

# Treating at-risk pregnancies using the Bicom

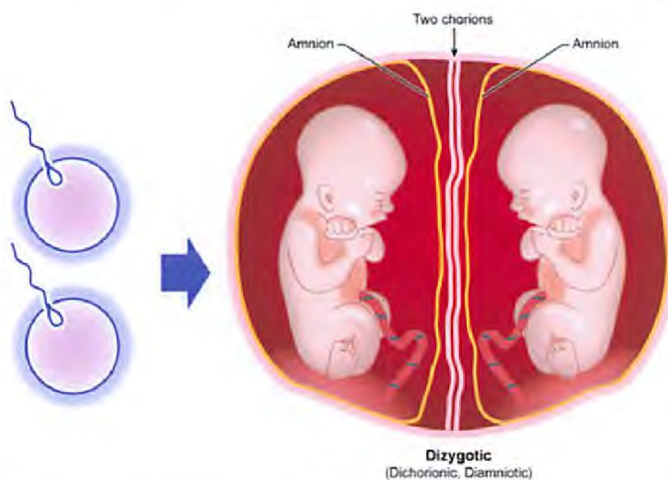
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## Twin-to-twin transfusion syndrome

### Overview

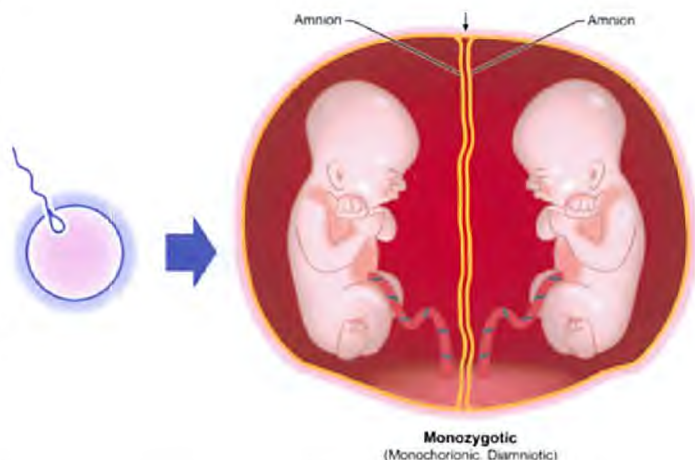
Most pregnancies result in one baby. In about one in 80 pregnancies, twins are conceived. This can occur in one of two ways:

The more common way (which accounts for two-thirds of cases) is for the two different sperm to fertilize two different eggs, resulting in what is called a dizygotic (DZ) twin gestation.



These twins are often called fraternal twins. In this type of twinning each twin has its own sac of amniotic fluid and its own placenta (afterbirth). Dizygotic twins have two sets of membranes surrounding their amniotic fluid sacs (one inner amnion layer and one outer chorion layer), and therefore they are known as diamniotic, dichorionic.

In about one-third of twin pregnancies, one sperm fertilizes one egg, but this splits into two embryos resulting in what is known as monozygotic (MZ) twins.

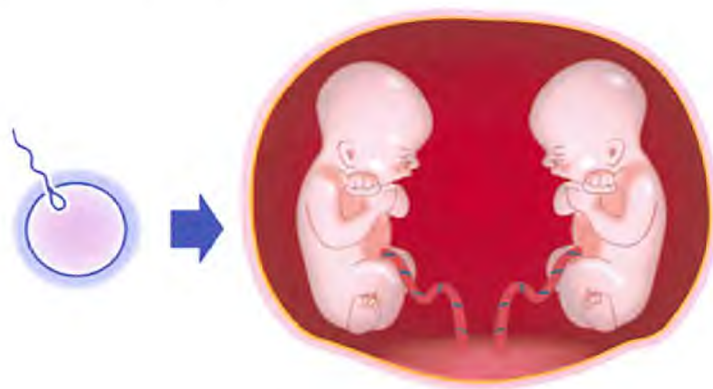


These twins are often referred to as identical twins since they have the same genetic material. Approximately one-third of MZ twins look just like fraternal twins on prenatal ultrasound since there are two separate amniotic sacs and two separate placentas. However, in two-thirds of identical twins, each twin has its own amniotic sac but shares a common placenta. This type of MZ twinning is called monochorionic, diamniotic since there is an inner layer surrounding the amniotic sac of each twin, but there is only one common outer layer (chorion) surrounding both of the sacs. This type of twinning occurs in approximately one in 360 pregnancies. Monochorionic twins are at higher risk for complications since they share a common placenta.

Less than 1 percent of identical twins (about one in 2,400 pregnancies) will have one amniotic sac and one placenta for both twins. This type of twinning is referred to as monochorionic, monoamniotic twinning. These twins are at very high risk for loss of the pregnancy due to entangled umbilical cords.

## What is twin-twin transfusion syndrome and how does one get it?

This condition occurs only in those identical twins that are monochorionic, diamniotic (one-third of all identical or monozygotic twins). In almost all of these pregnancies, the single placenta contains blood vessel connections between the twins. For reasons that are not clear, in 15 percent to 20 percent of monochorionic, diamniotic twins, the blood flow through these blood vessel connections becomes unbalanced, resulting in a condition known as twin-twin transfusion syndrome (TTTS). This is not an inherited or genetic condition. It is not caused by something that a mother or father has done or not done.



**Monozygotic**  
(Monochorionic, Monoamniotic)

In TTTS, the smaller twin (often called the donor twin) does not get enough blood while the larger twin (often called the recipient twin) becomes overloaded with too much blood.

In an attempt to reduce its blood volume, the recipient twin will increase the urine it makes. This will eventually result in the twin having a very large bladder on ultrasound, as well as too much amniotic fluid around this twin. This is known as polyhydramnios.

At the same time, the donor twin will produce less than the usual amount of urine. The amniotic fluid around

the donor twin will become very low or absent. This is known as oligohydramnios.

