

## Unequal Placental Sharing

### What is Unequal Placental Sharing?

watch video [1]

Although Twin-Twin Transfusion Syndrome (TTTS) is one of the most common diagnoses made in monochorionic twins (MC), not all MC twin pregnancies in which there are unequal fluid levels or a difference in size of the twins have TTTS. These findings can also be seen in a condition called "unequal placental sharing".

When two fetuses share one placenta, their umbilical cords may implant anywhere – there is no set or predictable pattern – and depending on where they implant, one fetus may get less of a "share" of the placenta than its co-twin, resulting in less blood flow and nutrition to one fetus, with more to the other (unequal placental sharing). As a result, although identical twins usually share the same genetic material (split from one egg/sperm), they may actually grow differently. The normally grown twin typically has normal or generous (but not excessive, or "polyhydramnios") amniotic fluid level. The other twin may have a smaller placental share, resulting in a smaller size. The smaller twin may have either normal amniotic fluid volume or, if its growth becomes progressively restricted, can develop low fluid ("oligohydramnios").

Watch Video [2]

### How serious is my fetus's condition?

watch video [3]

Ultrasound evaluations provide us with the information to determine the severity of the situation. The greater the degree of size/weight difference between the twin fetuses the more serious the problem is. Also the less fluid present in the sac of the smaller twin, the more serious the situation. We also monitor the blood flow in the umbilical cords of the fetuses using Doppler ultrasound. A high resistance pattern is characteristic in the smaller, sicker one, and a normal one in the larger.

### Unequal Placental Sharing Vs TTTS

Differentiating unequal placental sharing from TTTS can be challenging as many pregnancies with TTTS have some element of unequal sharing, and many pregnancies with unequal sharing may have some element of TTTS. However, when unequal sharing is the more significant aspect of the problem, amniotic fluid discrepancies do not typically reach the levels seen with severe TTTS, and the issue is more pointedly about the size/weight discrepancy. TTTS is defined by a deepest vertical pocket (or "DVP") of 8cm or greater in the recipient twin's sac, with a simultaneously low DVP of 2cm or less in the donor twin's sac. With unequal placental sharing, the fluid for each twin may be normal, or the smaller twin may

exhibit some degree of low-fluid related to its restricted growth. The difference in size between the twins may be marked and may reach 40% or greater (a difference of up to 20% is considered within the normal range for MC twins).

Twin pregnancies with unequal placental sharing have to be followed very closely for possible development of TTTS. Serial ultrasound exams are performed to calculate the weights, watch the growth and fluid levels of each twin. Although the smaller fetus may be somewhat restricted in its growth, it is still typically possible for that twin to grow well enough to sustain normal function. The goal is to help get that fetus safely to a gestational age when early delivery would be an acceptable alternative to continued (or worsening) growth restriction in the womb ? while remaining mindful of the other, normally grown twin?s best interests.

## **Vascular Connections: Arteries Vs Veins**

As mentioned in the TTTS section, virtually all MC twin pairs have vascular connections within the single shared placenta. Importantly, there are different kinds of connections, because there are different kinds of blood vessels. Specifically, each twin sends arteries and veins from the base of its umbilical cord toward and away from the placenta. When vessels from each twin?s circulation erroneously connect within the placenta, they may do so in any combination: an artery to an artery, a vein to a vein, or an artery to a vein. The culprit in TTTS is the abnormal connection between an artery from one twin and a vein from the other. Arteries are surrounded by a muscular layer within the wall and therefore have the ability to pump blood in one direction. Veins, on the other hand, are more flaccid, without any surrounding muscular layer, and accept whatever blood is pumped into them.

When an artery and a vein connect, the blood will flow from the powerful artery into the vein, heading in one direction ? or from one twin (the one giving rise to the feeding artery) to the other (the one receiving the draining vein). This leads to a net transfusion from one twin to the other. In some instances, an artery may connect with an artery from the other twin. When this happens, both vessels are powerful and can pump blood in either direction. In this type of connection, blood typically flows back and forth between the twin circulations, rather than exclusively from one toward the other. This type of connection seems to offer a protective effect and in some cases will ?balance out? the worrisome one-way flow that an arterial-venous (AV) pair can cause. We are currently actively studying the effects of an AA connection to better understand its role. We are now able to look for these types of connections using ultrasound. We tend to find arterial-arterial (AA) connections more often when there is unequal placental sharing rather than true TTTS ? which might help explain why these twin pairs are at less risk. The main concern in these cases is the size and weight discrepancy, and specifically, focuses on at determining the critical point when the smaller twin?s smaller share of placenta will no longer be enough to safely allow it to grow and thrive in the uterus.

## **What options do I have?**

watch video <sup>[4]</sup>

There are no treatments that can be performed to improve the situation in this case, because the amount of placental share for each twin is fixed and cannot be changed. Amnioreduction and laser treatment are not beneficial, and could make things worse (as the underlying problem is not a matter of transfusion between the twins). Management is based on keeping a

very close watch on the smaller twin. This may allow us to see when the smaller one is starting to show signs of difficulty. Depending on the stage of the pregnancy this may lead to hospitalization for closer monitoring or delivery. It is very important to keep very close vigilance on the smaller twin because stillbirth in that twin could possibly lead to serious problems even in the survivor (due to the vascular connections between them). In severe, early cases of unequal sharing in which the smaller twin is severely growth restricted and at significant risk for demise before a viable gestational age is attainable, radio-frequency ablation (RFA) of umbilical cord flow to that twin may be an option, in order to protect the normally grown twin from the adverse effects stillbirth of the other twin could have.

At our center, we offer close monitoring by a combination of ultrasound and non-stress tests up to 3 times/week, and in some cases, in-hospital continuous monitoring and watching the pregnancy for signs of danger to the smaller twin. In this way, we maximize the benefits of longer gestation and maturity of the fetuses while maintaining close surveillance of the small twin for signs necessitating delivery.

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**Source URL:** <https://fetus.ucsf.edu/unequal-placental-sharing>

#### Links

[1]

<http://www.youtube.com/watch?v=6xzBlibyFXE&feature=Playlist&p=4960CD573577A1B7&index=0>

[2] <https://www.youtube.com/watch?v=xVFevyuBmN8>

[3]

<http://www.youtube.com/watch?v=i61rdomnaOc&feature=Playlist&p=4960CD573577A1B7&index=2>

[4]

<http://www.youtube.com/watch?v=rOH7urC9t2w&feature=Playlist&p=4960CD573577A1B7&index=1>