Case study of TTTS treated with fetoscopic laser photocoagulation of placental anastomose at Tâm Anh Hospital

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Overview

- Twin to twin transfusion syndrome (TTTS) is one of the most prevalent complication seen in identical twins who share a common monochorionic placenta
- Prevalance: 0.1 – 1.9/1000 birth
- Mortality rate: 80 – 100% if not treated before week 26
- Mortality rate with treatment: 15-30%

Overview

- TTTS occurs due to the anatomosis of Vein and Artery which leads to an imbalance in haemodynamic between the giving and recieving fetuses
- It is also known for unequal amniotic fluid (TOPS)
- If untreated, 90-100% fetus will face death
- The other fetus have a 25% chance of having neurological disorder

Overview

Consequences:

- Premature birth
- OVS, amniotic infection
- Heart failure
- Anaemia, hypoxia for fetus and can lead to death due to placental failure or chronic anaemia
- The other fetus have a 25% risk of having neurological disorder

Saunder NJ. AJOG 1992

Van Heteren CF obstet-gyneco 1998

Overview

Treatement

- Maternal indocin
- Reduce amniotic volume
- Selective abortion
- Fetal perfusion in utero
- Septosomy
- Fetoscopic placental laser therapy
- Selective reduction : cord coagulation

Case report

- 27 years old. Para 0000
- Natural pregnancy.
- Pregnancy diagnosis Bi – Mo at 12 weeks
- Week of TTTS discovery: 18

Fetus 1: BIP: 36mm, AC: 104mm, FL: 21mm

MVP: 27mm. RI: 0,68.

Fetus 2: BIP: 39mm, AC: 124mm, FL: 22mm

MVP : 66mm. RI: 0,77

Case report

- Week 20:

Fetus 1: BIP: 44 mm, AC: 109 mm, FL: 26 mm

MVP: 11mm. RI: 0.

Fetus 2: BIP: 49 mm, AC: 127 mm, FL: 28 mm

MVP : 84 mm. RI: 0,77

Diagnosis: TTTS Stage 3 according to Quintero

Upon consultation, patient consented to fetoscopic placental therapy

Case report

- The surgery was carried out in the OT
- Anesthesia method: on the spot
- Surgery was carried out under guidance of Ultrasound
- Laser cutter was used to disconnect vessels (9 vessels) following the Salomon
- Length of operation: 45’
- HR after operation : 145 and 160

Case report

- Patient was hospitalised for 24 hours
- Treated with tocolyse and antibiotics
- After 1 day: Giving fetus MVP : 33 mm

  Receiving fetus MVP : 63 mm
- After 1 week :

Giving fetus: MVP: 40 mm, RI: 0,89

Receiving fetus: MVP: 65 mm, RI: 0,66

Case report

After 10 weeks (fetal age: 30 weeks and 3 days)

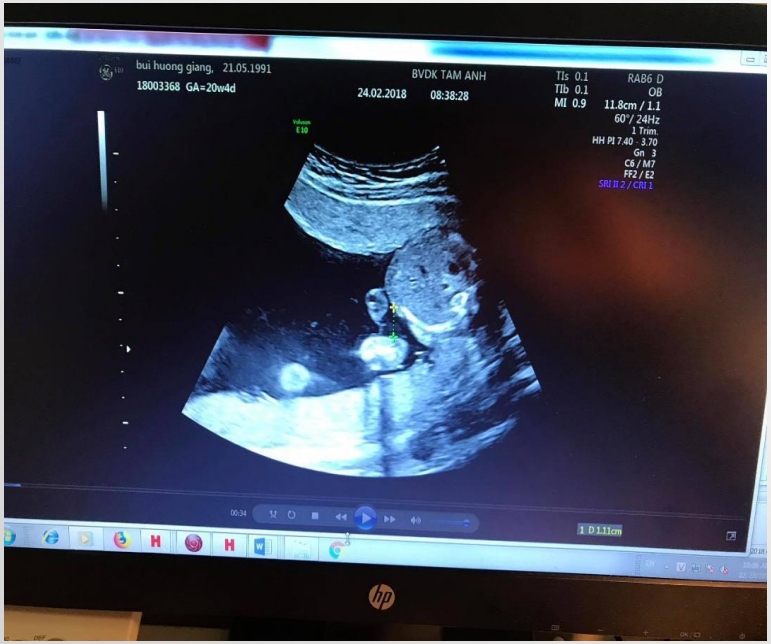
Giving fetus: BIP: 73 mm, AC: 205 mm, FL: 45 mm