As the disease progresses, the donor will produce so little urine that its bladder may not be seen on ultrasound. The twin will become wrapped by its amniotic membrane (known as a "stuck" twin). Often the polyhydramnios of the recipient twin is the first thing noticed by the patient due a sudden increase in the size of the uterus. Clothes may become tight fitting over a short period of time. At other times the differences in the amniotic fluid volumes between the twins is only noted at the time of a routine ultrasound.

## How is twin-twin transfusion syndrome diagnosed?

The diagnosis of TTTS is made with an ultrasound evaluation that shows a twin pregnancy with one placenta, twins of the same sex in separate amniotic sacs, and polyhydramnios in the recipient's sac and oligohydramnios in the donor's sac. Amniotic fluid volume is measured with ultrasound by determining the deepest pocket measurement from the patient's skin to her back. This measurement is known as the maximum vertical pocket (MVP).

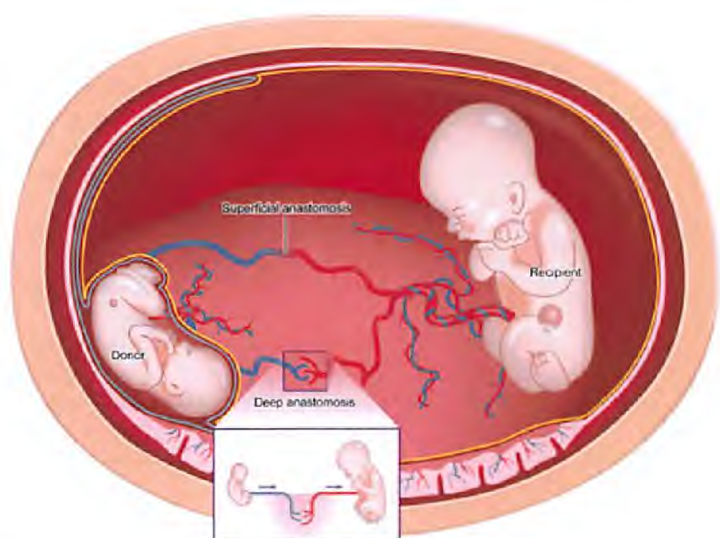


Illustration 1: Anastomosis

### What are the twin-twin transfusion syndrome five stages of classification?

Quintero<sup>1</sup> has proposed five stages of TTTS based on ultrasound findings:

**Stage I:** This is the initial way that TTTS is seen on ultrasound. In stage I, there is oligohydramnios in the donor's sac with an MVP of two centimeters or less (three-quarters of an inch) and polyhydramnios in the recipient's sac with a maximum vertical pocket of fluid of eight centimeters or more (just over three inches). The bladder of the donor baby is still seen.

**Stage II:** As defined above, there is polyhydramnios and oligohydramnios, but the bladder is no longer seen in the donor twin during the ultrasound evaluation.

**Stage III:** Blood flow in the fetus can be measured with a special type of ultrasound called Doppler. In addition to the findings of Stages I and II, careful study of the blood flow in the umbilical cord and fetal ductus venosus (the large blood vessel in the fetus that returns blood to the heart from the placenta) reveals abnormal patterns in Stage III. These patterns can occur in either or both fetuses.

In the umbilical cord, the diastolic flow can be either absent or reversed in the umbilical artery. This pattern is usually seen in the donor twin. In the ductus venosus, the diastolic flow can either be absent or reversed. This pattern is usually seen in the recipient twin due to early heart failure. The recipient twin can also exhibit leakage across the main valve on the right side of the heart – this is known as tricuspid regurgitation.

**Stage IV:** One or both babies shows signs of hydrops. This means there is excess fluid in parts of the baby such as swelling of the skin around the head (scalp edema), fluid in the abdomen (ascites), fluid around the lungs (pleural effusions) or fluid around the heart (pericardial effusion). These findings are evidence of heart failure and are typically seen in the recipient twin.

**Stage V:** One or both babies have died. The survival of the twins is poorer when there is progression to a higher stage over time. It has been estimated that half of patients will progress to a higher stage, 30 percent will remain at the same stage and 20 percent will improve to a lower stage.<sup>2,3</sup>

Staging of twin to twin transfusion syndrome based on sonographic and Doppler findings<sup>1</sup>

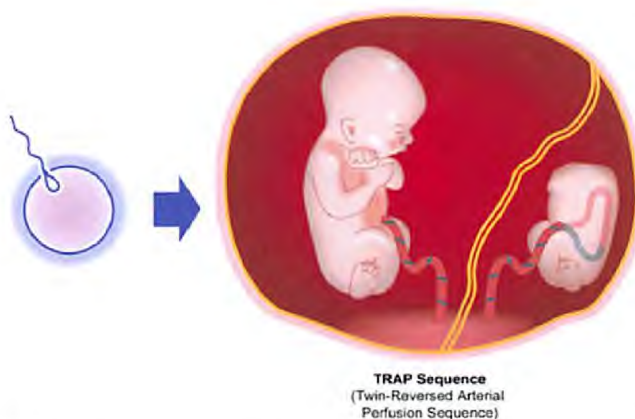
Stage	Poly / Oligohydramnios*	Absent Bladder in Donor	Critically Abnormal Dopplers**	Ascites, pericardial or pleural effusion, scalp edema, or overt hydrops present.	Demise of one or both twins.
I	+	-	-	-	-
II	+	+	-	-	-
III	+	+	+	-	-
IV	+	+	+	+	-
V	+	+	+	+	+

\* Polyhydramnios: maximum vertical pocket of >8 cm; oligohydramnios: maximum vertical pocket of <2 cm.

\*\* At least one of the following: a) Absent or reverse end diastolic velocity in the umbilical artery (AEDV/REDV) b) Reverse flow in the ductus venosus (RFDV), or c) Pulsatile umbilical venous flow (PUVF).

