Understanding Monoamniotic Monochorionic Twins

by Jocasta Oliver

Most of this information has come from the Monoamniotic Monochorionic Support website, www monoamniotic org. I’ve added extra information to make it relevant for Wellington’s expectant parents. This report was written from my experience of being pregnant in 2007, and of course may be outdated, so please check with your obstetrician.

Just what are “Monoamniotic Twins”? Monoamniotic twins are always identical. Identical twins are created when one egg is fertilized by one sperm, and some time after fertilization, this single egg miraculously splits, forming two distinct embryos with the exact same genes. No one knows exactly what makes the egg split; it appears to be random, occurring approximately 1 in every 250 pregnancies. When the egg splits is important. One of the first things to form is the yolk sac and the current assumption is that it exists to nourish the forming embryo. The placenta and chorionic sac begin to form probably about the same time. After that, the amniotic sac forms. Imagine these three sacs as three balloons surrounding the baby (though to be technically correct, the placenta isn’t really a balloon).

Now, if the egg splits before the placenta has formed, each baby will have their own placenta, chorionic sac, and amniotic sac. This is uncommon, but it is possible, and this is why having two placentas doesn’t necessarily mean the babies are fraternal twins. If the egg splits after the placenta has formed (within a few days after conception), then the two babies will share a placenta and chorion, but will have their very own amniotic sac (this is the case for the majority of identical twins – also known as Di-Mo’s – Diamniotic Di chorionic). But if they split after the amniotic sac has begun to form (estimates range between 7 to 9 days after conception), then both babies will have to share an amniotic sac. If the egg splits later than this then conjoint twins occur. Many Monoamniotic twins lie very close or on top of each other and early ultrasounds cannot tell if they are separate babies.

Monoamniotic Twins can be referred to as “MoMo twins” for Monochorionic and Monoamniotic. Another acceptable term is “Monoamniotic” (with an “n” instead of a “t”). All are correct, but the most common term is Monoamniotic. Other terms used related to this type of pregnancy are “mono amniotic twins”, “One sack twins”, “One sac twins”, “Twins in the same sac”, “no membrane”, “monoamniotic membrane”, “mono twins” or “one septum”. These are only a few of the phrases that may be tossed around by the medical (and not so medical) communities. Please note that monoamniotic triplets may form as well.

If you have to have an ultrasound at a very early time, you may be able to see a yolk sac. The yolk sac gradually disappears as the babies develop. There is some research that states that the number of yolk sacs corresponds directly with the number of amniotic sacs. I.e. 2 Yolk sacs = 2 amniotic sacs. There is a physical reason behind this – it’s not just a coincidence. So, if you have had an ultrasound early enough to be able to see yolk sacs, ask your doctor how many there were. Most likely, if you saw two yolk sacs, you have been misdiagnosed, but this is not always true. Sometimes, a misdiagnosis can result because the ultrasound machine being used is not of sufficient resolution to be able to see both yolk sacs, even though they are really there. The ultrasound machines used at Wellington Hospital and Pacific Radiology are all high level machines and shouldn’t have this problem, but ultrasounds used in some specialist’s consultations may not be of high enough quality to see.

It is not an absolute rule; however, it is very likely that if you were able to see 2 yolk sacs, you do have two amniotic sacs. It is at least reason to continue looking for a membrane until and unless you have separate confirmation of the diagnosis.

Why are Monoamniotic twins a problem? Monoamniotic twins means that both babies share the same living space. They don’t just share their house, they share a bedroom, bathroom, and playroom. While it is still possible, even for a singleton to become tangled in his or her own cord, monoamniotic twins have to worry about becoming tangled in their sibling’s cord too. Cord entanglements (also called “Cord Accidents”) are the number one risk in this type of pregnancy.

However – to put this danger in perspective – virtually all cases of monoamniotic twins will have tangled cords. There are a few very, very rare cases where it is found after birth that there was no entanglement at all, but for the purposes of pregnancy management, it should be assumed that they all will become tangled to some degree. It appears impossible for two babies to exist in the same sac without at least twisting their cords. So simple entanglement is not a death sentence!

