



G10 A Novel, Semi-Universal X-Ray Sensor Holder

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After attending this presentation, attendees will have an appreciation of a novel X-ray sensor holder that has semi-universal applicability to a variety of non-traditional dental and potentially non-dental applications.

This presentation will impact the forensic science community by increasing awareness of a new design for intraoral X-ray sensor holders. Current commercially available sensor holders have limitations that include rigidity, multiple pieces, and the inability to be barrier protected.

The current commercially available X-ray sensor holders for intraoral radiography are generally proprietary and sensor specific. While universal solutions for holding X-ray sensors exist, they fail to address needs encountered in forensic odontology, veterinary medicine, or other non-traditional applications. As a result, low tech devices, such as hemostats, tape on a stick, or even finger placement, is sometimes the sensor holder of choice. Commonly encountered problems in forensic odontology, when imaging decedents during postmortem examination, include access, orientation, and cleanliness of the sensor and sensor holder. A novel solution, to address limitations of currently available sensors in a postmortem setting, is the radiographic paddle (RadPad®). The radiographic paddle is a semi-universal sensor holder approximately 12 inches in length, expandable to approximately 18 inches. The handle of the RadPad® houses an expandable, rubber-coated wire attached on the terminal end to a hexagon-shaped, neodymium-surrounding magnet. The terminal end of the handle attaches to the X-ray sensor by insertion of the hexagon-shaped male portion into the receiving hexagon-shaped female portion. The neodymium magnet provides retention of the handle to the sensor. Several methods of connecting the female portion to the sensor are currently being investigated, with two different methods being utilized to acquire images in actual postmortem examinations.

Potential advantages of the RadPad® include: (1) only one handle and one sensor holder required for a 20-film Full Mouth X ray (FMX), with minimal manipulation of the sensor; (2) with some planning, a single handle can be adapted to any sensor, allowing for universal application and quick change between sensor brands; (3) flexibility of the rubber-coated wire allows for flexibility not offered in most X-ray sensor holder systems; (4) expansion of the handle affords the operator to reach intraoral locations not easily accessed by straight and rigid X-ray systems. Additionally, the handle expansion allows for decreased radiation exposure by allowing the operator to have greater distance between the X-ray beam and operator hand; (5) potential for complete barrier protection; (6) possibility to utilize in other non-traditional X-ray applications; and, (7) while some technical skill is required, a RadPad® can be constructed with materials available at most hardware stores, minus the neodymium magnets, which are readily commercially available.

Potential disadvantages of the RadPad® include: (1) not commercially available; (2) handle to sensor retention in the event of tight spaces that require moderate or greater force; (3) flexibility of the rubberized wire in the event of tight spaces that require moderate or greater force; (4) lack of X-ray tube head positioning; (5) bulkiness, which might preclude utilization in awake/alive patients; (6) handle cannot be heat sterilized; and, (7) possible durability.

The RadPad®, while not without limitations, has distinct advantages when utilized in a non-traditional setting. The potential for decreased radiation exposure to the operator while simplifying the sensor holder armamentarium and increasing cleanliness through complete barrier protection are three primary advantages.

X-Ray, Sensor, Holder

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