### What is an acardiac twin or twin reversed arterial perfusion (trap) syndrome?

A usual form of TTTS occurs in about one in 15,000 pregnancies. In these monochorionic twins, one twin develops normally while the other twin fails to develop a heart as well as other body structures. The abnormal twin is called an acardiac twin. In these pregnancies, the umbilical cord from the acardiac twin branches directly from the umbilical cord of the normal twin. Blood flow to the acardiac twin comes from the normal twin, which is also known as a pump twin. This blood flow is reversed from the normal direction leading to the name for this condition: twin reversed arterial perfusion syndrome or TRAP. In some cases the blood flow from the pump twin to the acardiac twin stops on its own and the acardiac twin stops growing. In other cases, the flow continues and the acardiac twin continues to increase in size. This eventually leads to heart failure and polyhydramnios in the pump twin. Without treatment, more than 50 percent of cases of TRAP will result in the death of the pump twin.



### What is the outcome for twin-twin transfusion syndrome (TTTS)?

There are a number of ways to treat TTTS, any of which may be the correct method depending on ultrasound findings, the gestational age of the pregnancy and a couple's specific needs.

**Left untreated, TTTS prior to 24 weeks' gestation (six months of pregnancy), 80 percent to 90 percent of cases are associated with the loss of one or both twins.**

If one of the twins should die, the blood vessel connections in the placenta can place the surviving twin at risk for long-term brain damage in as many as one-third of cases. In general, more advanced stages of TTTS have a worse prognosis than the earlier stages. When severe TTTS occurs at a very early gestational age (prior to sixteen weeks or the fourth month of pregnancy), the option of termination of the pregnancy can be considered due to the grim prognosis.

The various therapies that are available target either the unequal fluid between the twins' sacs or interrupt the blood vessel communications between the twins on the single placenta. The successful outcome of these treatments has been based on the number of babies that survive, as well as the number of babies who do not have brain damage. The treatments that are currently available are described below:

#### Treatments

##### **Reduction amniocentesis**

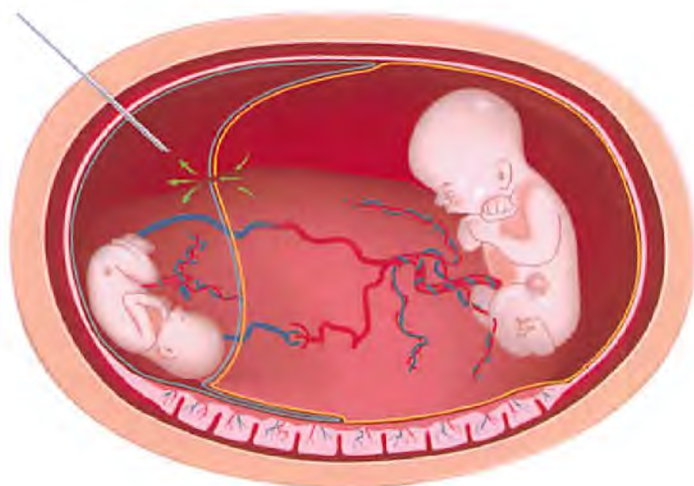
Serial amniocentesis involves the removal of the excessive amniotic fluid from the sac of the recipient twin using a needle that is passed through the maternal abdomen.

**Reduction amniocentesis usually requires repeat procedures to be undertaken every few days to weekly when the fluid returns to high levels.**

**The procedure is generally not thought to be effective for more advanced stages of TTTS (Stages III and IV).**

Premature labor with early delivery in 3 percent of cases, premature rupture of the membranes in 6 percent of cases, infection in about 1 percent of cases, and

premature separation of the placenta from the wall of the womb (called an abruption) in 1 percent of cases.



**Illustration 2:** Reduction amniocentesis

Pregnancies managed with serial reduction amniocentesis on average deliver by 29 to 30 weeks of gestation (approximately ten weeks prior to the "due date").<sup>4,5</sup> If there is progression of TTTS to a more advanced stage, serial amniocenteses will reduce the success rate for such procedures such as laser. Reported survival rates have varied from 18 to 83 percent, with a recent study noting that just over half (56 percent) of severe TTTS cases managed with reduction amniocentesis will end with at least one infant without brain damage.<sup>5</sup> Approximately, 20 percent to 25 percent of the TTTS survivors from pregnancies treated with reduction amniocentesis have been found to have long-term developmental delay.

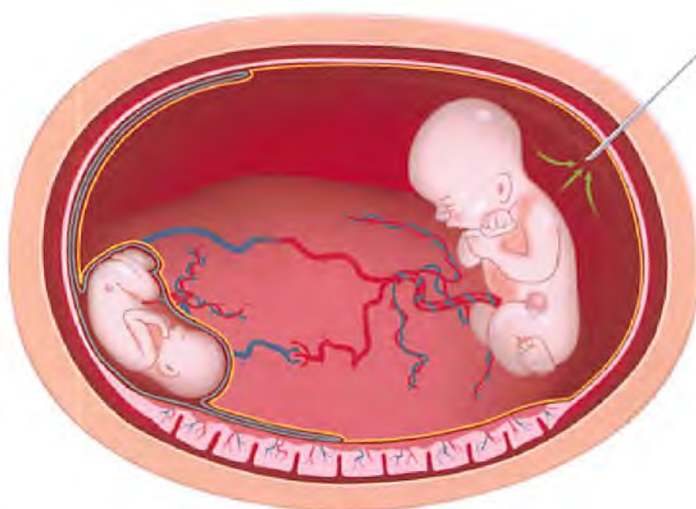
### **Septostomy (also known as microseptostomy)**

Septostomy is the creation of a hole in the membrane between the babies' sacs using a needle. This causes fluid to move from the amniotic sac with excessive fluid (the recipient's sac) into the sac with absent or low fluid (donor's sac). Since septostomy is performed with a needle that is used to perform

amniocentesis, complications of infection, premature labor and premature rupture of the membranes are rare. Septostomy carries the additional potential risk for the hole to become larger between the two sacs and could even allow the babies to share the same amniotic space if the entire separating membrane becomes disrupted. This has been reported to occur in 3 percent of septostomies. In the worst case scenario, the umbilical cords of the twins could become entangled, leading to the death of one or both fetuses. In one large series, survival to birth was 80 percent for at least one twin and was 60 percent for both twins.<sup>6</sup> Patients undergoing septostomy typically require fewer procedures than those treated with amnioreduction. There is no data currently available regarding neurologic outcome in survivors of septostomy.

