Use and Perceptions of Plastination Among Medical Anatomy Educators in the United States

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Introduction

What is Plastination?
Defined by the International Society of Plastination as a tissue preservation technique, developed by Gunther Von Hagens in the late 1970s, in which water and lipids in biological tissues are replaced by curable polymers that harden, resulting in dry, odorless and durable specimens.1

We performed a literature search and found that among the 786 peer-reviewed articles about plastination from 1977-2016, only 1% are from U.S. institutions. The majority are from Germany, Austria, Bulgaria, China, New Zealand, and France. Very little is known about the use of plastinates for anatomy education in the U.S.

Why is Plastination used?
- Tissues are as benign as a manufactured plastic model, yet anatomically authentic.1
- Eliminate exposure to carcinogenic solutions that are used to preserve cadavers, tissues, and organs.4

Study Goal:
Determine the use and perceptions of plastination as an anatomical teaching tool among medical educators in the U.S.

Methods

- Approved for exemption by the Colorado Multiple Institutional Review Board.
- An anonymous, voluntary, online survey was emailed to faculty at all U.S. MD and DO institutions and posted on the American Association of Anatomiasts (AAA) Open Forum.
- Survey items focused on:
  1. Availability and use of cadaveric dissection
  2. Knowledge and integration of plastination in curriculum
  3. Perceptions of plastination as a teaching tool

Quantitative results analyzed in SAS. Responses to specific qualitative questions were analyzed for emerging themes within each question, and triangulated with quantitative survey results to provide a richer explanation for the use or non-use of plastination.

Survey respondents, n=120
60% of survey completed?

Results

Use of Plastination for Teaching in U.S. Medical Schools vs. Dissection

<table>
<thead>
<tr>
<th>Percentage of U.S. medical anatomy faculty that….</th>
<th>% of indicated use</th>
<th>Sample Quote</th>
</tr>
</thead>
<tbody>
<tr>
<td>have heard of plastination: 100%</td>
<td>100%</td>
<td>“We do not use plastinates at our institution.”</td>
</tr>
<tr>
<td>visited Body Worlds/Works: 79%</td>
<td>79%</td>
<td>“We have visited Body Worlds and are considering using plastination.”</td>
</tr>
<tr>
<td>accurately define plastination: 57%</td>
<td>57%</td>
<td>“I think plastination is a good replacement to dissection.”</td>
</tr>
<tr>
<td>use plastinates in teaching: 39%</td>
<td>39%</td>
<td>“Plastination is a good replacement to dissection.”</td>
</tr>
</tbody>
</table>

Table 1: Quotes from respondents who indicated they DO NOT use plastinates at their institution.

Conclusion

• Plastination is more widely used within the U.S. than reflected by the literature.
• Many U.S. medical educators have a strong preference towards the dissection experience believing that dissection is the best way to learn anatomy.
• Plastinates of the pelvis/perineum and brain/nervous system would clarify anatomical relationships for students according to U.S. medical educators.
• A majority of U.S. medical educators believe that plastination is best used as a supplement to dissection but should not replace dissection.

There exist ethical reservations surrounding plastination that question the acquisition, display, and disposal of plastinated tissues.

References


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