorough preservation, the locking-in of the dye will be weak, and jaundice could return.

I prefer to use a drain tube when embalming a jaundice body. Continuous injection with a pulsator and intermittent drainage seems to have a flushing and penetrating effect on jaundice. The lower body or trunk should be embalmed with whatever amount of solution is needed to achieve preservation and to deliver enough dye to penetrate the jaundice. If you're short on dye, make sure you use enough in the head injection to do the job, even if you have to sacrifice some color in the body. My colleagues and I have been able to freeze and dominate the head color, while witnessing the jaundice coloration return to other parts of the body due to having too little dye at our disposal. Also, if you're short on coinjection chemicals, save your supply for the waterless pre-injection with dye or your waterless preservative injection to the head.

An example of a waterless mixture for injecting the head of a jaundice case with apparently normal tissue conditions (other than color) would be 4 to 6 ounces of Metasyn Accelerated, 16 ounces of Metaflow, and 16 ounces of Rectifiant. To this solution one would add the necessary dye.

In another recent case, I ran out of Metasyn Accelerated arterial and had to substitute Introfiant. I first used a pre-injection with dye, and followed with an injection consisting of 12 ounces of Introfiant, 12 ounces of Metaflow, and 12 ounces of Rectifiant with enough warm water to make 1 gallon of solution. Introfiant's deep penetrating ability makes it a natural for jaundice. The key again is to use enough chemical to achieve the necessary preservation while using enough dye to dominate the jaundice.

I always try to delay aspiration when confronted with jaundice. An overnight delay is best, if that is possible.

Warm water (not hot) is recommended whenever mixing water with any Dodge chemicals. The fact that heat causes expansion and cold causes contraction is at the bottom of this. Warm water helps to expand the cellular membrane and allow for better penetration. Some relatively uncontrolled chemicals cannot be injected with warm water. One should check the recommendations of the manufacturer.

Let's move along now to a discussion of cavity treatment for the jaundice case. I always try to delay aspiration when confronted with jaundice. An overnight delay is best, if that is possible. The idea here is to maintain the vascular pressure for as long as we can to allow our chemical and dye to penetrate. Immediate aspiration can weaken the locking-in process. The only exception to this would be if swelling occurs, particularly if the neck swells. If we were to delay aspiration in this situation, we could be locking in the swelling. When we face swelling, a partial high-thoracic cavity aspiration is recommended, being careful not to damage the tied off carotids. This is generally enough to relieve the pressure on the neck and remove the swelling.

Like the arterial Metasyn, the cavity Metafix is based on the Plasdoform principle. Plasdoform allows both chemicals to preserve slowly, and therefore penetrate deeply and thoroughly at a controlled rate. In addition, the plasdoform molecule actually has the ability to replace the bile pigment in the tissues, and thus overcome jaundice. This is why I use Metafix on all jaundice cases (to complement Metasyn).

No matter what cavity chemical you choose, you'll achieve better results using a delayed aspiration. After removing as much bodily fluid and bile pigment as possible, you should treat the cavity with at least two 16 ounce bottles of a quality cavity chemical.

Directly following the embalming, I like to apply another coat of massage cream to the facial tissues. Kalon tinted creams are ideal for this purpose. The moisture is maintained, and a naturally tinted skin foundation is achieved for further cosmetic applications. In the next article, we'll discuss additional procedures to prepare the jaundice case for final viewing.

Jack Adams

Embalming the Jaundice Case

Part V

by Jack Adams, CFSP

Some jaundice cases have to be cosmetized and laid out for visitation on the same day that the embalming is done. When trade embalmers are used and their schedules or geographic location make it impossible for them to call back, cosmetics will be applied immediately following the embalming. In such cases, opaque cosmetics are generally used to make sure that the jaundice coloration doesn't show through during visitation. This procedure is fine, as long as the application doesn't appear thick, cakey, and artificial. However, if possible, I would always recommend applying cosmetics on the day following the embalming.

The day following the embalming is judgment day. This is the day we get to see if our jaundice treatment has been successful. As we would do with any embalming, we first check the tissues to see if there is enough preservation. Secondly, we observe tissue coloration to determine our success in dominating the undesirable jaundice tones.

We gauge our success in treating the jaundice case by the degree to which we achieve skin tones that are easier to cosmetize than green jaundice tones. By skin tones which are easier to cosmetize I mean ones that can be covered using less cosmetic, so a more natural presentation can be achieved. Although a tissue color check on the day following embalming is ideal, if we are hurried and we must apply cosmetics directly after embalming, we must be aware of further possible color changes on the following day.

