Management of Single Fetal Death

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Common knowledge:

Twin pregnancies $\Rightarrow$ twin deliveries

- more early (unknown) losses
- more early (embryonic) losses
- more late (fetal) losses
Common knowledge (II):
The vanishing twins syndrome
► Unknown incidence
► Unknown etiology
► Unknown consequence

Landy and Keith
Incidence of the VTS (Pinborg et al)

1/10 of all ART singletons started as twins
If single fetal death is associated with CP

Is the Vanishing Twin Syndrome also associated with CP in the survivor?
A hypothesis for the aetiology of spasstic cerebral palsy – the vanishing twin

Reflections on the hypothesis for the etiology of spasstic cerebral palsy – the vanishing twin
CP & VTS (Pinborg et al)

Significant correlation between VTS > 8wks and brain damage in ART twins
THE VANISHING TWIN SYNDROME

Sonographic curiosity → Clinical entity
The Regio Emilia studies on VTS@ART

Obstetrical outcome

Psychological vulnerability

Early survival
Loss of entire pregnancy after ART: twins vs. singletons

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Loss of entire pregnancy after ART: twins vs. singletons

Pinborg et al (2005)
Loss of entire pregnancy after ART: twins vs. singletons

Loss of entire twin pregnancy

\[ = p_1 + p_2 \]  
or  
\[ < p_1 + p_2 \]

Outcome of single fetal death depends on:

Chorionicity

Gestational age at diagnosis

Interval since fetal death
Maternal effect: (probably) None
Outcome depends on:

**Chorionicity**

Gestational age at diagnosis

Interval since fetal death
Twins

DC

MC
Phase 1: TTPTS
(Twin To Placenta Transfusion)
Importance of the large vessels (Veins)
Phase 2: TTPTTS
(Twin To Placenta To Twin Transfusion)
Severe TTPTTS/TTPTTS:

Acute hypotension

→ Death of co-twin

Double death
Less severe TTPTS/TTPTTS:

Moderate hypotension → ischemia

Fetal end-organ damage
Mild TTPTS/TTPTTTS:
Mild hypotension
→ adaptation

Intact survival
Dead 33%
Alive 67%
Damage 33%  
Intact 67%
Intact: 45%
Death: 33%
Damage: 22%
Timing of single fetal death (1)

<table>
<thead>
<tr>
<th>Twin 1</th>
<th>Twin 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Early death</td>
<td>Intact</td>
</tr>
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</table>

Vanishing twin syndrome + a normal singleton
Vanishing twin syndrome + a normal singleton

• In spontaneous pregnancies: 3-5.5% start as twins → 1.2% end-up as twins
• In ART: 10.5% of singletons had a twin from the beginning
## Timing of single fetal death (2)

<table>
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<tbody>
<tr>
<td>Early death</td>
<td>Damage</td>
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Vanishing twin syndrome + damaged co-twin
Timing of single fetal death (3)

<table>
<thead>
<tr>
<th>Twin 1</th>
<th>Twin 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Late death</td>
<td>Late death</td>
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</tbody>
</table>

Double death
Double death

Risk in MC twins X 11

Kim, Korean J Radiol
Timing of single fetal death (4)

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<tbody>
<tr>
<td>Late death</td>
<td>Damaged</td>
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Single fetal death + damaged co-twin
Timing of damage

• Immediate to very acute
• Almost never observed in real-time
Timing of damage

At the time of diagnosis of single fetal death in MC twins, irreversible damage has most likely already occurred
Did damage occur?

- US
- MRI

Damage 33%
Intact 67%
Management option (1):

Vanishing twin syndrome in “normal” MC twins

— actual risk unknown
— TOP debatable

→ Conservative management
Management option (1a):

Vanishing twin syndrome in “problematic” MC twins

Indirect proof of functional anastomoses

— Discordant NTs
— Early signs of TTTS

→ TOP
Management option (2):
Single demise remote from term, timing unknown
—risk of damage ~30%
—risk of prematurity ~100%
→ conservative management
Management option (3):

Single demise remote from term, real-time diagnosis

—risk of death ~30%

—risk of damage ~20%

→ conservative management

→ intrauterine transfusion

→ delivery (in viability)
Look for brain lesions
Prospective risk of unexpected IUFD at >33 wks

N= ~3000 >33 wks

Blickstein, 2010
Thank you