### **Selective laser ablation of the placental anastomotic vessels**

In more advanced stages of TTTS (stage II and higher) laser ablation of the communicating vessels on the placenta between the twin fetuses can be a curative procedure.



**Illustration 3:** Septostomy (also known as microseptostomy)

The procedure is performed in an operating room. The instruments are inserted under ultrasound guidance into the amniotic sac of the recipient twin. The needle is removed and a telescope (fetoscope) with a thin fiber to carry the laser energy is then inserted through the hollow tube. The fetoscope is used to look directly at the blood vessels on the surface of the placenta. Vessels that are found to communicate between the twins are then closed using laser light energy. At the completion of the surgery, the extra amniotic fluid in the recipient twin's sac is removed to achieve a normal volume. The procedure may take 45 minutes to two hours depending on the difficulty of the case.

Laser ablation is associated with a higher risk of complications such as premature contractions, premature rupture of the membranes (15 percent to 20 percent of cases), placental separation (2 percent) and infection. For this reason, special medications to prevent contractions and

antibiotics to prevent infection will be given before and after the procedure. In addition, laser therapy may be associated with unique risks since the laser energy may cause certain areas of the placenta or blood vessels on the surface of the placenta to bleed.

Laser ablation has been shown to result in the survival of at least one twin in 70 percent to 80 percent of cases and both twins in one-third of cases.

Should one fetus die after the procedure, the likelihood that the surviving fetus will develop complications is reduced from 35 percent to approximately 7 percent. In one-third of cases, neither twin will survive. Studies to date have indicated that approximately 8 percent of survivors following laser ablation will have a long-term mental handicap. This is approximately half of the rate of problems seen in survivors treated with amnioreduction.

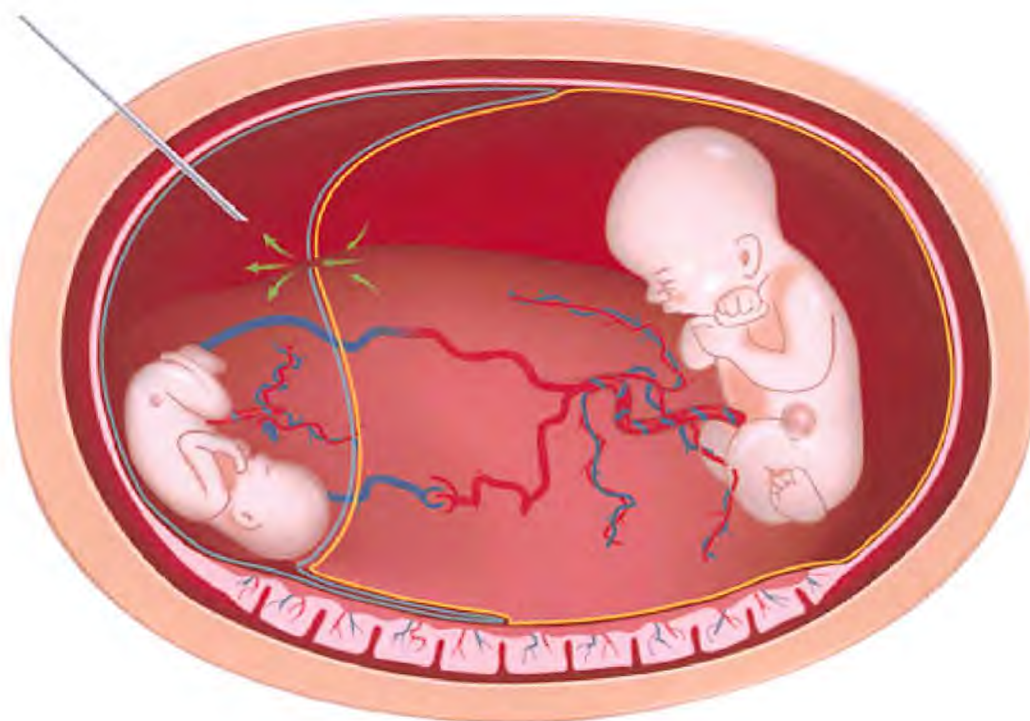


Illustration 4: Selective laser ablation of the placental anastomotic vessels

### Selective cord coagulation

In some cases, a couple may make the difficult decision to proceed with the purposeful loss of one twin to save the other twin. This procedure is used when laser ablation of the connecting vessels is not possible or if one of the twins is so close to death that laser ablation would likely not be successful. By stopping the flow in the cord of the dying twin, the other twin can be protected from the consequences of its sibling's death. The umbilical cord is then grasped and

electrical current is applied to burn (coagulate) the blood vessels in the cord so that the blood flow will stop to this fetus. The communication between the fetuses is definitively ended; however, this eliminates the chance of survival for one of the twins. Complications of this procedure include premature delivery and premature rupture of the membranes. Rupture of the membranes has been reported to occur in about 20 percent of cases. Survival of the one remaining fetus can be expected in 85 percent of cases.

