UPDATE IN FETAL THERAPY

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www.fetalmedicinebarcelona.org
Fetal Medicine & Therapy

- recent development
- high tech
- multidisciplinarity
- fetal surgery
- referral activity
- increasing importance
- high legal pressure
Evolution of social demands in Fetal Medicine & Therapy: the fetus as a patient

- perception fetus as a person
- capacity Dx & Tx
- society of information

DEMANDS
Levels in Fetal Medicine
integration in public health

1. Diagnosis

Primary level
Levels in Fetal Medicine
integration in public health

1 Diagnosis

Primary level
# Levels in Fetal Medicine integration in public health

<table>
<thead>
<tr>
<th>Level</th>
<th>Description</th>
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<tbody>
<tr>
<td>1</td>
<td>Diagnosis</td>
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<tr>
<td>2</td>
<td>Advanced studies</td>
<td>Tertiary Hospital (1 in 300,000)</td>
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<td>US-guided fetal therapy</td>
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Levels in Fetal Medicine integration in public health

1. Diagnosis
   Primary level

2. Advanced studies
   US-guided fetal therapy
   Tertiary Hospital (1 in 300,000)

3. Endoscopic therapy & Fetal Surgery
   Fetal surgery Center (1 in 15-20 million)
Levels in Fetal Medicine
integration in public health

Pregnancies

100 %

Public Health System

Complexity
Multidisciplinarity

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Levels in Fetal Medicine
integration in public health

Pregnancies

100 %

Public Health System

Advanced Fetal Medicine
Tertiary Center

Complexity
Multidisciplinarity

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Levels in Fetal Medicine integration in public health

Pregnancies

- 100%

Public Health System

Advanced Fetal Medicine
- Tertiary Center

Fetal surgery center
- National or transnational level

- Complexity
- Multidisciplinarity

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FETAL SURGERY ≈ FETOSCOPY

• fetus ≠ smaller neonate

• uterus and mother not operable
FETAL SURGERY ≈ FETOSCOPY

• fetus ≠ smaller neonate

• uterus and mother not operable
FETAL THERAPY MUST BE NICE FOR PATIENTS NOT FOR DOCTORS ("PIONEERS TIME" IS OVER)
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FETAL THERAPY
common indications and procedures

- FETAL ANEMIA
- MONOCHORIONIC TWINS
- LUNG DEFECTS AND MASSES
- URINARY TRACT OBSTRUCTION
- FETAL TUMORS
- SPINA BIFIDA
FETAL THERAPY

common indications and procedures

FETAL ANEMIA

MONOCHORIONIC TWINS

LUNG DEFECTS AND MASSES

URINARY TRACT OBSTRUCTION

FETAL TUMORS

SPINA BIFIDA

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Chronic unbalanced transfusion
- Twin-twin transfusion syndrome (TTTS)
- Twin anemia polycytemia syndrome (TAPS)

Unidirectional acute transfusion
- Single fetal demise
- Sustained bradichardia in one fetus

Discordant placental territories
- Selective IUGR

Discordant Malformation

High risk
Chronic unbalanced transfusion

- **Twin-twin transfusion syndrome (TTTS)**
- Twin anemia polycytemia syndrome (TAPS)

- Poly (>8cm) + oligohydramnios (<2cm)
- Very discordant bladders

J Perinat Med 2013
Chronic unbalanced transfusion

- Twin-twin transfusion syndrome (TTTS)
- Twin anemia polycytemia syndrome (TAPS)

- Poly (>8cm) + oligohydramnios (<2cm)
- Very discordant bladders

J Perinat Med 2013
Laser = best treatment option
NEJM 2004

Barcelona, N=648

Current survival of at least one fetus in 88%

Literature: 80-85%
J Perinat Med 2013
TTTS: laser therapy

Laser = best treatment option
NEJM 2004

Barcelona, N=648

Current survival of at least one fetus in 88%

Literature: 80-85%
J Perinat Med 2013
FETAL THERAPY

common indications and procedures

- Monochorionic twins
- Urinary tract obstruction
- Fetal tumors
- Lung defects and masses
- Fetal anemia
- Spina bifida
Percutaneous Feto-Endoscopic Tracheal Occlusion
Deprest J, Gratacos E, Nicolaides K. UOG 04

