

ARTS INTEGRATION IN MEDICINE TO IMPROVE WOMEN'S HEALTHCARE

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ABSTRACT

Arts integration can be a powerful tool to instill creativity and humanity into STEM fields. Within the field of medical education, arts integration can be particularly effective to improve women's health. This paper outlines three ways in which we (myself and the Virginia Commonwealth Department of Surgery) have integrated the arts into medical graduate education to improve the treatment of female patients. The three methods include traditional art classes for surgical residents, workshops to understand breast aesthetics with a focus on how it relates to breast reconstruction, and the development of a highly realistic surgical sculpture for breast reconstruction. These approaches can improve students' visual fluency, observational skills and surgical technique as well as impart a deeper understanding and appreciation for the female form. This paper describes the techniques we used to implement these goals within plastic surgery residents' education.

1. INTRODUCTION

Arts integration within medical graduate education is an effective tool to improve the quality of learning, especially as techniques and approaches are evolving and deepening. Educational goals of this integration include the development of empathy, altruism, and observational skills. It can also assist in combating burnout and compassion fatigue [1]. Arts integration can also be an effective vehicle to improve women's health. Healthcare professionals, particularly those treating women, need to have a keen understanding of women's bodies from a multitude of perspectives. It's critical to find ways to teach residents how to holistically understand the female form, be sensitive to those forms, and develop empathy for the female experience. The arts can help.

Within the field of plastic surgery, it is imperative that trainees have an advanced understanding of these topics. Plastic surgery is a speciality that is concerned

with the repair, reconstruction, or replacement of physical defects of form or function of the body [2]. Hand-eye coordination, observational skills and surgical technique are necessary to be an effective plastic surgeon. But it is also key for surgeons to understand the body in relation to the patients' psychology, specifically for their female patients. We've designed a series of workshops to create a multifaceted learning experience to help residents develop all these aspects of their learning.

2. METHOD

In collaboration with the Virginia Commonwealth University Division of Plastic and Reconstructive Surgery, I created a series of multifaceted workshops for surgery residents that investigate methods and techniques for integrating arts into medical education specifically to improve the quality of care to their female patients.

The workshops were designed to allow residents the opportunity of discovery of the form and perspective of their female patients while simultaneously improving their surgical skills outside of the high-pressure operating room environment.

2.1 Drawing and Sculpting the Female Form: The Art of Observation

The first method we investigated was a series of traditional art classes. We began with figure drawing (figure 1), progressed onto figure sculpture (figure 2), and finally portrait sculpture. The goals of these workshops were to strengthen the surgeons' observational skills, deepen their understanding of anatomy, combat burn out, and learn how to appreciate all the subtleties of the female form [3]. By having a variety of female models, we made sure that many different body types were represented. Another skill we nurtured through this exercise was active observation that does not prejudice the subject. The ability to look with open eyes free of bias is fundamental to clinical medicine. Through the medium of sculpture and drawing, physicians can better perceive subtle visual details and behavioural nuances during surgery as well

as the physical examination of patients. Another outcome of the workshop, specifically the drawing lesson, was the opportunity to better communicate with their patients. If surgeons can draw quick sketches of procedures to show their patients, they can better visually communicate.



Figure 1. Figure Drawing Class. Surgeons and surgery residents draw the female form from a live model



Figure 2. Figurative Sculpture Class. Surgeons and surgery residents assemble a system of wire armatures that will support the clay figure sculptures.

2.2 Understanding Breast Aesthetics

In this workshop, I developed a sculpture of a woman's torso with a unilateral mastectomy (figure 3) to help surgical residents better understand breast aesthetics, particularly as it applies to breast reconstruction. During the workshop residents used plasticine clay to recreate the missing breast. In recreating a missing breast that matches the remaining one, students honed skills crucial to their practice as surgeons. They used their observational and analytical skills to understand and recreate the symmetry, volume, contour, and texture of the breast. During the workshop students

participated in extensive conversation with myself, their fellow trainees, and the attending surgeon to learn how to critically examine and sculpt the form of a breast (figure 4). In discussing the aesthetics of breasts, the students came to understand what the natural breast looks like, and how this relates to current culturally accepted norms of beauty. The model even allowed the students, especially the male trainees, an opportunity to look at the model from the patient's vantage point (figure 5). This allows the residents the time to reflect on patient expectations and the cultural pressures they may live with.



Figure 3. Resin castings of mastectomy sculpture



Figure 4. Teaching students directly about symmetry of the form.



Figure 5. Students were encouraged to imagine the multitude of perspectives through which breasts are viewed, especially from the patient's vantage point.

2.3 Surgical Sculpture for Breast Reconstruction Surgery

Through a transdisciplinary collaboration with a surgeon, an engineer, and an artist (myself), we created a training workshop to allow surgery residents to learn and practice the complicated surgical techniques involved with breast reconstruction for women who have had a mastectomy due to breast cancer (figure 6). Unlike the previous two workshops which incorporate artistic training into resident education, this project incorporates advanced sculptural methods to create a functional figurative sculpture which allows for a more comprehensive surgical training experience. This is an example of art integration for surgical innovation. The residents use the sculpture to practice a specific microsurgical technique that is critical to the success of the surgery (figure 7). This technique is used for a specific type of breast reconstruction where a woman can use her own tissue instead of a breast implant. The model is completely unique and reusable and could only have resulted from this unique transdisciplinary collaboration. The workshop gives surgeons an opportunity to practice the surgery and learn the technical nuances before they operate. This can improve their technique and lead to better patient outcomes. In creating the torso, I utilized sculpting and mold-making techniques to realistically simulate the female body with as much anatomical accuracy as possible (figure 8). It was especially important that I modelled the form based off an average sized woman, not an idealized female form that is so often used for commercially available surgical trainers.