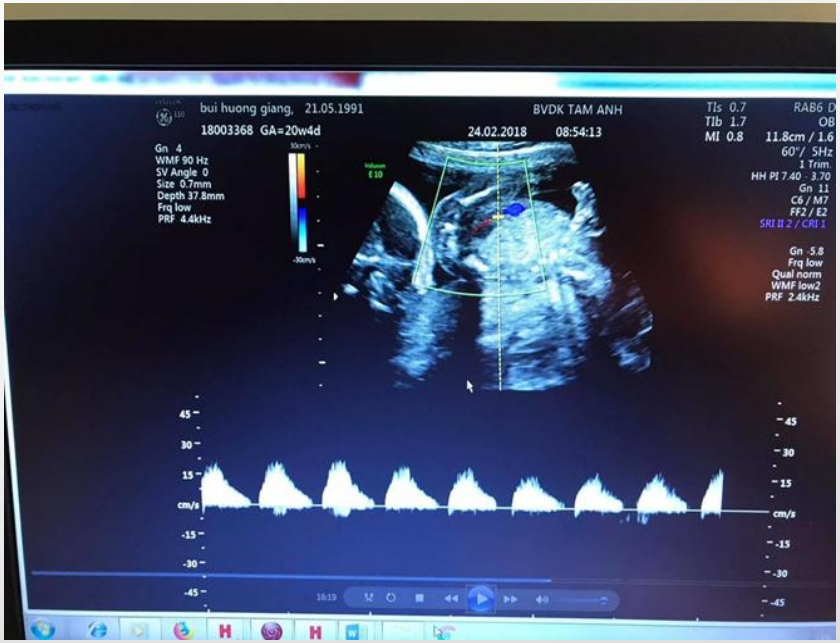
MVP: 45 mm, RI: 0,88. EFW: 805g

Receiving fetus: BIP: 73 mm, AC: 239mm, FL: 53mm

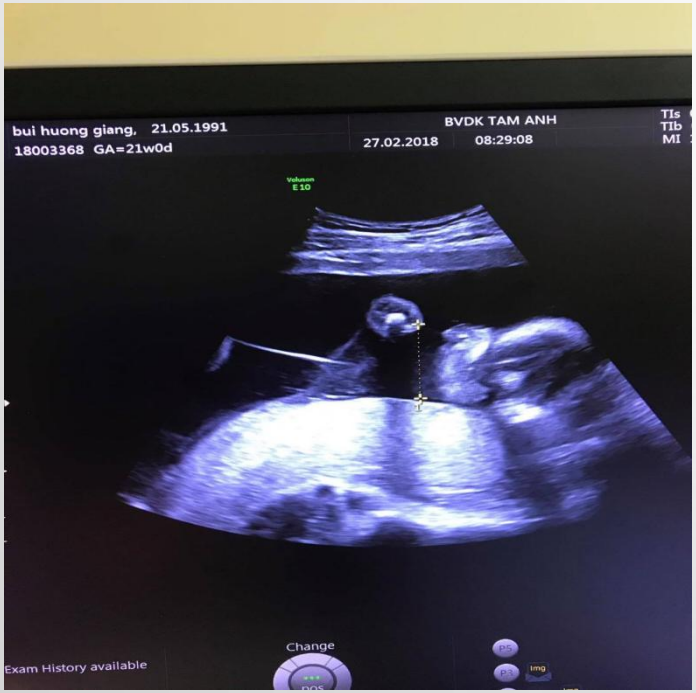
MVP: 61mm, RI: 0,49, EFW: 1195g

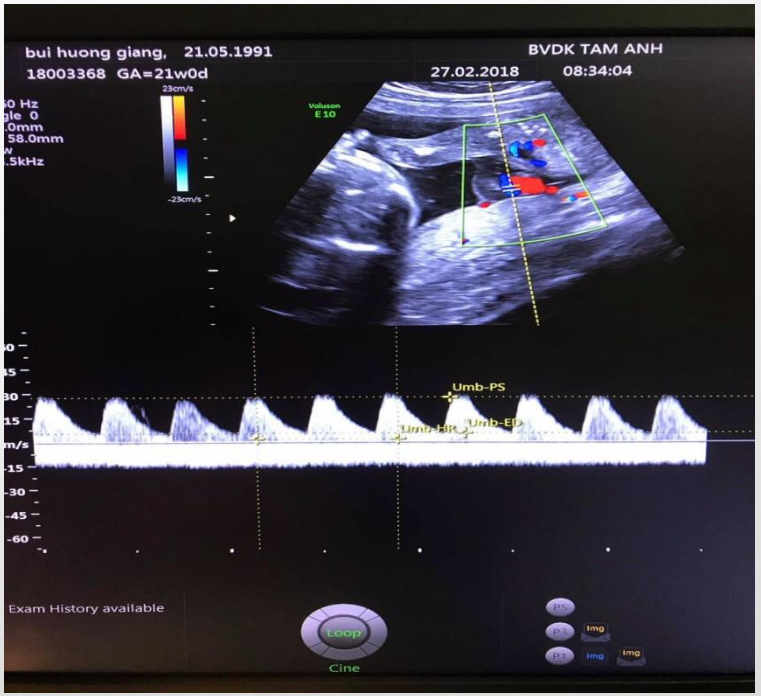
Pre operation



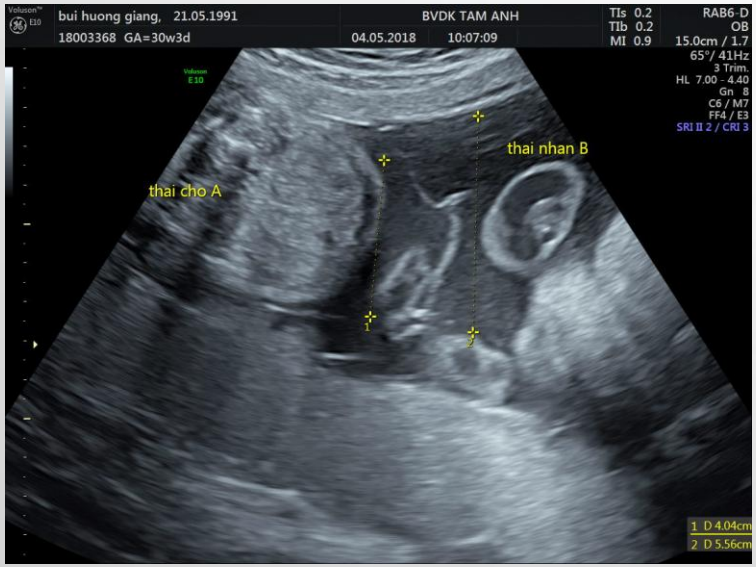


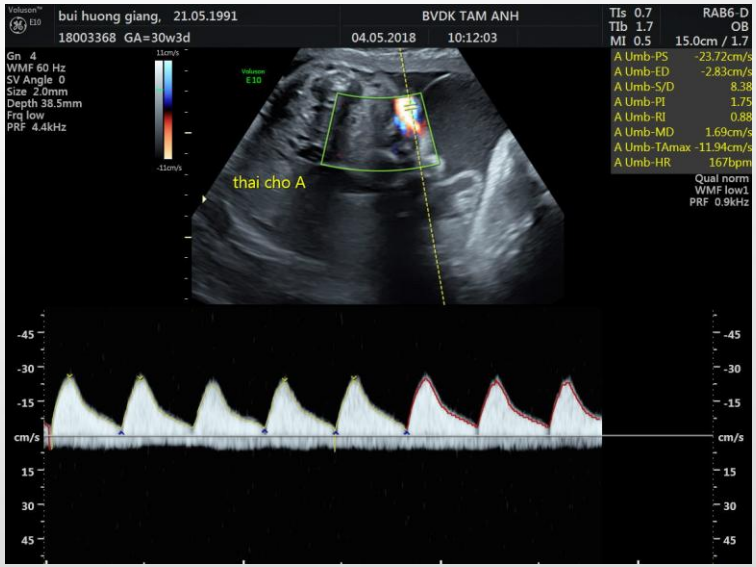
Post operation





Post operation