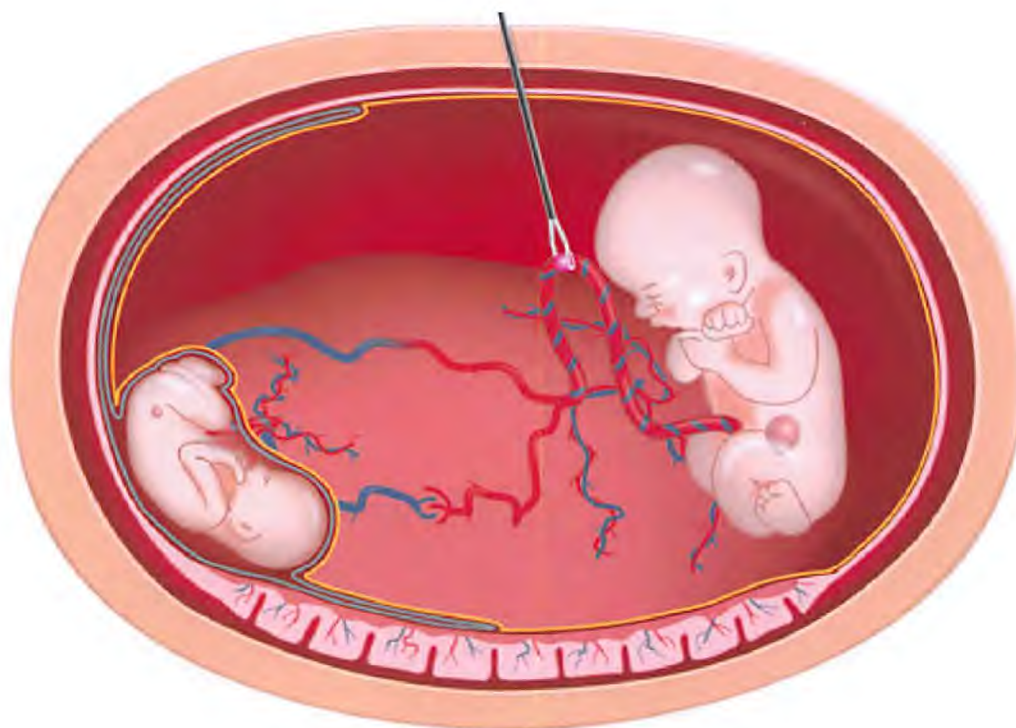


Illustration 5: Selective cord coagulation

## **CASE 1**

Mother H. Y., 28 Y., Teacher. G1P0 LMP: 07.27.2013 22W6D  
**Monochorionic diamniotic twin pregnancy TTTS (Quintero 2)**

Last year I made a presentation to you about OEIS complex case as an intrauterine fetal pathology. That baby's family have recommended me and bioresonance therapy, to father Dr. Y. his wife Mrs. H. Y. had TTTS pregnancy.

They also came to my clinic on 01.03.2014.

Mrs. H. Y. was being followed Istanbul University, Istanbul Faculty of Medicine, Prenatal Diagnosis and Treatment Unit.

### **24.12.2013 USG Report:**

21+ W monochorionic diamniotic twin pregnancy.

**Fetus 1: Oligohydramnios (vertical pocket: 3 cm) MCA PSV: 19cm/s (<1 mom).**  
Umbilical artery Doppler normal. The bladder was observed.

**Fetus 2: Polyhydramnios (vertical pocket: 9 cm) MCA PSV: 27cm/s (1 mom – 1.3 mom).**  
Umbilical artery Doppler normal. The bladder was observed.

Quintero 2 were TTTS.

Fetoscopic Laser was proposed. The family was informed.

"If the pregnancy continues in this way, both the fetus and the survival chance is about 20%.  
If we give up the life chances of the other one is 100%.

Chances of survival of both of them with the laser coagulation is 30%."

Because of the risks associated with high vital, Fetoscopic Laser, family did not accept the laser coagulation. They decide to take bioresonance therapy at the suggestion of family doctors who are still friends.

The family was informed by bioresonance therapy method. Consent was obtained.

Testing was performed on a blood sample from the mother. Therapy program was prepared.

The evaluations of blood spin: Left Spin

Geopathy & E-Smog

Major Allergen: Cow's milk, Egg

Pathogen loading: Candida Albicans, Camphylobacter Pylori

Heavy metal cumulation: Mercury

Mother began her major allergen diet.

Pathogens and heavy metal therapy and detoxification programs postponed. Therapy was planned at three day intervals.

### **1. Bioresonance application. 01.03.2014**

Left spin reflected program (with Spintester 2000)	192
Geopathy & E-Smog	700.3, 701.1, 702.0
Yin-Yang Balance	507
Laterality problems	535.2
Eliminate scar	900.2, 910.3



## 2. Bioresonance application. 01.06.2014

Geopathy	700.3
Laterality problems	535.2
Activating the thymus	428.2
Blockage of the sacrum	211.2
Remove energy blockage	915.2
Blood circulation problems in the abdomen	10042, 3031.0, 504.03

## 3. Bioresonance application. 01.09.2014

Geopathy	700.3
Yin-Yang Balance	507
Laterality problems	535.2
Blood circulation problems in the abdomen	10042, 3031.0, 504.0

Geopathic burden has been detected on the mother as a pathological field interaction and the location of her bed has been changed.

## 4. Bioresonance application. 01.13.2014

Laterality problems	535.2
Poor circulation	3126
Blood circulation problems in the abdomen	10042, 3031.0, 504.0

## 5. Bioresonance application. 01.14.2014

Uterine contractions detected on the mother and Miracle meridian program has been planned as a therapy.

I also used miracle meridian therapy according to Dr. Sabine Rauch\*.

Clear deep blockage	3017
Miracle meridian program (via Lu7/Ki6 Key Point)	211, 381*
Magnesium point	570.5



REN MAI Key Point Lu7



YIN QIAO MAI Key Point Ki6

On the continuing tension in the abdomen, pregnant urgently hospitalized in Istanbul University, Istanbul Faculty of Medicine of Obstetrics and Gynecology Clinic on 01.16.2014.

#### 01.16.2014 USG

25- W monochorionic diamniotic twin pregnancy

**Fetus 1: Oligohydramnios (vertical pocket: 1 cm).**

Umbilical artery Doppler normal. The bladder was observed.

**Fetus 2: Polyhydramnios (vertical pocket: 14 cm).**

Umbilical artery Doppler normal. The bladder was observed.

Quintero TTTS 1 were evaluated.

33% of discordance between fetuses has been observed.

Column length of 30 mm (N > 27 mm)

01.20.2014 Amniodrainage was performed.

01.20.2014 She was discharged.

There's no complications observed and did not require any other amniodrainage.

The pregnant could not attend the bioresonance therapy until 02.20.014

Due to fact that the pregnant went through a hospitalization period, bioresonance treatment protocol was unable to be performed. The treatment was carried out through blood samples.