If we must apply cosmetics directly after embalming, we must be aware of further color changes on the following day.

Assuming we've been successful in achieving a natural skin tone through arterial injection and this result has held through the day following embalming, we can now choose our transparent cosmetic based on the moisture level of the skin. If the moisture level is adequate, we can choose liquid tints. When the skin is drying or needs remoisturizing, we should choose a cream tint for our transparent application. The Kalon Massage Creams are particularly effective in tinting facial tissue after arterial injection when opaques are not required. Their moisturizing ingredients will be very helpful in preventing dry, flaky skin.

Alcohol-based tints can achieve very natural cosmetic results. Their delicate effect seems to bring out some of the natural colorations of the face such as freckles, birthmarks, or age spots. These tints have a deep penetrating ability in addition to their tinting effect. While an application of the tint alone may be sufficient, it also makes an excellent base for further cosmetic applications. And, these additional cosmetic treatments can be kept to a minimum with a good base from an alcohol-based tint such as a Complexion Spray or French Rose Tint. In some cases, the appearance of the body after using an alcohol-based tint can be very similar to results which could be achieved through the use of cosmetizing arterial dyes internally. In both cases, you can often obtain a more natural skin tone than the jaundice case would otherwise have.

Let's assume we've decided that the facial tissue contains an adequate moisture level for liquid tints. We should then clean the skin with a gentle application of Dry Wash which has been soaked into gauze, Webril, or some soft material. A rough application may cause dehydration or discoloration such as a browning of the tissue. Once the pre-embalming application of Kalon Cream has been removed, the liquid tint will be able to evenly penetrate the pores.

I've heard comments such as: The family has seen the jaundice, so why hide it?

In addition to French Rose Tints and Complexion Sprays, there is also a liquid powder tint called Soft Touch. The wide selection available makes it

Please turn to page 24

THE JAUNDICE CASE

continued from page 11

possible to recreate any skin tone. It's critical to recreate a lifelike skin tone exactly, and this task becomes easy with experimentation and experience. After the alcohol tints dry, White Kalon Massage Cream can be applied to prevent dehydration.

If your arterial procedures have not dominated the jaundice discolorations, you'll need to use an opaque cosmetic to cover these unnatural tones. I know of some funeral directors who show bodies with some degree of the jaundice or yellow-green color still visible. They justify this by saying that they don't want to cake on the cosmetics. I've heard comments such as: The family has seen the jaundice, so why hide it?

Somehow, I will never be comfortable with even a hint of Martian green in the skin tone of the deceased. Even if a family requests no cosmetics, they should be told of the undesirable consequences. It may be appropriate to have them view the unembalmed yellow-green tones and/or to explain how these tones could intensify to deep green or greenish black. While recently in Kentucky, I learned of some religions that do not allow any cosmetic application. If a member of such a religion is jaundiced at death, the arterial injection takes on all the more importance. It's the last chance to dominate that undesirable coloration.

A deep jaundice discoloration *can* be covered up, and this *can* be done without sacrificing a natural appearance. Three effective opaque cosmetics which you should have are Undercoat Aerosol, Kalon Pigments, and the liquid Perma Cosmetics. Undercoat comes in three shades: light, medium, and dark. They are intended to be used to establish a base coat over any discoloration. If used properly, they will cover even the most severe stains. One should first clean the skin with a gentle application of Dry Wash. Dab and wipe the surface with a saturated pad of Webril toweling sufficiently so that the pores are cleaned. This process will ensure a more successful bonding of the cosmetics to the skin.

When spraying the cosmetic, one should use short, quick, light sprays—keeping the can about 8 inches from the skin surface. A thin application will avoid any dripping or over-spraying. Then, after this layer had dried, a second or third thin coat may be applied if needed. Be sure to let each layer dry prior to the next coat. This will prevent dripping, caking, or peeling. Hair can be covered with paper toweling or Kalon Massage Cream before spraying on Undercoat. This will enable the embalmer to have a much easier time cleaning up the hair afterwards. It is essential to clean the hair properly after the application of any cosmetic, of course.

Using thinned-out, lighter applications is a good way to get coverage without having extra opacity—which could contribute to an unnatural look.

