

## Intrauterine Fetal Death of a Co-twin in Multifetal Pregnancies.

1

## Incidence

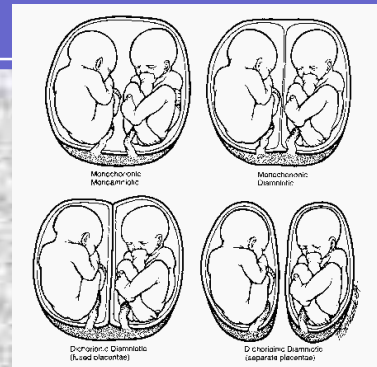
- The number of twin, triplet and higher order multiple births have increased.
- The increase was in DZ twins due to use of ovulation induction and ART's
  - The incidence of MZ
    - **twins** – 1/80<sup>1</sup> (1/80).
    - **triplets** - 1/80<sup>2</sup> (1/6400)

2

## Types of Twins

- Dizygotic twin – 70%
  - Fertilization of two separate ova.
- Monozygotic twin - 30%
  - Single fertilized ovum divides into two similar structures.

3



4

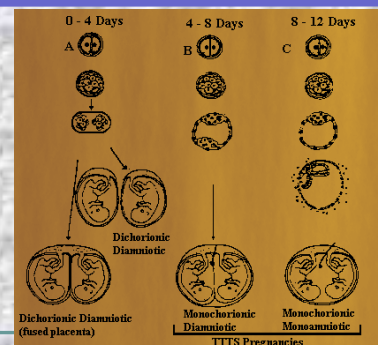
## Monozygotic twins

- The outcome of twinning process depends on WHEN the division occurs

Monoamniotic Monochorionic	Diamniotic Monochorionic	Diamniotic Dichorionic
9-12 d	4-8 d	0-3 d
<1%	75%	25%
After chorion and amnion are formed	After chorion is formed before amnion is formed	Before chorion is formed before amnion is formed

Division after 13 d → conjoined twins

5



6

## Twin-specific complications (%) in relation to Zygosity

Type of twinning	Fetal growth restriction	Preterm delivery Placental	vascular anastomosis	Perinatal mortality
Dizygotic	25	40	0	10-12
Monozygotic: mean values	40	50		15-18
Diamniotic/dichorionic	30	40	0	18-20
Diamniotic/Mono-chorionic	50	60	100	30-40
Mono-amniotic/mo-nochorionic	40	60-70	80-90	58-60
Conjoined	—	70-80	100	70-90

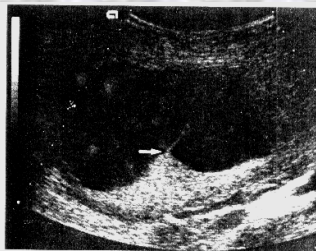
## Determination of Zygosity

### Important because of:

- Obstetrical risks are different in relation to zygosity, mainly due to risks from monochorionicity in MZ

8

## Twin Peak = Lambda sign= MC



9

## Vascular communications

- Only in monochorionic placentas
- Types
  - Artery-to-artery
  - Vein-to-vein
  - Artery-to-vein
    - Most are hemodynamically balanced
    - Rarely, significant shunts between fetuses
      - Acardiac twin
      - Twin-to-twin transfusion syndrome (TTTS)

10

## Unique Complications

- Other complications associated with vascular communications
  - Cerebral palsy
  - Microcephaly
  - Multicystic encephalomalacia
    - Are caused by ischemic necrosis leading to brain damage (because of hypotension or death of one twin)

11



12

## Death Of One Twin In-Utero

- Incidence
  - 2.7% in Second trimester
  - 6.7% in Third trimester

13

## Death Of One Twin In Utero

- The risk of stillbirth increased in
  - Monochorionicity
  - Non-Western origin and
  - Assisted reproduction techniques (ART).

14

## Effects of Dead fetus on The Surviving Twin

- Increased mortality & morbidity
  - Unlikely in dichorionic gestation
  - 17-25% in monochorionic twin
    - Due to shared circulation
  - Acute TTTS 25-40% (Bajoria et al.,1994)
    - Bilateral Renal Cortical Necrosis
    - Multicystic encephalomalacia
    - Cerebral Palsy 15-20% (pharoah et al, 2000)
    - Higher risks in presence of acute on top of Chronic TTTS
  - Intrauterine DIC (rare)

15

## Effects of dead fetus on the Mother

- Maternal
  - DIC
    - Rare if death <34 wks & v. rare <17 wks
    - Requires conservative treatment (± Heparin)
    - Follow up of patients' clotting profile & Fibrinogen level

16

## Acute TTTS

- Risk is 25%
- Starts immediately, appears in USS or MRI after 4-6 weeks
- Occurs only in MZ twins with monochorionic placentation
- Commoner in artery to vein communication

17

## MANAGEMENT in MC Twins

- >34 wks: consider delivery
- <34 wks : follow up→ fibrinogen weekly + bimonthly USS + neonatal cranial USS or MRI + explain risks to parents

**REMEMBER:** What killed one fetus might kill the second!!!

18

## The Question Is

WHAT IS THE GESTATIONAL AGE BEFORE WHICH ACUTE TTTS COMPLICATIONS ARE CONSIDERED RARE?

(Proposed to prof dr Sherif Abdelfattah in Bristol by email)

19

Dear Sherif,

Thank you for your e-mail. Your questions are extremely difficult to answer, simply because no body knows for certain. All published reports include only small numbers of cases with varying gestational ages and chorionicity. Most important is that the majority of them report death of one twin as a complication of twin-twin transfusion syndrome, which obviously has additional risks and very different pathological changes and effects on the surviving twin.

To the best of my knowledge, the risks when death of one twin occurs in the first trimester are in the range of 5 - 10 %, although in reality it is probably a much smaller risk. The risk substantially increases from the second trimester onwards and continues to be high for any later gestational age.

Regarding management, it is always estimated that brain damage in the surviving twin occurs within 2-5 weeks following the death of the other twin. Our policy in the fetal medicine unit here in Bristol is to scan the surviving twin every two weeks. The worrying signs are: cerebral ventriculomegaly, microcephaly (or the head circumference not growing adequately), signs of leukomalacia (white areas in the brain) or any other brain anomaly such as cysts.

What's very useful is fetal MRI. We know increasingly rely on this but I am not sure about its availability in Cairo. Of course the MRI is available but I mean an experienced radiologist to do a fetal MRI.

I hope you find this useful. Please keep me updated on this patient's progress.

20