Post operation

BVDK TAM ANH

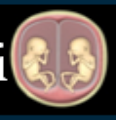
Date of Exam: 04.05.2018 Page 6 / 9
Exam Type:

Fetus: B/2 Name bui huong giang Pat. ID 18003368

Fetus Compare	A	B
AUA	26w5d	28w3d
EDD(AUA)	05.08.2018	24.07.2018
EFW (Hadlock)	805g	1195g
EFW Ratio	67%	100%
EFW Discordance	33%	0%
BPD (Hadlock)	7.29cm	7.27cm
OFD (HC)	8.24cm	8.80cm
HC (Hadlock)	25.37cm	25.84cm
HC* (Hadlock)	24.44cm	25.33cm
AC (Hadlock)	20.41cm	23.95cm
TAD	6.18cm	7.64cm
FL (Hadlock)	4.49cm	5.28cm

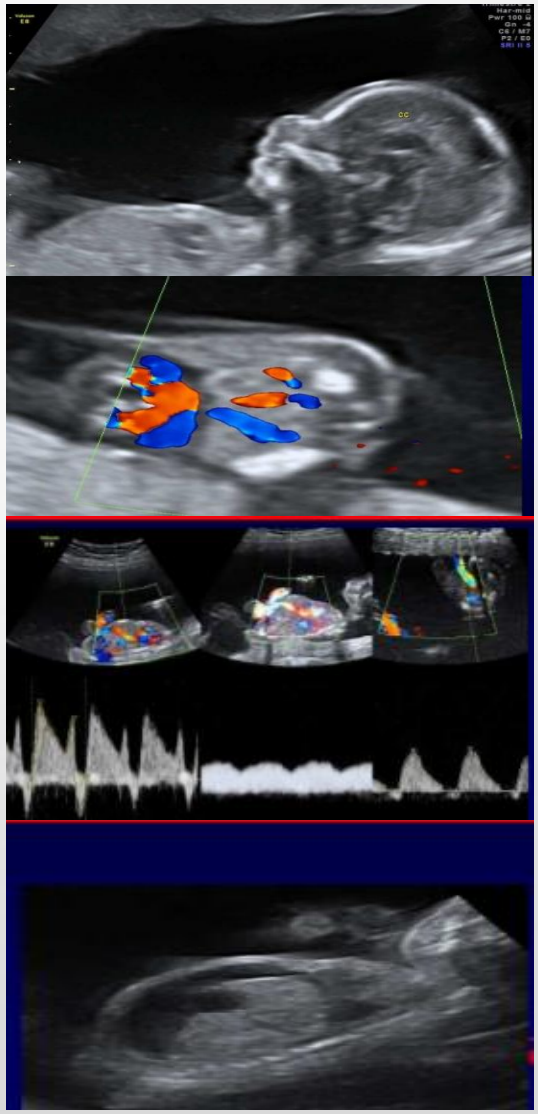
Discussion

Rau - ối và các nguy cơ

Thời gian phân chia	Tần suất	Rau - ối	Nguy có thai chết
< 3 ngày	25%	Hai rau – hai ối 	10%
4 – 8 ngày	75%	Một rau – hai ối 	25%
9 – 13 ngày	2%	Một rau – một ối 	50%
> 13 ngày	Hiếm	dính nhau 	99%

