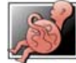

Laurel Waters MD FCAP FASCP
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Phone (925) 247-9038 Fax (925) 247-9048
www.perinatalpath.org

Education Topics

Dr. Waters is available to lecture, teach academic and continuing education courses, and give workshops on many topics in Perinatal Pathology. Recognizing that the requirements and time considerations of institutions vary, Dr. Waters's presentations can be tailored to suit particular needs. The following is a list of sample topics with brief objectives:

Gross Placental Pathology

- To describe abnormalities of the membranes
- To expose clinically significant changes in the umbilical cord
- To illustrate abnormalities of the placenta

Twins and Higher Multiples

- To elucidate the development of twins
- To differentiate whether zygosity can be determined by gross exam and when it cannot
- To describe twin-twin transfusion and related complications

Indications for Placental Pathology

- To itemize College of American Pathologist recommended guidelines
- To illustrate simpler standards
- To understand rationales for universal examination

Placental Pathology Associated with Risks of Cerebral Palsy and Neurologic Impairment

- To detect chronic placental changes indicating weeks of stress
- To demonstrate subacute placental changes indicating days of stress
- To differentiate acute changes in hours or less of the birth

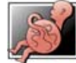
Abnormalities of Placentation: Previa, Accreta, etc

- To classify abnormal locations of the placenta, i.e. previa
- To distinguish abnormal depths of penetration of the placenta, i.e. accreta
- To contrast extrachorial placentation: circummarginate v. circumvallate

Infection and Inflammation of the Placenta

- To summarize the etiologic agents for ascending infections
- To recognize causes of bloodborne infection
- To explain villitis of unknown etiology (VUE)

Please contact Dr. Waters if you are interested in having her provide educational services at your institution.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Services for Poor Perinatal Outcomes

Placental Pathology

- Gross and microscopic
- To be performed at the hospital or Dr Waters' lab

Autopsy

- To be performed at the hospital or funeral home
- Conferences with parents and physicians

Analysis of Poor Perinatal Outcome:

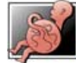
- Review of autopsy, placental, pathology and chart
- Interviews and conferences with physicians involved
- Conference with family

Medico Legal Expert Witness Work:

- Review chart
- Review autopsy and placenta and or specimens slides
- Discuss with lawyers
- Draft Report on case analysis
- Deposition
- Trial

Twin/Twin Transfusion Syndrome Flow Study

- Fresh, refrigerated monochonionic placentas
- Analysis of anastomoses and flow pattern



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Specimen Submission and Billing Options

To submit specimens, call PerinatalPath at (925) 247-9038.

Specimens may be sent to PerinatalPath via:

- Our medical courier service
- By a mail service of your choice

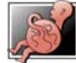
  From the Point of Delivery:
  - Specimens are sealed well and sent fresh with cold packs
  - Specimens are fixed in formalin, drained, and sealed well

  From a Pathology Department:
  - Specimens sent without examination
  - Specimens are sent after gross examination
  - Specimen and slides are sent after gross examination and having been cut

IUFDs or neonatal autopsies are performed at your facility by Dr. Waters.

Billing Options

- All billing is done by PerinatalPath
- Patient billing is done by the routine Pathology Department billing process
  - Professional component split
  - Global billing split
  - Per case cost to pathology group
  - PerinatalPath charges patient for consultation
  - PerinatalPath charges pathology group for consultation



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What can placentas tell us?

The placenta is an amazing organ essential for the growth of the fetus, providing a source of nutrients (and toxins) and a mechanism for disposing waste. Over the course of nine months this essential organ performs these vital functions, and then is discarded by the body after delivery of the baby and readily available for study. It can reveal many clinically important abnormalities with prognostic significance.

Microscopic examination of the placenta can show signs of **Chronic Intrauterine Hypoxia** such as **Chorangiosis**, **Increased Syncytial Knots** and **Advanced Maturation with Increased Twigs**. These chronic changes may be difficult to determine clinically, but may cause profound abnormalities in the outcome of the infant. **Fetal hypoxia** has been associated with **Abnormal Neurologic Development**. **Funisitis** has also been associated with a 10% incidence of cerebral palsy.

The placenta can also indicate the possibility of **Coagulation Abnormalities** in the mother. **Maternal Floor Infarcts and Gitter Infarcts/Massive Perivillous Fibrin Deposition** have been associated with abnormalities of clotting substances as **Factor V Leiden, anti-Thrombin III and Proteins C and S**. These may cause other health problems for the mother. Treatment could improve both the mother's health and the outcome of future pregnancies.

Examination by a pathologist knowledgeable about placentas may provide significant clinical data which could be used to optimize outcomes of the infants, mothers and future pregnancies. This information is also valuable to help understand what caused unfavorable outcomes and avert unnecessary malpractice suits.

Please contact me for any further information.

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Beyond Apgars: Clinically Unsuspected Placental Chorangiosis Not Predicted By Smoking Or Asthma

Laurel Waters, M.D., Placental and Perinatal Pathology, Moraga, CA

Presented as a paper at the Medical Women's International Association (MWIA) meeting, Tokyo, Japan, July 2004

Presented as a poster at the American Medical Women's Association (AMWA) meeting, San Diego, CA, February 2004

Histologic examination of placentas from >500 consecutive deliveries at a community hospital revealed an unexpectedly high incidence of signs associated with chronic intrauterine hypoxia such as chorangiosis. The pregnancies were relatively low risk. The hospital has limited Level II nursery capacity and high risk cases tend to be referred to a nearby institution. On the other hand, the socioeconomic status is low.

When all Apgars were >7, 39.44% (140/355) showed chorangiosis. When 1 minute Apgars were <8 the incidence of chorangiosis was nearly identical at 39.47% (15/38). The five intrauterine deaths and those without clinical information were excluded.

The records which included prenatal information were analyzed for the possible contribution of smoking and asthma. Only three cases of asthma were identified and included one from each high Apgar with chorangiosis and low Apgar with and without chorangiosis. Smoking was also relatively infrequent with only twelve cases found and none of them showed chorangiosis. The amount smoked was low with only one of the mothers admitting to more than 10 cigarettes/day and only two said they smoked 10 cigarettes/day. Nine of the smokers had high Apgars and three had low Apgars. The non smokers in the high Apgar group showed 37.62% (41/109) with chorangiosis, which is similar to the overall rate. Only seven of the low Apgar group were non-smokers and only one of them showed chorangiosis. The only subgroup with adequate numbers for analysis showed a rate similar to the larger groups, indicating a lack of predictability.

The clinical risk factors for intrauterine hypoxia of smoking and asthma were not predictive of chorangiosis in this study of low risk, low socioeconomic mothers, but the number of cases with the risks documented is low and further study is indicated.