- increase airways pressure
- accelerated growth
- first case: oct 01
- currently >500

TOTAL RCT international trial ongoing
Percutaneous Feto-Endoscopic Tracheal Occlusion
Deprest J, Gratacos E, Nicolaides K. UOG 04

- increase airways pressure
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TOTAL RCT international trial ongoing
LUNG DEFECTS
CCAM: prognosis & natural history

CCAM & hydrops

MORTALITY 100%

(Winteres et al. JCU 1997)
(Kitano et al. W.B. Saunderes, 1999)

MAIN FACTOR: SIZE

Maternal mirror syndrome
(placental hídrops)
LUNG DEFECTS

Lung Mass + hydrops = fetal therapy
LUNG DEFECTS

Pleural effusion + hydrops = fetal therapy
LUNG DEFECTS

Pleural effusion + hydrops = fetal therapy

Nicolaides K, 1990
Smith RP, UOG 05
Murabayashi, Fet Dx Ther06
LUNG DEFECTS

Bronchial atresia
LUNG DEFECTS

Bronchial atresia

Martinez et al. Fetal Diagn Ther 2013
FETAL THERAPY

common indications and procedures

- FETAL ANEMIA
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- URINARY TRACT OBSTRUCTION
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- SPINA BIFIDA

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Lower Urinary Tract Obstruction

Urethral Posterior Valves

- Often associated other nephro-urologic anomalies
- At best 50% intact survival

Shunt (PLUTO, Lancet 2013)
No apparent benefit (N= 31)

Fetoscopy with valve ablation
Intact survival 45-50%
Ruano et al. n=11
Martinez et al. n= 14
Obstructive ureterocele
LUTO
Obstructive ureterocele
FETAL THERAPY
common indications and procedures

- FETAL ANEMIA
- MONOCHORIONIC TWINS
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MRI anatomical evaluation of fetal tumors
## Fetal Therapy

### Common Indications and Procedures

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<th>Condition</th>
<th>Image</th>
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Fetal surgery for spina bifida (NEJM 11)

• Deambulation 20% vs 40% in treated
• Need Shunt 85% vs 35%
• Maternal-fetal complications > 50%
Fetal surgery for spina bifida (NEJM 11)
• Deambulation 20% vs 40% in treated
• Need Shunt 85% vs 35%
• Maternal-fetal complications > 50%
Fetal surgery for spina bifida
CHALLENGES

• Improve education
• Offer fetal therapy of 2013 not of 1993
• Improve instrumentation to reduce invasiveness + complications
FETAL MEDICINE DOES NOT EXIST WITHOUT DETECTION
THE CRITICAL ROLE OF IMPROVING EDUCATION

GENERAL POPULATION

Ultrasound Unit

Fetal Medicine Unit
Fetal Medicine does not exist without detection. The critical role of improving education.
Erasmus Mundus Joint Doctorate in Fetal and Perinatal Medicine.
An innovative programme spanning from early fetal life to childhood

The application process for the second edition is now open!

Welcome to The Erasmus Mundus Joint Doctorate in Fetal and Perinatal Medicine (Fetalmed-PhD), an innovative research and training programme allowing to combine high international standards and state-of-the-art research facilities. The programme aims to provide an advanced education for a new generation of researchers and doctors in the field of fetal and perinatal medicine.
The problem of regulating a low-volume + high-complexity activity

Spain and influence area n=250-300 / year
The problem of regulating a low-volume + high-complexity activity

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The problem of regulating a low-volume + high-complexity activity

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- excellence, not distance is a problem
- ideal scenario:
  - minimal politics
  - “market” regulation
  - accreditation and national registry
FETAL THERAPY
REALITIES AND PROSPECTS

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