Circulatory system meridian	241.1
Regulate the blood circulation	3022
Stimulate the circulatory system	3061
Circulatory disorders	3032
Regulate circulation	3031
Yin-Yang balance	507
Laterality problems	535.2
Lymph therapy	200.3, 201.2, 3066
Renal function disorder	480, 481, 3078, 3079, 3080

#### 01.30.2014 USG

27+ W monochorionic diamniotic twin pregnancy

**Fetus 1: Amniotic fluid volume was normal (vertical pocket: 4 cm).**

Absence of End-diastolic velocity in the umbilical artery Doppler was observed.

Ductus venosus was normal. The bladder was observed.

**Fetus 2: Polyhydramnios (vertical pocket: 10 cm).** Umbilical artery Doppler was normal.

21% of discordance between fetuses has been observed.

#### 02.18.2014 USG

29+ W monochorionic diamniotic twin pregnancy

**Fetus 1: Amniotic fluid volume in normal (vertical pocket: 5.5 cm).**

Umbilical artery Doppler normal. Ductus venosus normal. The bladder was observed.

**Fetus 2: Polyhydramnios (vertical pocket: 9.5 cm).** Umbilical artery Doppler was normal.

38% of discordance between fetuses has been observed.

The pregnant woman has come to the emergency with painful contractions on 03.06.2014. She was at the stage of 31+ weeks of her pregnancy. Contraction was observed manually. At the NST (fetal electrocardiotocography / non stress test), 100 mm Hg contractions were observed for 2 times in 10 minutes.



Cervix was 3 cm dilated and softened at the vaginal examination. Fetal head was observed at level (-2) by manual examination.

I urgently carried out "Miracle Meridian Programs" in my clinic. And then the pregnant women were referred to the hospital because of the risk of preterm labor.

About an hour after reaching the hospital the pregnant woman was feeling relieved, the contractions at NST were gone. Cervix was closed by manual examination?!!

The pregnant was sent home without being interned.

#### 03.18.2014 USG

33+ W monochorionic diamniotic twin pregnancy

**Fetus 1: Amniotic fluid volume in normal.** Umbilical artery Doppler normal. Ductus venosus normal. The bladder was observed.

**Fetus 2: Amniotic fluid volume in normal.** Umbilical artery Doppler normal. Ductus venosus was normal.

25% of discordance between Fetuses has been observed.

#### 03.26.2014

**Pregnant women was delivered by Caesarean section at 34W4D pregnancy.**

First baby was 1740 g, 42 cm, 8/9 Apgar scores of boy.

Second baby was 1180 g, 37 cm, 6/8 Apgar scores of boy.

Both babies were taken to the neonatal intensive care unit after birth, because of prematurity.

Both babies not be monitored for respiratory problems. They were not entubated.

They encountered no neurological or gastrointestinal problems.

Although predicting 3 weeks hospitalization, they were discharged on the postpartum 11th day (04.06.2014).

First baby was 1690 g, second baby was 1150 g when discharged from hospital.

They also had no neurological, gastrointestinal, cardiologic or developmental problems in routine outpatient follow-up.



## **CASE 2**

Mother B. A., 23 Y., Housewife. G2P0A1. LMP: 01.04.2014 22W2D  
Monochorionic Diamniotik Twin Pregnancy TTTS (Quintero 3)

Mrs. B. A. came to my clinic for Bioresonance therapy through her Gynecologists and Obstetricians's suggestion who is my friend on 09.06.2014.

### **06.09.2014 USG Report:**

(Report of pregnant woman have been followed Training and Research Hospitals is as follow)

LMP in accordance 22W2D twin pregnancy.

**Fetus 1: 21W4D 410 g Polyhydramnios was available.** The bladder was observed. The umbilical artery Doppler was normal.

**Fetus 2: 20W0D 290 g Olygohydramnios was available.** Bladder was not examined. An absence of diastolic velocity was observed in the umbilical artery Doppler.

Quintero 3 TTTS.

Fetoscopic laser was proposed.

The family was stated that they do not accept the Fetoscopic Laser Therapy due to invasive nature of the therapy method because of the possible risk of a fetal loss.

I informed the pregnant and her husband about the Bioresonance therapy. I gave one of my friend as an example who had a TTTS case on her twins and talked about the success rate of possible Bioresonance treatment.

Family agreed to go with Bioresonance therapy during the pregnancy, and approved the treatment.

I suggested that the family that the pregnancy should be monitored at the Istanbul Medical Faculty of Istanbul University, Perinatology Clinic along with the Bioresonance therapy.

### **06.09.2014**

Mrs. B. A. with 22W2D twin pregnancy who had a TTTS Quintero 3, had taken to the Bioresonance Test Therapy program.

Tests were performed on blood samples.

The evaluation of blood spins	Left Spin
Geophaty & E-Smog	
Major Allergen	Wheat, Yeast

### **06.09.2014. On the same day the at first session Bioresonance she underwent a therapy.**

Left spin reflected program (with Spintester 2000)	192
Geophaty& E-Smog	700.3, 701.1, 702.0
Yin-Yang Balance	507
Laterality problems	535.2
Blood circulation problems in the abdomen	10042, 3031.0, 504.0

Mother began major allergen diet.

At 06.11.2014 the pregnant was examined in Prenatal Diagnosis and Treatment Unit at Istanbul University, Istanbul Medical Faculty.

06.11.2014 USG Report (after 1. BRT session)

Indication: Fetal

Multiple pregnancy, the fetus Number 2

Quintero Stage 3 TTTS ?

22W3D monochorionic diamniotic twin pregnancy diagnosed through early stage USG monitoring.

**Fetus 1: Polyhydramnios (vertical pocket: 8 cm).**

The umbilical artery Doppler was normal. Ductus venosus Doppler normal

**Fetus 2: Oligohydramnios (vertical pocket: 1.7 cm).** The bladder was observed.

Umbilical artery end diastolic velocity in Doppler have intermittent absence.

Ductus venosus normal.

There were 34% weight discordance between the two fetuses.

Quintero 2 TTTS

The family was informed about the Fetoscopic Laser procedures.

