

“History of Perinatal Medicine – early stages”

Abstract

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Erich Saling¹ and Monika Dräger¹,

¹Institute of Perinatal Medicine e.V.
Located at Vivantes Klinikum Neukölln, Berlin, Germany

Our generation is living in a breakthrough of our professional events. For the first time a new patient, the unborn, became accessible to applied routine medicine. The preceding historic events, are in so far particularly important.

The historic precursors of indirect approaches to the fetus, have been **fetal heart rate diagnostics**: in 1818 first report on fetal heart sounds by Mayor; in 1891 first graphic records of fetal heart actions by Pestalozzi and in 1908 by Hofbauer & Weiss. In 1906 Cremer registered the first fetal electrocardiogram.

The two outstanding pioneers of **modern electronically based fetal heart rate surveillance** are Caldeyro-Barcia and Hon. In 1957 Hon succeeded in separating the fetal signals out of the abdominally recorded maternal and fetal complexes und thus laid the basis for modern cardiography. Caldeyro-Barcia in 1958 was the first who recorded the fetal heart rate in combination with uterine contractions. This was the initial step for modern heart rate monitoring. But clinical widespread cardiotocography did not start until 1966 when Hammacher developed a suitable recording system, which became available for routine use in 1968. Other pioneers in cardiotocography are Maeda from Japan and Mosler from Germany who used Doppler ultrasound for recording the CTG.

Caldeyro-Barcia was not only a main pioneer of cardiotocography, but he focused also the attention to uterine physiology and patho-physiology. For example, in 1948 Alvarez and Caldeyro-Barcia used amniocentesis for measuring the intrauterine pressure. (The very first measurement of the intrauterine pressure during labor had been performed in 1872 by Schatz, who used a transcervically inserted balloon). Caldeyro-Barcia was undoubtedly one of the most outstanding forerunner pioneers of perinatal medicine and at this early stage made Montevideo to a highly respected center.

The **real Perinatal Medicine began to exist** when the fetus became accessible for applied medicine by a direct approach which could be used for practical clinical routine use. This was achieved by direct analysis of fetal blood samples (**FBA**) in 1960, and published by us in 1961. First there were serological and hematological examinations, followed by blood gas and acid base analysis. Consequently the fetus became for the first time a real patient apart from his mother and obstetrics underwent an essentially new character.

Another breakthrough which very much influenced modern obstetrics and perinatal medicine was the introduction of **ultrasonic diagnostics**. It provided the obstetrician with a new essential sensory organ, which enabled him to look into the uterus and to examine the fetus. Father of this progress is Ian Donald who published in 1958 the first scans of fetuses . The broad application of ultrasound diagnostics started in the late 1960s when suitable equipment for broad routine use became available. Later pioneers in ultrasound have been: in **fetal biometry**: Donald and Brown, Thompson, Campbell and Hansmann. Campbell also started **diagnosis of fetal malformations**, Hansmann described **intrauterine transfusion** under ultrasonic guidance. Kratochwil described the usefulness of detecting **fetal cardiac motion by M-mode**. **Doppler in obstetrics** was first used in 1964 by Callagan. The further development of ultrasound, Doppler, and more recently 3D and 4D led to unbelievable progress.

Of historic interest are also **amniotic cavity accesses**: 1881 first amniocentesis by Lambl; 1930 first amniography by Meness; in 1952 Bevis used amniocentesis for diagnosing Rh- Erythroblastosis; Liley performed in 1961 spectrophotometric analysis of amniotic fluid and in 1963 the first direct treatment of the fetus by blood transfusion into its abdominal cavity in a case of severe fetal Rh-disease. From the 1960s onwards with the help of amniocentesis the diagnosis of more diseases, mainly anomalies, became possible.

We introduced **amnioscopy** in 1962 to assess increased fetal risk in late pregnancy by inspection of amniotic fluid.

In 1966 we published the first real book focusing on “The infant within the field of obstetrics”. In 1968 it was translated into English – unfortunately under a not quite correct title: “Foetal and Neonatal Hypoxia in relation to Clinical Obstetric Practice”.

In 1967 we created the **term “Perinatal Medicine”** and, in view of all this new progress, recommended a reform of **clinical structures** in 1968 which later have in principle been established in the USA as “Maternal Fetal Units” in 1972. A center for perinatology with emphasis on scientific activities was already founded in 1970 in Montevideo. It was the first Latin American Center of Perinatology (CLAP). This also shows that Latin America in general and Uruguay in particular played an important role in the development of this new field.

The first **international meeting** on a high scientific level took place also in Uruguay, in Montevideo in October 1964 (with a small group of participants including Caldeyro-Barcia, Hon, James and myself).

As an **official scientific corporation** Perinatal Medicine has existed since 1967 when we officially founded the very first national society in this field, the German, and on an international level since 1968 when the European Association of Perinatal Medicine has also been founded in Berlin. Both have been foundation stones for widespread interdisciplinary cooperation in this field.

In 1991 the World Association of Perinatal Medicine was founded and this year we celebrate its 10th congress here in Uruguay.
(www.saling-institute.org)

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