



LW4 The 2014 Killing of Five Babies in Oulu, Finland, and the Neonatal Line (NNL) Investigation as the Definitive Bottom Line

Vivian Visnapuu*, University of Turku, Turku, WA 20520, FINLAND

After attending this presentation, attendees will better understand the NNL investigative method, which can be used in newborn homicide cases.

This presentation will impact the forensic science community by informing attendees of the NNL investigative method that can be applied to newborn homicide cases.

Background: Police arrested a 35-year-old woman after discovering five decomposed human fetuses in a basement cabinet of her apartment in Oulu, Finland, in 2014. The woman said she thought all the babies had been born dead. The woman had put the remains of her five newborn infants in buckets and plastic bags between 2005 and 2013 and transported them from place to place. The police began a forensic investigation immediately. The remains were so damaged that a forensic pathological investigation was infeasible, so two independent experts conducted osteological investigations. A forensic odontological investigation was conducted, as was an NNL investigation, which was the crux of this case. Also, a psychiatric assessment of the woman was administered pursuant to an order of the District Court of Oulu.

Material and methods: The delivery-related NNL appears in the enamel of primary teeth and first permanent molars at birth and is a marker of the live birth process.¹⁻⁴ It varies in width and location, is different in each deciduous tooth type, and is indicative of gestation time.^{5,6} It is unclear what triggers determine NNL at birth. NNL separates pre- and postnatal enamel and dentin and varies in location in different tooth types. Four primary teeth from each fetus were investigated by histological methods and light microscopy.^{6,7} The teeth were preserved in 100% alcohol. Samples were run through a rising alcohol series (70%, 90%, and 100%), embedded in resin (Technovit[®]/alcohol 50%/50%), and in 100% Technovit[®] twice. Sections of 20 microns were made by buccal-lingual/palatal and axial cutting and, when no wear appeared, through incisal middle and cusp tip/underlying dentin horn.^{7,8}

Results: All the infants' gestational ages were 38-40 weeks per the results of odontological investigation and 38 weeks per the results of osteological investigation.^{1,5} NNL was observable in all infants' cases and at least 1-4 days of enamel formation after NNL was observable in each investigated primary tooth.⁵ This means that all the infants were born alive and all lived 1-4 days; however, the cause of death was not possible to investigate because the remains were so badly damaged.

The conclusion of the psychiatric assessment was that the woman was criminally responsible. After the psychiatric assessment, the judgment of the District Court of Oulu was a verdict of five counts of murder and five counts of violence of grave peace; a life sentence was imposed. The defendant was not content with the judgement and appealed to the Rovaniemi Court of Appeal, which commuted the sentence to five counts of manslaughter and a 12-year sentence. The Oulu District Prosecutor was not satisfied and appealed to the Supreme Court of Finland in August 2016.

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