2. Bioresonance application. 06.12.2014 (3 days apart)

Mandibular joint correction	530.4
Eliminate scar	900.2, 910.3
Activating the thymus	428.2
Blockage of the sacrum	211.2
Yin-Yang Balance	507
Laterality problems	535.2
Blood circulation problems in the abdomen	10042, 3031.0, 504.0

3. Bioresonance application. 06.14.2014 (2 days apart)

E-Smog	701.1
Laterality problems	535.2
Blood circulation problems in the abdomen	10042, 3031.0, 504.0
Tissue process, chronic	923.2
Circulatory system meridian program, acute, chronic	240.1, 241.1

4. Bioresonance application. 06.16.2014 (2 days apart)

E-Smog	701.1
Laterality problems	535.2
Tissue process, chronic	923.2
Circulatory system meridian program, acute, chronic	240.1, 241.1
Circulatory disorders	3032

06.17.2014 USG Report (after 4. BRT session)

23+ W diamniotic monochorionic twin pregnancy diagnosed through early stage USG monitoring.

**Fetus 1: Polyhydramnios (vertical pocket: 7.5 cm).**

The umbilical artery Doppler was normal. Ductus venosus doppler normal.

**Fetus 2: Oligohydramnios (vertical pocket: 1.9 cm).** Umbilical artery had minimal absence of end diastolic velocity in Doppler. Ductus venosus Doppler normal.

There are 36% weight discordance between the two fetuses.

TTS was starting and discordance from IUGR (intrauterine growth retardation) was considered.

5. Bioresonance application. 06.18.2014 (2 days apart)

E-Smog	701.1
Laterality problems	535.2
Tissue process, chronic	923.2
Circulatory system meridian program, acute, chronic	240.1, 241.1
Circulatory disorders	3032
Common allergy treatment (wheat, first week)	11310, 963.1, 944.2, 998.1

6. Bioresonance application. 06.21.2014 (3 days apart)

E-Smog	701.1
Laterality problems	535.2
Tissue process, chronic	923.2
Circulatory system meridian program, acute, chronic	240.1, 241.1
Circulatory disorders	3032.0
Blood circulation problems in the abdomen	10042, 3031.0, 504.0
Common allergy treatment (wheat, second week)	12310, 977.2

7. Bioresonance application. 06.24.2014 (3 days apart)

Clear deep blockages	3017.0
Lung meridian, chronic	211.1
Kidney meridian, chronic	381.1

Stress, heart, circulation was performed through the second channel.

06.25.2014 USG Report (7th session after BRT)

24+ W diamniotic monochorionic twin pregnancy diagnosed through early stage USG monitoring.

**Fetus 1: Polyhydramnios (vertical pocket: 7 cm).**

Umbilical artery Doppler are normal. Ductus venosus Doppler are normal.

**Fetus 2: Oligohydramnios (vertical pocket: 3.3 cm).** Umbilical artery had minimal absence of end diastolic velocity in Doppler. Ductus venosus normal.

Have a 30% weight discordance between the two fetuses.

8. Bioresonance application. 06.26.2014 (2 days apart)

Autoregulation disturbed	432.1, 827.4
Balance blood pressure	970.1, 127.2
Blood circulation problems in the abdomen	10042, 3031.0, 504.0

#### 9. Bioresonance application. 06.30.2014 (4 days apart)

Common allergy treatment (wheat, third week)	13310, 963.2, 944.3, 998.2
Balance blood pressure	3019, 970.1, 127.2
Laterality problems	535.2

#### USG 07.02.2014 Report (9th session after BRT)

26– W diamniotic monochorionic twin pregnancy diagnosed through early stage USG monitoring.

**Fetus 1: Polyhydramnios be no. Amniotic fluid volume in normal (single pocket: 5 cm).**  
Normal umbilical artery Doppler. Ductus venosus Doppler normal.

**Fetus 2: Olygohydramnios (vertical pocket: 3 cm).**  
Umbilical artery Doppler normal. Ductus venosus normal.

There was 29% weight discordance between the two fetuses.

Discordance from IUGR (intrauterine growth retardation) was considered.

The pregnant did not participated to the BRT sessions until the next ultrasound examination.

#### USG 07.09.2014 Report (9th session after BRT)

27– W diamniotic monochorionic twin pregnancy diagnosed through early stage USG monitoring.

**Fetus 1: Polyhydramnios be no. Amniotic fluid volume in normal (vertical pocket: 3.7 cm).**  
Normal umbilical artery Doppler. Ductus venosus Doppler normal.

**Fetus 2: Oligohydramnios be no. Amniotic fluid volume in normal (vertical pocket: 4.4 cm).**  
Normal umbilical artery Doppler. Ductus venosus Doppler normal.

25% weight discordance between the two fetuses.

Discordance from IUGR (intrauterine growth retardation) was considered.

Pregnant 3 days a NST (non-stress test) and AFV (a total volume of amniotic failure) tracking, weekly Doppler USG control plan was directed to the routine antenatal outpatient clinic.

08.08.2014 date was given an appointment to check on Prenatal Diagnosis and Treatment Unit.

#### 10. Bioresonance application. 07.09.2014 (9 days apart)

E-Smog	701.1
Laterality problems	535.2
Blood circulation problems in the abdomen	10042, 3031.0, 504.0
Balance blood pressure	3019, 970.1, 127.2

#### 11. Bioresonance application. 07.16.2014 (7 days apart)

Laterality problems	535.2
Blood circulation problems in the abdomen	10042, 3031.0, 504.0
Balance blood pressure	970.1



12. Bioresonance application. 07.23.2014 (7 days apart)

Yin-Yang Balance	507
Balance blood pressure	3019, 127.2
Tissue process, chronic	923.2
Circulatory system meridian program, acute, chronic	240.1, 241.1
Circulation LDF 1 meridian program	

On 07.23.2014, pregnant when I did the ultrasonography control in my office.

28+ W diamniotic monochorionic twin pregnancy diagnosed through early stage USG monitoring.

