

Image A

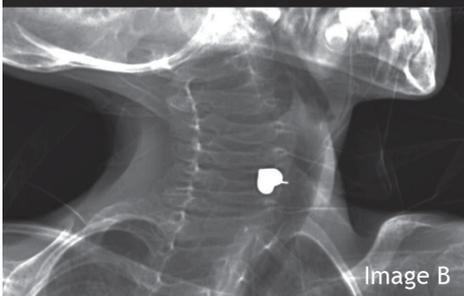


Image B

## A case study from a United States Forensic Pathology Facility

### INTRODUCTION

Cerebral palsy (CP) is an irreversible and non-progressive disorder caused by a brain injury or abnormal brain development, occurring either before birth, during birth or immediately thereafter<sup>1,2</sup>. Cerebral palsy causes physical impairment which may be mild to severe, such as muscle weakness, spasticity, inability to feed independently or to walk. Concomitant medical conditions, and factors such as inability to feed independently or to raise the head strongly predict a reduced life expectancy<sup>3</sup>.

### CASE PRESENTATION

The decedent was a 7-year-old female who was on hospice care. Her complicated medical history included cerebral palsy, polymicrogyria, epilepsy and inflammatory bowel disease. Since birth, she had been unable to walk or talk. She took in formula via a feeding tube. Towards the end of her life the decedent had become intolerant to food, then to water, and died soon afterwards. There was no history of abuse or neglect.

### IMAGING, DIAGNOSIS AND TREATMENT

Given the extensive medical history of the decedent, the cause and manner of death could normally be determined without an autopsy. However, due to the convenience and quick "Full-Body" acquisition of the Lodox system, a radiographic study was ordered. On the Lodox X-ray image, a foreign object was immediately identified in the neck area (Image A). A lateral view X-ray (Image B) helped to localize and identify the foreign object with greater accuracy. There was no jewelry or clothing accessory on the outside of the decedent or in the body bag. Given this unusual finding, it was decided that an autopsy was necessary to rule out an asphyxial cause of death. The autopsy revealed a heart-shaped earring located a few centimeters below the epiglottis inside the decedent's esophagus. The earring was surrounded by a necrotic cystic abscess.

The cause of death was determined to be as a result of broncho-pneumonia due to the sequelae of the cerebral palsy. The esophageal abscess may have contributed to the patient becoming intolerant to additional oral intake of food or fluids.

### DISCUSSION

It is unknown how the earring became lodged in the decedent's esophagus. Foreign body ingestion by children is common, although the actual worldwide incidence is unknown. The Susy Safe Project reports that the incidence in the European Union for children aged between 0 and 14 years is about 500004. Litovitz and Schmitz (1992) reported that 2382 cases of ingested cylindrical and button batteries had been recorded in a national registry over a 7-year period<sup>5</sup>. Other authors report on only the number of cases reviewed in a particular hospital, but note that many more cases are missed because they are not treated in hospital because they have a benign outcome<sup>6,7,8</sup>. The peak incidence occurs in children at ages between six months and three years<sup>9</sup>.

Children with CP are much more likely to develop respiratory diseases than children in the general population. A study by Hutton (2008) revealed that 59% of recorded deaths were as a result of respiratory complications, mainly pneumonia, with epilepsy and congenital malformations making up 9% and 8% of the balance, respectively<sup>2</sup>. The finding that the cause of death was due to pneumonia is consistent with the medical history of the patient and is a well-documented cause of death in patients with CP. Asphyxia was ruled out by the autopsy. The source of the earring in the esophagus remains unknown. However, no foul play was suspected.

### CONCLUSION

In <5 minutes, A/P and lateral X-ray images of the decedent were obtained resulting in the identification of an unknown retained foreign object. This highly contributed to the order of a full autopsy examination. In cases where normally only an external examination is performed, the efficiency of the Lodox X-ray scanner allows this forensic pathology facility to take X-ray images of all cases with any occult trauma, old projectiles and retained foreign objects (as in this case). The X-ray finding affected how this case was triaged, and ultimately revealed the cause and manner of death.

### References

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