



## Pathology & Biology Section – 2005

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### **G95 An Interdisciplinary Approach for Diagnosis and Age Estimation of Infants' Fractures in the Course of the Autopsy**

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After attending this presentation, attendees will understand a scheme for diagnosis and age estimation of infants' fractures during autopsy.

This presentation will impact the forensic community and/or humanity by diagnosing and estimating the age of infants' fracture as an important contribution to the diagnosis of the battered child syndrome. Fractures of different ages are suspicious, and dating the fractures allows some scrutiny in assessing whether the ages are in accordance with the details given by the accused. Moreover, the implementation of an interdisciplinary approach involving forensic pathologists, osteopathologists, and radiologists allows use all resources and enhances cooperation with other disciplines.

Age assessment of infants' fractures plays an important role in the diagnosis of the battered child syndrome. In postmortem cases an interdisciplinary scheme involving careful external investigation, skeletal survey, autopsy, radiography, and osteo-histology has proven useful for dating infants' fractures. Four postmortem cases of infants with multiple fractures of different ages due to child abuse (a total of 48 osseous lesions) were evaluated. Early stages of fracture healing processes were dated histologically by the extent of periosteal thickening, osteoid production and calcification of soft callus. In advanced healing processes the osseous apposition rate defined by the width of the newly formed trabeculae was measured for age estimation of the fractures. Multiple influencing variables must be considered. Hence, dating the osseous lesions leads not to one single day, but to a time-interval when the fracture has occurred. The results of the cases presented indicate the forensic relevance of defining a time interval of the injury, which often allows some scrutiny in assessing whether the ages are in accordance with the details given by the accused. Also, fractures of different ages are a strong indicator of child abuse. Further work in this field will lead to more precise dating of infants' fractures.

**Battered Child Syndrom, Infants' Fractures, Osteo-Histology**