**Fetus 1: Amniotic fluid volume in normal (vertical pocket: 5 cm).**

Normal umbilical artery Doppler. Ductus venosus Doppler normal

**Fetus 2: Oligohydramnios. Umbilical artery Doppler had absence of end diastolic velocity.** Ductus venosus normal:

57% weight discordance between the two fetuses:

I thought that this negative developments may be more rare treat pregnant.  
I decided to make the therapy sessions more often.

6 sessions until birth underwent therapy containing more of the same BRT programs.

In the meantime, the mother's blood was found once left spin. And it was reflected.

Itching appeared in the 30th week of gestation in pregnant. BRT has passed the complaint with one session.

Liver detoxication	10093, 3063, 430.2
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Liver-Gall Bladder regulation	3064
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USG 08.08.2014 Report (18th session after BRT)

31– W diamniotic monochorionic twin pregnancy diagnosed through early stage USG monitoring.

**Fetus 1: Amniotic fluid volume in normal (vertical pocket: 5 cm).**

Normal umbilical artery Doppler. Ductus venosus Doppler normal

**Fetus 2: Oligohydramnios (vertical pocket: 1.2 cm).**

Umbilical artery Doppler was observed absence of end-diastolic velocity:

Ductus venosus normal.

There was 58% weight discordance between the two fetuses.

Discordance from IUGR (intrauterine growth retardation) was considered.

32–34 gestational weeks at birth was suggested.

Due to the increasing weight difference between twin babies was decided to terminate pregnancy at 32–34 gestational week.

**BIRTH**

**On the date of 08.18.2014, 32W2D pregnancy, the pregnant whose water with meconium was broken had a labor through Caesarean section.**

**First baby** was 1595 g, 8/9 Apgar scores of girl.

**Second baby** was 675 g, 6/8 Apgar scores of girl.

Preterm babies after birth, with a presumptive diagnosis of respiratory distress were included in the Neonatal Intensive Care Unit.

It was a huge "disappointment" for the pediatrician at the Neonatal Intensive Care Unit to witness a baby showing no need for intubation despite the fact that the delivery was taken place on the 32nd week with 675 g.

### **First Baby**

He was discharged from the hospital on the postpartum 28th day (4th week) with 1790 g in a stable condition. Neither neurological nor gastrointestinal complications have been experienced during the neonatal intensive care period.

### **Second Baby**

He was discharged from the hospital on the postpartum 63rd day (9th week) with 1850 g in a stable condition. Neither neurological nor gastrointestinal complications have been experienced during the neonatal intensive care period too. No sequel was observed.



First baby 1595 g (postpartum 1st hour)



Second baby, 675 g (postpartum 1st hour)



Post partum placenta

## Conclusion

Twin to twin transfusion syndrome is a complication in monochorionic twin pregnancies. Although its cause is not understood completely, it develops as a result of blood transfusion from one of the twin fetuses to other through the placental vascular anastomosis.

TTTS (twin to twin transfusion syndrome) in preterm birth and fetal death due to prenatal mortality and morbidity rates are high.

Prenatal mortality occur before 26th week TTTS (twin to twin transfusion syndrome) pregnancy is closer to 90–100%, an average 71%.<sup>(7, 8, 9)</sup>

Even in the cases of TTTS (twin to twin transfusion syndrome) treated, the mortality rate is 40%.

Wide variety of treatment approaches are used to keep the pregnancy until the month live delivery to be achieved. However, development of new methods of treatment is not enough to keep alive these babies yet.

There are high maternal and fetal complications of this treatment approaches. And costly treatment requiring hospitalisation.

Bioresonance therapy method is non invasive, safe for baby and mother and cheap as outpatient procedure.

If the series of studies carried out, Bioresonance therapy method can take place in obstetric practice.

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## Literature

1. Quintero RA, Morales WJ, Allen MH, Bornick PW, Johnson PK, Kruger M. **Staging of twin-twin transfusion syndrome.** J Perinatol 1999; 19:550-5.
  2. Taylor MJ, Govender L, Jolly M, Wee L, Fisk NM. **Validation of the Quintero staging system for twin-twin transfusion syndrome.** Obstet Gynecol 2002; 100:1257-65.
  3. Dickinson JE, Evans SF. **The progression of disease stage in twin-twin transfusion syndrome.** J Matern Fetal Neonatal Med 2004; 16:95-101.
  4. Mari G, Roberts A, Detti L, et al. **Perinatal morbidity and mortality rates in severe twin-twin transfusion syndrome: results of the International Amnioreduction Registry.** Am J Obstet Gynecol 2001; 185:708-15.
  5. Senat MV, Deprest J, Boulvain M, Paupe A, Winer N, Ville Y. **Endoscopic laser surgery versus serial amnioreduction for severe twin-to-twin transfusion syndrome.** N Engl J Med 2004; 351:136-44.
  6. Moise KJ, Jr., Dorman K, Lamvu G, et al. **A randomized trial of amnioreduction versus septostomy in the treatment of twin-twin transfusion syndrome.** Am J Obstet Gynecol 2005; 193:701-7.
  7. Hecher K, Plath H, Bregenzler T, Hansmann M, Hackeloer BJ. **Endoscopic laser surgery versus serial amniocenteses in the treatment of severe twin-twin transfusion syndrome.** Am J Obstet Gynecol 1999; 180:717-24.
  8. Quintero RA, Dickinson JE, Morales WJ, et al. **Stage-based treatment of twin-twin transfusion syndrome.** Am J Obstet Gynecol 2003; 188:1333-40.
  9. Lee H, Wagner A, Robert B, et al. **Radiofrequency ablation for TRAP sequence.** Am J Obstet Gynecol 2005; 191:S18.
- D'Alton ME, Mercer BM. **Antepartum management of twin gestation: Ultrasound.** Clin Obstet Gynecol 1990; 33: 42-9 10.
- Erskine RLA, Ritchie JW, Murnaghan GA. **Antenatal diagnosis of placental anastomosis in a twin pregnancy using Doppler ultrasound.** Br J Obstet Gynecol 1986, 93:955-9 11.
- Burke MS. **Single fetal demise in twin gestation.** Clin Gynecol Obstet 1990; 33: 69-78.