Once you've achieved an adequate base with Undercoat, you can use your regular cosmetics over that. Add enough color to tone and naturalize the opaque base. I personally prefer Kalon Pigments for any additional applications that may be needed. Transparent cosmetics (such as Kalon Cream) can be supplemented with Kalon Pigments for covering discolorations such as bruises, jaundice, or razor burns. They can also be used in combination with Undercoat or Liquid Perma Cosmetics. Or, they can be used alone in light coats or heavier applications as needed to cover.

Kalon pigments can be cut, or made less opaque, by adding White Kalon Massage Cream—or by using a brush moistened with Dry Wash. However, these applications should be made directly to the skin, and not over liquid opaques. The massage cream and Dry Wash enhance pore penetration, but may have a disrupting effect on the bond between the skin and the liquid opaques. Using these thinned-out, lighter applications is a good way to get the amount of coverage you want, without having any extra opacity—which could contribute to an unnatural look. Mixing uncut Kalon Pigments on the palm of your hand is a good way to achieve exactly the tone you want, while creating a creamy consistency that will easily cover over the worst discolorations.

I prefer to use the Liquid Perma Pigments for covering the most difficult jaundice cases. Again, the skin should be gently cleaned first with Dry Wash on Webril or gauze. Because these Perma Pigments are available in many shades, it should be possible to come up with a base coat that is very close to exactly the right coloration for the remain's skin tone. Then, I like to add a small amount of highlight color to the base—while it is still moist. This application makes it possible to achieve a more natural base before adding the final highlight and/or light brown for toning down.

Opaque applications can require about four to five times as much cosmetic as is needed on a normal case. In order to prevent this heavy application from looking unnatural, we have to add additional highlight cosmetic over the base. If we use the amount of highlight we would normally use with a transparent base on an opaque cosmetic application, we'll get chalky, cakey-looking results. The same rule of thumb applies when adding brown tones to an opaque base: add substantially more brown than you would if working over a transparent base.

Once a Perma Cosmetic application dries, it won't rub off while handling or dressing. It will make a very effective base for applications of Kalon Pigments or Kalochrome Creams. Additional browns such as the light or dark brown shades in either the Kalon Pigment or Kalochrome lines should be used to establish natural eye shadows and neck shadows that are present in life. Green eye shadow, bright red lipstick, and nail polish should be avoided when possible. These treatments will tend to bring out the jaundice if it is present, rather than diminishing it.

I prefer to apply a brunette powder over the cream opaques. The brunette seems to blend easily with these creams. To my eye, the white powders can sometimes appear too light or dusty. Sometimes I believe I see a white chalky residue materialize (although I realize many more cosmeticians use the white powder than the brunette). After setting and drying the cream, excess powder should be removed with a dusting brush.

In the next issue, we'll discuss the proper cosmetic treatment for the head and hairline. Methods of cleaning hair will also be covered.

RESTORATIVE PROCEDURES

continued from page 23

loose edges or corners protruding after the Pore Closer is applied. Allow this to dry once again to a non-tacky surface before continuing. Using a spatula, Inr-Seel can be applied next to the surface of the gauze. Use enough to fill the fiber of the gauze until it is no longer visible through the Inr-Seel.

I find it simpler at this point to blend the Inr-Seel into the restoration using my fingers, which I dip periodically into cold water. Since the Inr-Seel is water soluble, it will dissolve as it is blended, leaving a uniform application over the surface of the gauze. This will allow a clean transition from Inr-Seel to skin once you are past the line of demarcation. The Inr-Seel should be allowed to dry for approximately 15 minutes, depending on the amount of water that has been used during smoothing. There should not be any moisture visible prior to the next step. Once the Inr-Seel has dried, Pore Closer is applied with a soft brush, preferably red sable, over the entire surface of the Inr-Seel and one-half inch onto the skin surface. Allow to dry. This will be the base for your cosmetics.

I would recommend using either the Kalon Pigments or Complexion Cream over the restored area. Both of these will be sufficiently opaque to cover the color of the Inr-Seel. Another option would be to use Undercoat Spray as a base, and then use blending cosmetics over this to give a natural appearance.

One additional comment on using Inr-Seel and Pore Closer: In many cases, the area of skinslip is bordered by skin surfaces which are of questionable integrity. I feel the use of gauze, Pore Closer, and Inr-Seel will add stability to these areas, and circumvent additional problems caused by movement during casketing and positioning the remains.

WHY NOT LOWER THE STANDARDS

continued from page 5

ceive mandatory annual continuing education on a variety of topics including blood and airborne pathogens and hazardous material handling techniques.