Discussion

- Quintero Categorisation
- 5 stages
- Stg I: imbalance in amniotic fluid
- Stg II: nonvisualization bladder
- Stg III: absent or reversed omb arte diastol
- Stg IV : hydrop in 1 or 2 twin
- Stg V : foetal demise 1 or2



Discussion

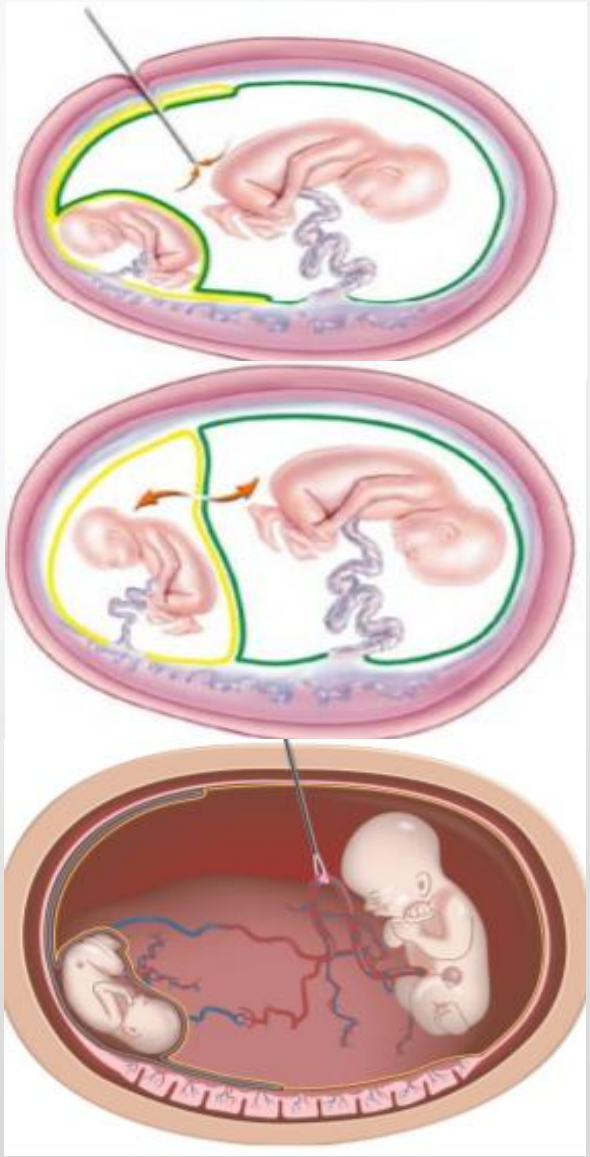
- TTTS is a obstretigical emergency in need of immediate intervention
- Different treatments are available for different circumstances
  - Amniotic fluid depletion
  - Septosomie
  - Fetoscopic placental laser therapy
- Selective reduction : cord coagulation

Discussion

Reduction

Septosomie

Cord coagulation



Disscusion

- Amniotic fluid depletion requires repetitive operation. High risk of infection
- Umbilical cord clamping while having complications can cause sequelae
- Setptosomie currently isn’t reccommeded due to bride amnoitique

