How One Donor Affects Thousands of Patients:
An interprofessional exploration of anatomy, pathology, and one human story

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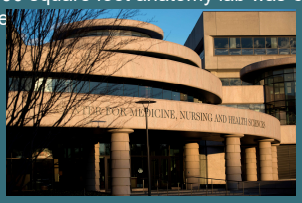
setting

Quinnipiac University welcomed its first medical school class in 2013. A 12,000 square foot anatomy lab was constructed on the new graduate campus in North Have



Prior to the opening of the Frank H. Netter MD School of Medicine, students in the School Health Sciences took dissection-based anatomy at nearby Yale University. The presence of a new anatomy lab on campus allows all QU students to stay on site.

The new lab also provided new opportunities for students in other disciplines to visit the anatomy lab.

In 2015, the Doctorate of Nurse Practice (DNP) program created a prosection-based anatomy experience for its students.

An anatomist at the medica school (LC) prosects one donor cadaver each year and the DNP and CRNA students visit for nine 30-minute anatomy sessions over the course of their two-Semester "Advanced Health Assessment" class.

Diagnostic Imaging students and faculty brought portable x-ray to the lab to locate bony lesions. A radiologist reviewed the images and reported an enlarged hypophyseal fossa.

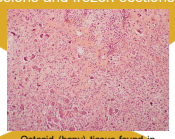
20 DNP students came to learn "normal" anatomy & got much more! They related patient findings to current/previous patients they had treated; one brought up "potters cough" which may have explained CL's apparent delay in seeking treatment

Median sternotomy revealing pleural effusion

12 second year medical students a few months removed from their own dissection experience & embedded in learning pathophysiology explored the process of differential diagnosis by viewing gross lesions and frozen sections

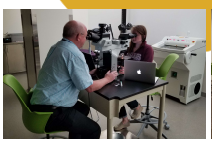
10 CRNA students had taken a dissection-based anatomy course focused on PNS and airway previously. One had this to say about the prosection experience, *"We felt the hard nodules of osteosarcoma in the donor's lungs, giving us a real sense of how difficult it must have been for the patient to breathe and how difficult it would be to ventilate such a patient. [The sagittal view of the airway] revealed details of an obese patient's airway. Discussing this donor's history and examination with the pathologist …was enlightening to see the role the pathologist would play in diagnosing and guiding treatment therapy for such a case."*

Four fourth year medical students completed an elective pathology rotation, working with the PA to prepare slides of the donor's lungs and uterus and guided other students through the case



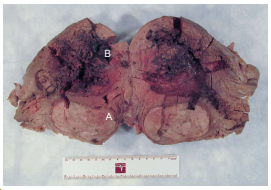
Osteoid (bony) tissue found in metastatic lung tumors

One Pathology Assistant student took the lead on exploring the enlarged hypophyseal fossa detected in the x-ray. She describes her experience: *"I enjoyed following where the clues led, like taking x-rays to find skeletal abnormalities and then taking samples of those abnormalities. I loved collaborating with other health professionals because they helped me to see things from a different perspective."*

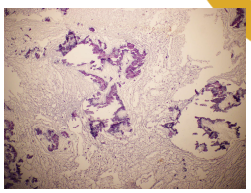


Pathologist MFS at double-headed microscope with an M4 reviewing slides

An M4 discusses the case with PAs



Gross appearance of uterus with large benign fibroma (A) and significant hemorrhagic malignancies (B)



Negative pancytokeratin stain of uterine tissue

her story

CL was a 54-year old white woman who died in August 2017. Her next of kin, a first cousin, contacted the Quinnipiac Body Donation Program, in which CL had expressed the desire to participate. The directors of the program considered refusing the donation, as she nearly met the program's exclusionary criteria for obesity and her cousin

new she had metastatic cancer of some kind. The directors decided to accept donation, but rather than have novice students perform the assigned her to a faculty member to prosect.

Pathologies noted:

- Dozens of metastatic lung lesions, one of which had eroded a pulmonary artery, causing a substernal pleural effusion
- Frozen section of lung lesions (performed by MFS): osteosarcoma
- Death certificate noted "uterine sarcoma" as COD and her occupation as "pottery studio owner"
- Enlarged uterus contained benign fibroma as well as masses grossly consistent with sarcoma
- Frozen section of uterine masses found no evidence of uterine sarcoma; all lesions were osteosarcoma
- Whole body plain film x-ray revealed no bony lesions, indicating a primary osteosarcoma originating in the uterus
- Frozen section of pituitary: cyst that may have contributed to obesity & uterine fibroids

barriers

Pathology & DI equipment housed far from anatomy lab (fixed!)

Conflicting student schedules preclude real-time IP collaboration

Who pays donor fees and faculty time when dealing with a shared resource like this?

Incentivizing student & faculty participation

Faculty time spent teaching outside own school counts less toward promotion

We cannot predict what conditions future donors will have; replicating this experience may be impossible

ideas for moving forward

Body donation programs

nt to consider relaxing some of their strict criteria for donation – this "unideal" donor provided an unmatched learning opportunity for dozens of students, who, in turn, will interact with thousands of patients through their future careers.

Wherever possible, students from multiple programs can investigate a case together, even asynchronously

All donors have a story – collaborations between those dissecting and Pathology Assistant and/or Diagnostic Imaging students can improve students' understanding of pathology, radiology, and pathophysiology.

Near-peer teaching (i.e., M4s teaching M2s) can be an effective and motivating model to improve learning for all participants, and we plan to seek out additional opportunities to encourage such interactions.

Previous clinical experience, such as that of the DNP students, provides invaluable insight into the lives and experiences of living patients. Nurses see the anatomy underlying the their patients' conditions have and help less experienced students broaden their perspectives on clinical medicine.

acknowledgments

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