E93 A Case Report of a Migrating Bullet: An Unusual Cause of Postmortem Confusion

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The goal of this presentation is to share an unusual case of an unusual phenomenon involving retained intracranial projectiles.

This presentation will impact the forensic science community by discussing how single gunshot wounds pose challenges to medical examiners when projectiles do not end up where expected (e.g., internal ricochets and embolisms).

Migrating bullets of the central nervous system are rare sequelae of penetrating gunshot wounds. Typically, such cases have been described in the neurosurgical literature because they can produce complications in the management of patients, such as decline in neurologic status, delays in rehabilitation, and difficulties in bullet removal. In contrast, few postmortem reports have described this phenomenon.

A 24-year-old male sustained a single gunshot wound of the head and was taken to a nearby trauma center where he survived for two days before expiring from his wound. The body was brought to the Dutchess County (DC) Medical Examiners Office (MEO) and an autopsy was performed the next morning with a postmortem interval of approximately 18 hours. External examination revealed a wound located above the left ear and a wound over the right eyebrow; both had been previously sutured in the hospital. After removing the sutures, it was found that the wound above his left ear was round with a circumferentially abraded margin consistent with an entrance gunshot wound. The wound above the right eyebrow was a crescent-shaped vertically oriented wound with sharp edges, no abrasions on the adjacent skin, and was more consistent with an exit wound; however, examination of the postmortem Anterior –Posterior (AP) X-ray of the head revealed a radiopaque object near the inside of the left side of the calvarium (i.e., next to the entrance defect). A few tiny radiopaque fragments were also noted within the brain along the wound track extending from left temporal to right frontal, including a tiny fragment outside of the cranial cavity in the soft tissue of the right frontal scalp near the exit wound. Upon opening the cranial cavity, a large fragment of a small caliber, deformed, non-jacketed bullet was recovered from the left side of the skull near the entrance wound. Examination of the bullet suggested that part of it may have exited out of the right frontal scalp. The right frontal bone beneath the exit wound revealed outward beveling of the skull consistent with a bullet directed left to right.

Postmortem AP and lateral postmortem radiographs of the head were taken prior to commencement of the autopsy in order to localize the projectile. Premortem hospital Computed Tomography (CT) scans and radiographs were not available for review prior to the start of the autopsy but were subsequently examined after the postmortem examination. Subsequent review of the premortem CT scans of the head confirmed that the bullet recovered at autopsy had shifted from the right frontal area to the left temporal area prior to the patient's death. The admission CT scan revealed a radiopaque object near the right supraorbital area with hardening artifact noted

Even with the advantage of postmortem radiography, bullets embedded within dense bone may prove difficult to identify and recover. Another situation in which medical examiners may be similarly challenged occurs when encountering a migrating bullet. A migrating bullet is one that shifts its position inside the body after initially

coming to a complete rest. Clinical documentation of this is typically performed by radiography, in the past, by serial X-ray studies, and today, by follow-up CT scans. Such cases have been reported in penetrating wounds to various body parts, including the head and spine. Medical examiners need to be aware of this unusual phenomenon of retained intracranial projectiles.

Migrating Bullet, Gunshot Wounds, Intracranial Projectiles