Discussion

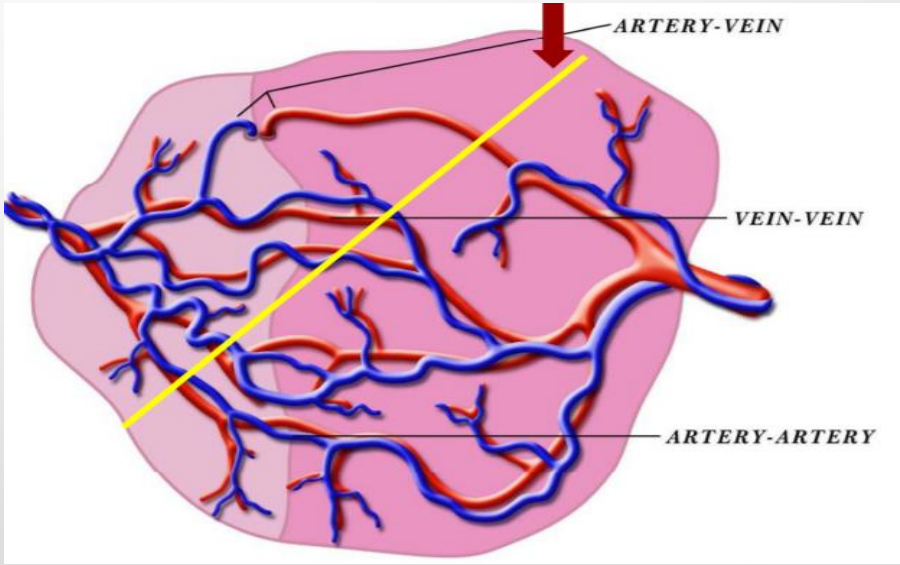
- In this situation, we decided to carry out with an operation due to
  - Stg III TTTS
  - Fetal age is still at 20 weeks
  - Normal morphology of fetus
  - Without intervention, it can lead to serious impairment of one of the fetus and death to the other
  - According to Delia, Y ville, Senat, the survival rate of one fetus can go up to 68-76% with laser therapy
  - Survival rate for both fetus: 52-60%

Discussion

Laser therapy

- 1990 Delia (Obstet Gynecol 75:1406,1990)
- 1995 Delia (Am J Obstet Gynecol 172: 1202,1995) 53% survived, 96% normal development
- 1995 Yve VilleN Engl J Med 332; 224 1995, 53% survived and have normal development

Membrane



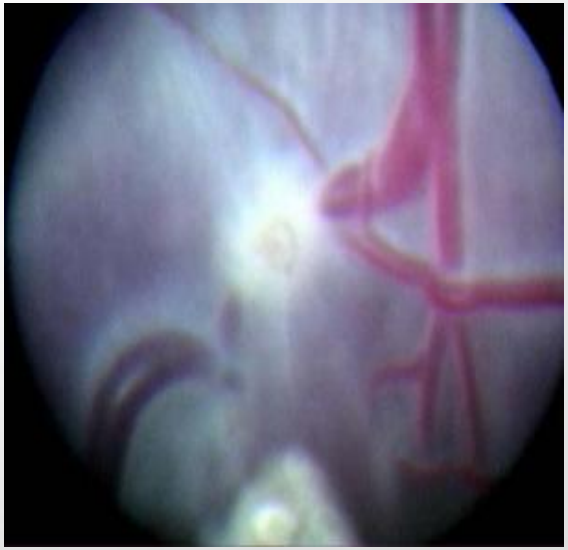
Discussion

- This patient was monitored once / 2 weeks
- Assessed with statistics: MVP, RI, Fetal size
- After 1 week MPV of receiving fetus decreased, giving fetus increased present diastol (RI: 0.89)
- After 10 weeks, both fetus develop normally, amniotic level normal, RI normal, fetal weight: 805g , 1195g

Discussion

	Fetal Survival	At least 1 Survivor
Hecher '99	61%	79%
Hecher '00	68%	81%
Quintero '00	61.3%	83%
Quintero '03	64.2%	83.2%
Huber '04	70%	83%
Huber '06	71.5%	83.5%
Crombleholme '07	77%	91.7%

Laser coagulation



Discussion

Complications

- recurrent 13% Robby,2006, Habli,2009
- Death of 1 fetus 13-25% Rosi2008
- Death of both fetus 13-25% Rossi,2008
- OVS 10%Cavicchioni 2006
- Premature birth 10% cavicchioni 2006
- Cardiovascular disease (pulmonary artery constriction)
- Neurological sequelae 4-11% Douglas 2012

Bride amniotique

Conclusion

- TTTS is a dangerous complication and needs immediate diagnosis, strict monitoring with ultrasound for timely intervention
- Fetoscopic laser therapy applied at stage II-IV quintero, fetal age 16-26 weeks is considered optimal
- Post operational monitoring to prevent other complications for mother and fetus
- This is an invasive intervention so the surgeon needs to be thoroughly trained and experienced in ultrasound diagnosis

Thank you for listening