The proposed Limited Funeral Practitioner would not be required to have any training and, by definition, would not be able to perform body disinfection. There will be times when a family will insist on viewing the body at a direct disposition facility. This could put them at great risk. A person experiencing the death of someone close to them is undergoing a very high level of stress—and stress is known to impair the workings of the immune system. Thus this family can more easily contract the disease than an average family in the general population.

Since the Limited Funeral Service Practitioner cannot wash, disinfect, and embalm, the family is being exposed to what the CDC and OSHA have described as a highly infectious object. A licensed mortician would use germicidal soaps and topical embalming disinfectants to greatly lower the risks to the family that wished to view an unembalmed body.

While the health care field, funeral service, and the federal government are encouraging higher and higher levels of training to protect both the worker and the general public, this bill would do just the opposite. Funeral service is highly competitive, and full-service funeral homes already offer very limited service arrangements at highly competitive prices. Currently, however, these same funeral homes still have the properly trained staff, equipment, and supplies available to handle most any emotional, physical, or hazardous situation that might arise.

RIGHT TO DIE

continued from page 19

that the most dramatic impact of the right-to-die issue on funeral service may occur. With current projections that four million Americans will have preplanned in some form by the year 2000, part of this service's popularity can be traced to the changing nature of death. Many loved ones of a deceased who died a lingering death are determined to get all of their affairs in order prior to their own deaths.

Prearrangement conferences often allow extraordinary discussions to occur within families, who many times air feelings never revealed previously. In the proper climate, loved ones openly discuss their views on death and determinations regarding their own care and, most importantly, their feelings for one another while alive. Such guided discourse can allow the funeral director to be viewed in a new light and can aid him in developing intense positive relationships with more families. Families can also discover the range of our professional services and knowledge, further solidifying our profession's value to them. For example, living wills or organ and tissue donation subjects are commonly a natural part of preplanning discussions and provide excellent opportunities for funeral directors to educate families on these topics.

The right-to-die issue may present

Please turn the page

Jack Adams

Embalming the Jaundice Case

Part VI (conclusion)

by Jack Adams, CFSP

In the last issue, we discussed the various cosmetic applications for treating the jaundiced case. The cosmetics used vary from transparent creams and liquid tints to dense opaque liquids and creams. The choice naturally depends on the skintone achieved following the embalming.

Cosmetics and Hair

Facial cosmetics belong on the face and not the hair. Earlier in this article, we mentioned how you could cover the hair with toweling or apply massage cream to the hair before applying the opaque spray cosmetic. These treatments could make the cleaning up process easier and more effective. However, there is always a certain amount of hair-cleaning with every cosmetic application.

A Webril towel or piece of gauze moistened with Dry Wash can be used to wipe the dense cosmetic from the hair. A comb can be used to protect the cosmetized hairline and scalp. A small stiff brush dampened with Dry Wash can be very handy in completing the clean-up of most hair. One can hold strands of hair up between the fingers, and run the brush up from the hair roots, being careful not to touch the skin. In this way, remove the cosmetic from the scalp between thinning hair. As the brush removes cosmetic and powder, it can be blotted on toweling and cleaned with fresh Dry Wash. This process should be repeated until all the color is removed from the hair.

The definitive color change or line of demarcation at the hairline should always be removed. A common cosmetic failure is not working the cosmetics into the skin beyond the hairline. This results in a defined artificial line of opaque cosmetic bordering an area of jaundice discoloration which jumps out and greets visitors at the viewing presentation. However, this can be avoided by properly working or stippling the cosmetic into the skin tissue beyond the hairline. We sometimes forget that even the skin between and under hair has natural colorations—and that green is not one of them. If necessary, the entire head should be cosmetized to avoid this artificial line. When working with thinning hair, lighter applications of cosmetic can be made to the head by using sparing amounts on a brush. One can blot the brush on paper toweling to remove the bulk of cosmetic from the brush. Cosmetizing with the remainder on the brush can sometimes be enough to cover the top of a head which is already partially covered with hair. This technique can be very effective when using Liquid Perma Cosmetics.

We sometimes forget that even the skin between and under hair has natural colorations—and that green is not one of them.

When using opaque cream cosmetics such as Kalon Pigments for the top of the head, the embalmer can cut or reduce their density by using Dry Wash or massage cream. One can dampen a brush with Dry Wash before applying the cosmetic to the brush. Once the cosmetics are applied to the brush, blotting the brush on paper toweling will thin the cosmetic nicely before it is to be applied to the head. Kalon Massage Cream can be added to Kalochrome Creams or Kalon Pigments to thin and prepare lighter, more natural applications of these opaque creams. The degree of thinning would, of course, be dictated by the degree of discoloration on the head. These thinning techniques can make the final hair clean-up easier.