In order for entanglement to become dangerous, there must be cord compression. It is very possible to have entanglement apparent as early as 10 weeks (and probably even earlier), and still have both babies delivered safely at 34 weeks with no complications. It is very likely that the majority of tangles begin during the first trimester when there is so much extra room to move around in. So, even if you see tangles from the very start, it does not necessarily mean that you will have serious or fatal cord compression before you can safely deliver them. Nevertheless, as cord entanglement is a first sign of possible problems, that is what obstetricians will give the most amount of attention to. The weapons they have at their disposal in this flight are ultrasound, doppler imaging (a way of seeing actual blood flow through the cords), and fetal monitoring (CTG’s). With these tools, it becomes easier to detect problems early, before they become insurmountable.

There are plenty of cord entanglement pictures on the Monoamniotic website that show the level of entanglement that babies can survive through. Personally, I found it very comforting that so much entanglement can occur without problems to the babies, but the pictures are graphic and disturbing.

There is no kind of procedures that can be done to fix this condition. There is one medication, Sulindac, that reduces amniotic fluid volume in hopes that reduced fluid will also reduce movements of the babies. However, it is very experimental and there are no long term studies on the side effects of Sulindac on either the mother or the babies. Sulindac is discussed often on the Support website, however, I don’t know if it is available in New Zealand and my obstetrician did not support the use of it at the time of my pregnancy (2007). Other than Sulindac, there are no treatments that actually try to prevent entanglement or compression: the only treatment doctors can offer is delivery. If they discover serious problems before 24-26 weeks (the point of viability outside the womb), there’s nothing that can be done. After that point, if they discover life-threatening problems, they can deliver, although the earlier delivery occurs, the higher chance that the babies may suffer from the complications of extreme prematurity.

Preventing cord accidents

While some cord accidents are sudden, it appears that the majority of fatal cord accidents are gradual, and the

Continued on page 16
Understanding Mo-Mo Twins from page 15

The majority of those who will show symptoms that can be detected via high resolution ultrasound and/or fetal monitoring (CTG’s). This means if you are watching often enough, you will probably see the signs of cord compression in enough time to do an emergency delivery, before it is too late. So as: it is still the key to the management of a monoamniotic pregnancy is monitoring. How much and how often is a question that you will have to address with your obstetrician. Unfortunately, there is no consensus of a best treatment plan in terms of the frequency of monitoring. Generally speaking, more is better, up to and including 24/7 continuous monitoring. There has been a recent push to use continuous monitoring in the States, as some recent studies have shown not only higher success rates with 24/7 monitoring, but also later deliveries than those monitored less frequently. As far as I know, 24/7 monitoring is not offered in New Zealand.

Having monoamniotic twins means is that you will deliver via c-section, prematurely. Some doctors advocate 32 weeks, others 34, and yet others 36. The idea is to balance the risks outside versus the risks inside. Once you get to 32 weeks, the scariest of the preemie problems are usually past. At 34 weeks, all but minor preemie problems should be past, and at 36 weeks, they are almost considered full term. However, there is evidence that carrying past 36 weeks increases the risk of fetal death. So, given the fact that there are almost no prematurity risks at 36 weeks, there are very few reasons to carry beyond that point, and a LOT of reasons not to. Nevertheless, you have to weigh the risks of prematurity at each of these milestones against the risks of staying in utero, which are considerable. The longer they stay in, the more chances there are for fatal cord accidents. I believe most obstetricians are only going to 32 weeks without 24/7 monitoring.

