

# Cemetery Remains or Clandestine Burials?

Effects of embalming and how this aids in the identification of forensically significant remains.

## INTRODUCTION

Our research question is how embalming a body effects the taphonomy and estimation of time since death. The purpose of our research is to determine if a body has been embalmed or not and therefore ruling out forensic significance. There has only been small amounts of research in the field of identifying embalmed specimens in a forensic setting. Berryman, Bass and Symes (1991) have done some research in the field that showed there are ways to determine if a specimen has been embalmed such as, chemical testing, cracking and flaking of the tissue, and impressions left by clothing on bone. Our experiment will help to clarify if a body has been embalmed or not and will assist in ruling out a forensic investigation without the use of chemical testing, just with the use of physical appearances. Our experiment will involve embalming two pig legs obtained from a butcher shop, enclosing the specimens in a wire cage to protect it from animal scavenging. Our control specimen will have no alterations. Conditions of the specimens will be effected by several things including water drainage, structure in which the body was buried, type of soil, time since death, practice of embalming, and age at death of individual (Rogers 2005, 2). Our specimens will be buried in top soil mixed with some clay with good water drainage, one of the specimens will be embalmed, and the age at death of individual was approximately 6-8 months. We expect that there will be insect activity on our specimens as well.

## MATERIALS & METHODS

### Materials

- 2 pig hocks
- Wire cage
- Supplied embalming fluids, and hypodermic needles
- Safety protocol (tyvek suits, glasses, nitrile gloves, face masks)

### Experiment Timeline

- October 5th: pig hocks purchased from Thrifty Foods
- October 7th: embalm the specimen
- October 10th: specimen buried
- Delayed due to storm
- November 18th: exhumed specimens



## THE EMBALMING AND BURIAL

### The Embalming:

- 1st a water corrective was added
  - Creates pH level 7.3/7.4
- 2nd a humectant was added
  - Corrects post-mortem dehydration
- 3rd the embalming fluid
  - Formaldehyde free arterial fluid
  - Usually the vascular system is used to distribute the embalming fluids
  - Ours was distributed via a needle directly to the tissue

### The Burial and its Preparation:

- Burial took place on October the 9th at 5:30pm
- Burial depth was approximately 30cm in loose top soil
  - Elevation of 165m above sea level
- Forested area surrounding our burial site
  - Fir, Arbutus, Maple and Oak
  - Contribute to a lot of fallen leaves and debris over the burial site
  - The decay of the leaves may help attract insects which could increase the decomposition of our specimens.



## RESULTS

The following protective measures were taken:

- A 1x1m sheet of chicken wire over top of the burial site as a secondary protective measure
- The samples were buried in a wire enclosure to deter scavenging animals from digging up our specimens and contaminating our results.
- A 1x1m sheet of chicken wire over top of the burial site as a secondary protective measure
- Branches over top of the burial site as a last line of defense
  - Placed a red flag as a marker for where the specimens were buried.

### Embalmed Specimen:

- No animal scavenging
- No evidence of insect activity
- Muscle retained firmness and remained firmly attached to the bone
- Skin still held elasticity
- Slight depression from soil weight
- Pale pink skin, with dirt staining
- Muscle similar to original coloring
- Minimal decomposition

### Control Specimen:

- Early to advance decomposition
- Sagging flesh and skin slippage
- Disarticulated joint
- Gelatinous muscle texture
- Muscle was separating from the skin
- Skin discoloration showing a creamy white color, with soil staining
- Muscle turned red/purple in color
- No animal, or insect activity



## CONCLUDING THOUGHTS

- Complete lack of skeletonization
- No insect activity associated with either specimen or surrounding soil
  - embalming chemicals or cool temperature
- Next time
  - Separate locations
  - Multiple specimen
  - Time
- Our biggest challenge: finding a funeral home
- The Pit: the smell!
- The Peak: the embalming
- Contributions to the field of forensic anthropology
  - Results were not previously unknown or unexpected as far as embalming delaying decomposition
  - More time to see what taphonomic differences on the skeletal elements
  - Scavenging, bug activity



We would like to express our gratitude to First Memorial Funeral Service for donating the materials necessary for the embalming to us and to Natasha Keepence for working with us to perform the embalming, this project could not have happened without her.

## REFERENCES

- Skulls: <http://thegraphicsfairy.com/vintage-halloween-clip-art-anatomy-skull-printable/>
- Rogers, T.L., 2005. Recognition of cemetery remains in a forensic context. *Journal of Forensic Science*, 50(1), pp.JFS2003389-7.
- Berryman, H.E., Bass, W.M., Symes, S.A. and O'BC, S., 1991. Recognition of cemetery remains in the forensic setting. *Journal of Forensic Science*, 36(1), pp.230-237.