When it is necessary to cosmetize the entire head, there will be more hair-cleaning. On severe cases, when cosmetics cannot be completely removed with cleaning solutions, it will be necessary to cover the hair with various cosmetic applications. Cosmetics can be mixed to match hair colors, and applied over the skin cosmetic in the hair. Eyebrow pencils can be applied to hair to achieve natural coloration. A brush moistened with Dry Wash can be used to stroke the eyebrow pencil and give the brush enough color to be applied to the hair in order that normal hair coloration can be achieved.

The Kalochrome cosmetic line offers a large range of colors which could be used to cover any hair discolorations. These colors include gray,

yellow, black, and white (although this last shade is available only on special order). White hair always seems to be the hardest to clean. Liquid cleaning solvents alone sometimes seem to turn true white hair a bit yellow, perhaps because they reduce the cosmetic but do not entirely remove it. The white Kalochrome can be very valuable to have on hand just for this important hair cleaning process.

Once the embalmer has matched the hair color with a cream cosmetic, he or she can moisten a brush with the cream and carefully apply the cosmetic to the hair, avoiding the skin. This type of application will camouflage even the most discolored hair.

You can purchase hair crayolas in beauty supply stores. Funeral service hairdressers use these hair crayons (Roux sticks) to easily and quickly color hair and hair roots, and to treat hair when light touch-ups are needed. These crayons can be very effective in removing cosmetic discoloration from the hair. Whatever techniques you use, you'll need to establish a natural skin tone to the head and scalp, while removing all the cosmetics from the hair.

Dressing and Casketing

For jaundice cases, funeral directors could recommend that families choose clothing that will enhance cosmetics rather than fighting with them. A natural cosmetic application can seem to fade back into jaundice tones if it is surrounded by yellow or green clothing. If possible, we should choose soft, light colors for females such as beige, pink, lilac, and powder blue. When gathering clothing for males, we should avoid greens and yellows in suits, shirts, and ties. Neutral soft color casket interiors should be chosen, avoiding the yellow blends that would only work against us in our presentation.

Communications with families while making funeral arrangements is very important. Asking for a photo on all viewing arrangements can open the door for getting more information regarding the condition of the remains. The family will many times present the photo along with a description of the body, including any physical changes that have taken place. Changes such as swelling, emaciation, and discoloration will be discussed. If no communication lines are opened, the funeral director could ask a question like, "Is there anything you could tell us about your father's appearance that might help us to prepare him for viewing?" This will show your concern and the fact that you care.

A family will sometimes share their expectations or hopes regarding the embalming results. Some people believe embalming will fix any adverse condition, or that embalmers are miracle workers. On difficult cases, families should be told that there are no guarantees of perfect embalming results. Let them know that you'll do the best you can to achieve a peaceful, pleasant, recognizable appearance—but that there are times when this is not possible. It's important for the person making funeral arrangements to communicate with the embalmer. We all need to be aware when high expectations are present even though the embalming will be very difficult. Communication can do a lot to diminish a family's disappointment, anger, and mental anguish regarding embalming results. Discuss the condition of the remains and make helpful recommendations when possible. This can only help us achieve better results, and at the same time demonstrate to our families that we truly care.

Conclusion

The important thing about embalming the jaundice case is to remember that it's like embalming any other case. That is to say, we must never substitute sound disinfection and preservation practices in order to achieve more natural skin tones. Cosmetics can always be used to mask or cover skin discolorations, but cosmetics can't hide decomposition.

Cosmetics can always be used to cover skin discolorations, but cosmetics cannot hide decomposition.

Proper coinjection chemicals should be used to overcome difficulties presented by chemical imbalances in the jaundice case, and to make it possible to permeate calcified cell membranes. These coinjections, along with a quality jaundice arterial, should be delivered with a controlled rate of flow. The use of a pulsator and a drain tube to establish intermittent drainage is recommended in order to establish deep, even penetration. Add to your solution whatever amount is necessary of a quality arterial dye, so that you can break through and dominate the jaundice discoloration, and achieve a more natural skin tone.

This concludes my jaundice series. I hope that when you're faced with a severe jaundice remains, some of the procedures mentioned in this series will help you to be successful in creating a natural presentation.