As for delivering by c-section, that is very important. If there is entanglement, there is the possibility that neither baby could be born vaginally because they are tied together so closely. Even if there is only minimal tangling, the risks of cord prolapse (where the cord of the second baby is “born” at the same time as the first baby, thus compressing the cord and possibly causing irreparable damage to the second baby) are too high to dismiss. Admittedly, there have been monoamniotic twins born vaginally and at term who were completely healthy. There have even been a few cases reported in the literature of safely delivered monoamniotic twins, encouraging others to attempt it themselves. However, the risks of both carrying to term, and of attempting a vaginal delivery are so high that few doctors are willing to risk their patients on them. And anyone whose doctor encourages an attempted vaginal delivery should think very carefully about the risks and whether they are willing to take them for the minimal benefit of a potential vaginal delivery, which could easily end up being an emergency cesarean delivery.

Are they sure they’re in the same sac?

What may be the best news of all is that the amniotic membrane can be very thin...so thin, that’s it’s extremely hard to see on an ultrasound. So, misdiagnoses are common. If the diagnosis was made before 8 weeks, it is definitely not certain; it is simply not possible to get a reliable determination of whether a membrane is present or not before 8 weeks. After that point, there appears to be a window around 10 to 12 weeks where the membrane is easier to see; others note a window at 16 to 20 weeks. So, if you are diagnosed before that time, you may want to ask for a repeat ultrasound during one or both of these timeframes. Once you are referred to the high risk clinic you are likely to have fortnightly ultrasound so getting a look at these times is not a problem. Many women do not find out that there are even twins, much less whether there’s a membrane or not, until much later. In those cases, there is still a good chance that the membrane was just hidden. So, unless you’ve had a definitive, absolute diagnosis (see below for some of the ways that can be done), there still may be hope for a misdiagnosis.

Some of the tests they use to determine if the babies are truly in one sac are done through amniocentesis. If the doctor will be doing an amnio, for any reason, it is likely that during the amnio they will perform another test to try to find a membrane. One is called the Bubble Test, the other the Dye Test. During a Bubble Test, they will insert a small bubble of air into the amniotic cavity next to one baby. Then they will roll the mother over while still doing an ultrasound and see if the bubble travels to the other side (next to the other baby) unhindered. If it does, they will assume there is no membrane. The Dye Test involves injecting dye into the amniotic fluid next to one baby, then withdrawing fluid next to the other baby. If the fluid next to the second baby is also dyed, then they probably share a sac. Probably? In rare instances a membrane may be so thin that the babies have punctured it thus the dye (or bubble) can still get across. Sometimes these membranes are sufficient to keep the babies from becoming entangled; however, it is best to assume that it will not, and act accordingly.

One other diagnostic criterion they use to determine if the babies are truly in one sac is the presence of tangles. If they can clearly see tangles in their cords, then that pretty much conclusively determines that there is only one sac. Even if there is a membrane, that’s irrelevant - obviously it didn’t keep them from becoming entangled, so it is safest to consider them monoamniotic and proceed with managing the pregnancy as that way.

What about TTTS?

Twin to Twin Transfusion Syndrome (TTTS) is possible with monoamniotic twins. Until recently, it was thought that it was less common with monoamniotic twins than with monochorionic, diamniotic twins. However, some recent research states that the incidence of TTTS is virtually the same in both groups. Nevertheless, it may be more difficult to diagnose when the babies share a sac. One of the key indicators they use in diagnosing TTTS is the amount of fluid in the two sacs - if one has a whole lot, and the other has very little, that suggests TTTS. However, with only one sac, that is impossible to determine. So the main technique they will use to diagnose TTTS in a monoamniotic pregnancy is size discrepancy. Basically - whether one baby is of drastically different size than the other. Another important diagnostic clue is the condition of the bladder. In TTTS, one twin will have a very large bladder, but the other will have an almost invisible bladder. The article on page 21 gives even more information about TTTS and how it is diagnosed and treated.

Summary

- Monoamniotic twins are often misdiagnosed, especially at early scans
- A Monoamniotic pregnancy is high risk, but babies do survive
- This type of pregnancy is misunderstood and you may need to explain to other medical professionals exactly what your medical condition means and the risks involved
- http://www.monoamniotic.org is an amazing support network and has a bulletin board with mo-mo mothers around the world
- Being positive is the only thing you can really do!