**Abstract**

INTRODUCTION. Clinical application of anatomic knowledge is a cornerstone of professional healthcare programs. Optimizing time is a constant goal in all curricula, especially in anatomy, traditionally a very time demanding course. We have implemented three clinically related activities for first and second year dental students in anatomy that increase inter-cohort integration, clinical and anatomy faculty collaboration, and emphasize a longitudinal thread of anatomic knowledge in the dental program at The Ohio State University. RESOURCES. Resources include clinical faculty, 4th year dental students, anatomy faculty, anatomy cadaver lab, dissecting tools, surgical instruments, penlights, tongue depressors, and materials for intraoral injections. DESCRIPTION. Clinical faculty and anatomy faculty collaborated for all activities described for first and second year dental students. First-year dental students practiced intraoral injections on cadavers with alginate, allowing students to observe the injected location and visualize a 3-D approximation of the infiltration. Another activity first-year dental students practiced was an abbreviated cranial nerve exam in the neuroanatomy labs and then they applied it in the Introduction to Clinical Dentistry course head and neck exam. The second-year dental students practiced extraction of cadaveric specimens utilizing appropriate surgical instrumentation. Fourth-year dental students guided underclassmen for both anatomy lab experiences. Initial feedback from all participants suggested these collaborations were helpful integrating anatomic knowledge and clinical application for all student groups.

SIGNIFICANCE. These activities promote integration between dental cohorts as well as between clinical faculty and anatomy faculty while reinforcing anatomical knowledge as foundational for clinical procedures.

**Introduction**

Adding enhanced value to dissection labs has never been more important in the current trend of reducing anatomy lab time in all medical and dental curricula. I describe three activities that increase inter-cohort integration, increase clinical and basic science anatomy faculty integration, and emphasize anatomy more longitudinally in the dental program at The Ohio State University.

Activity I. The first activity is a local anesthesia injections on cadavers in the gross anatomy lab. Early Clinic faculty and fourth-year dental students come into the lab and work with the first-year students at their dissection tables on bisected heads with intact oral cavities. Each student has an opportunity to practice 1 of 7 maxillary and mandibular intraoral injections (Fig. 1). Following the injection students dissect the area to see how well they were able to target the appropriate area for the specific nerve block (Fig. 2).

Activity II. The second activity involved presentation and practice of an abbreviated cranial nerve exam in the anatomy class correlated with neuroanatomy content. Introduction to Clinical Dentistry course faculty applied this content together with the Anatomy faculty in the early clinic labs.

Activity III. In the third activity, second-year dental students come back into the anatomy lab with clinical faculty and fourth-year dental students to during the Introduction to Oral Surgery course. This lab activity is prepped by the first-year students who prepare odontograms for the anatomy lab cadavers. The faculty coordinate to create an appropriate balance for the primary objective of familiarizing second-year dental students with the instrumentation necessary for uncomplicated and common surgical extraction procedures. Familiarity with, handling and position of the specific instrumentation is emphasized in the lab. Students are given the opportunity to practice uncomplicated extractions.

**Description**

Activity I: Head and neck dissections were performed and paused at the point of bisection of the head with the oral cavity intact. Measure out 1 scoop of alginate powder and pour it into the mixing cup. Add 3 scoops of chilled colored water (three colors were attempted), mixing ½ the volume of water or at a time until homogeneous and then add second ½ of volume of water. Mix with the tongue depressor (Fig. 1a). Each student at the dissection table was instructed to draw approximately 2 ml of the mixture into the syringe, clean the end and attach the needle. Intraoral injections of ~1 ml were made to simulate nerve blocks for the following nerves: greater palatine, incisive, inferior alveolar, infraorbital, lingual, mental (Fig. 1b), and posterior superior alveolar nerves. After about 15 minutes, dissections were performed in each area to expose the injection target area and extent of the infiltrate (Fig. 2).

Activity II: First year students practiced an abbreviated cranial nerve exam as it correlated with the integrated neuroanatomy content (Fig. 3).

Activity III: Second-year dental students worked with fourth-year students, residents, Oral Surgery and Anatomy faculty in the anatomy labs to learn instrumentation handling and manipulation through uncomplicated extractions (Fig. 4).

**Significance**

Activity I allows for: 1) the practice of intraoral injections on cadaveric specimens and the visualization of the area infiltrated by an injection of a specific volume, and 2) an inter-cohort teaching experience. Activity II reinforces foundational neuroanatomy and integrated curricular content. This activity also allows faculty an inter-professional collaborative experience. Activity III 1) emphasizes the importance of anatomy longitudinally in the dental curriculum and 2) provides an additional inter-cohort experience and inter-professional faculty collaboration.

**References**


**Figure 1a**

The alginate mixture will be thin and should be homogenous. 1a) Add the alginate mixture into the syringe and inject into the specific nerve block protocols.

**Figure 2a**

Dissect the target area to locate the injected alginate mixture and the extent of infiltration. 2b) Inject the mixture into the syringe and see how well they were able to target the appropriate area for the specific nerve block (Fig. 2).

**Figure 2b**

**Figure 2c**

**Figure 4a**

**Figure 4b**

**Figure 4**

1. 1a) Extraction. 4b) Instrumentation for uncomplicated extractions. 2. 2a) Dissect the target area to locate the injected alginate mixture and the extent of infiltration. 2b) Follow the injection students dissect the area to see how well they were able to target the appropriate area for the specific nerve block (Fig. 2).

**Figure 3**

Students worked in pairs to practice cranial nerve tests.