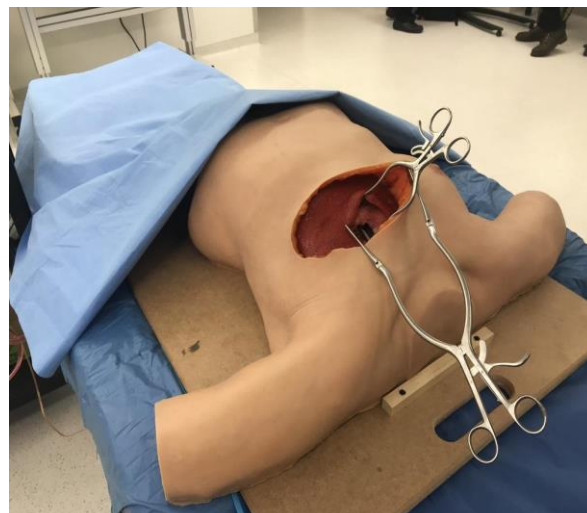


Figure 6. Microsurgical trainer before skills training lab



Figure 7. Microsurgical trainer during skills training lab. Residents are practicing breast reconstruction

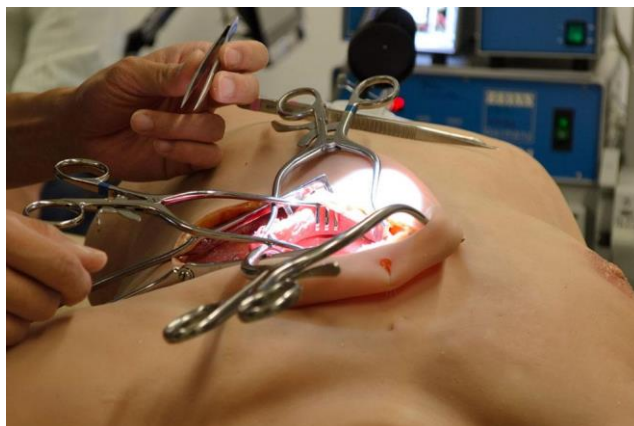


Figure 8. Closeup of microsurvival trainer during skills training lab

3. RESULTS

To obtain feedback on the effectiveness of the workshops we collected data through a combination of verbal questions as well as written surveys. We gave the residents surveys for the “Surgical Trainer Workshop” and the “Breast Aesthetics Workshop.” We obtained verbal feedback for the sculpting and drawing workshops.

3.1 Drawing and Sculpting Workshops Feedback:

After the drawing and sculpting workshops, residents reported that they gained a deeper understanding of the female form. One resident reported that after leaving the class, they began to see the face as shifting planes and shapes instead of just features on a head. They also reported that drawing and sculpting the body is one of the ultimate tests of one's knowledge of the human form.

3.2 Breast Aesthetics Workshop Survey Results:

Twelve subjects participated in the workshop; seven completed the survey. On a scale of 0-10 (10 being the most useful), subjects ranked the effectiveness of the workshop at 9.4. They strongly felt the workshop improved their understanding of breast aesthetics (9.4/10). Subjects reported a greater appreciation of the breast's complex, nuanced shape, pitfalls of light and shadow's effect on perspective, and different vantage points of observation.

3.3 Surgical Sculpture for Breast Reconstruction Surgery Results:

Eight subjects participated in the workshop; four completed the survey. On a scale of 0-10 (10 being the most useful) subjects reported an overall increase in their confidence to perform the surgery (7.5/10). They reported an increase in their understanding of the procedure (7.33/10). They also reported that the sculpture effectively simulates what it is like to operate within the confines of the chest cavity (8.5/10).

4. CONCLUSION AND DISCUSSION

We found that these workshops have enriched the resident trainees learning experiences and improved their treatment of their female patients.

The breast aesthetics workshop not only gave the residents time to understand the natural shape of the female breast, but also an opportunity to discuss gender norms and standards of beauty. It prompted conversations with the male residents to help them understand why a woman might want to keep the natural shape of her own breast, and not opt for the idealized breast shape.

Regarding the surgical training for breast reconstruction, the residents did report an increased understanding of the procedure as well an opportunity to make errors before operating on a real patient. Residents reported feeling more confident with the procedure after the training session.

When creating these workshops, we wanted to design them in a way where the learning objects would be hitting many important aspects of their practice—from surgical training skills to developing empathy for the female form and experience. It was also critical that a wide range of female body types were represented in these various workshops.

There are several ways the workshop process could move forward. We could increase the interaction between medical professionals and artists by including more artistic perspectives in the workshops and design process. The long-term surgical effectiveness of these workshops could also be investigated. We could come up with metrics to evaluate the surgical results. Patient feedback on the workshops is another important viewpoint to investigate. We could explore patient reactions to knowing that their surgeons have an artistic background. We could measure how it has affected their quality of care from the patient perspective.

These methods that we explored are specifically related to plastic surgery, but the potential for this kind of collaboration to better improve women's health is endless and could be applied to several other specialities. Other instances that this field could be applied to include any number of fields where creativity, empathy, and an artistic eye are essential. Topics to be explored could include gender issues, female reproductive health, aging, and many more. Through these workshops we have realized that the arts are powerful and can help to truly humanize healthcare.

4. REFERENCES

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