Postpartum Haemorrhage (PPH)

Professor Susan Walker,
Head of Deparment

"Postpartum haemorrhage is responsible for 30% of all maternal deaths"

Transcribed directly from MOGCAST Episode 1. Listen here: https://shorturl.at/ckqtH

"Hey everybody, it's Sue Walker here. I'm Professor of Maternal and Fetal medicine based at Mercy Hospital for Women and the Head of Department of Obstetrics and Gynecology. Welcome to this MOGCAST today.

The purpose of these little podcasts, we're hoping that they'll be just little snack boxes of information that will help to scaffold your knowledge while you're on clinical rotation. And you can just listen to it in the car or when you're out walking, indeed, when there's a quiet time on placement. So, we hope it assists with building your knowledge.

But we also hope that it will help you to make the most of the clinical experiences and the things that you're exposed to while you're doing your women's health rotation and most importantly, help you feel like you are truly part of the team. Because you are. You are our practitioners of tomorrow. And the corollary is, if we're going to be any good at this, we'll be medical students all our lives. So welcome to this podcast.

And today what I'm going to be talking about is postpartum haemorrhage. Now, the reason postpartum haemorrhage is really important is because it's such a major contributor to maternal morbidity and mortality worldwide. So postpartum haemorrhage is responsible for 30% of all maternal deaths. 75% of what we call near-miss events, people going to ICU, massive transfusion requirement and so forth. Postpartum haemorrhage is the most common reason that we admit women to ICU, and it's the most common cause of severe maternal morbidity. So postpartum haemorrhage really matters.

And in terms of the causes, just reminding you that we talk about the four T's. So there is tone that is, is the uterus contracted or do we have a problem with uterine atony?

Trauma. Is there genital tract trauma? And this of course could be anything from right up at the top, a ruptured uterus to a cervical laceration to a vaginal tear, a vulva or a perineal tear.

The third T is for tissue that is for retained placenta. So, if there's been some placenta left behind, remember obstetric haemorrhage is just like every other haemorrhage. You just need to be able to apply pressure to it. And you can't get that front and the back wall of the uterus contracting down to collapse all of those blood vessels. If there's something in the way it might be clot or more commonly, a cotyledon of placenta left behind. So retained placenta is the third t and the fourth one is called thrombin. That is, for coagulopathy. And coagulopathy as you know, it might be acquired due to pregnancy or it might have been preexisting. So I guess common preexisting things might be things like ITP or Von Willebrand's disease, for example. But the acquired ones we think about, particularly in pregnancy, are those mums who've got sick because of pre-eclampsia and developed DIC, mums who have had an abruption, mums who are septic, mums who've had a fetal death in utero, and the less common cause but the catastrophic coagulation failure that can accompany amniotic fluid embolism.

Okay, so that's just summarized our etiology. And if we look at the groups of those, the majority of them will be related to atony and the atony with or without a retained placenta. That is, the uterus can't contract down because there's something stuck in the way. But it might not be the retained placenta. There might be atony just because labour's been too long in highly multiparous patients, they're a little bit more likely to have a uterus that's refractory to contracting afterwards. Or if a mum's septic or there are other reasons why the

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uterus is not contracting very well, for example, some medications that she might be on.

And then about 1 in 5 of these, so about 20% are due to genital tract trauma, which as I say, can be from all the way at the top to all the way down the bottom. And then there's a group where there's no single cause, or there might be multiple contributing factors. But I guess when we're thinking about how are we going to manage it when we see it happen in labour ward, the big things we want to think about are atony, retained placenta, genital tract trauma.

Okay, so I think the postpartum haemorrhage, you really only need to think three things you need to think communicate, resuscitate, and stop the bleeding. They're the three jobs. you need to communicate with everybody in the room and everybody outside the room. You need to resuscitate the mum who might be suffering from the effects of hypovolemia, and then potentially secondary consequences, consumptive coagulopathy or renal impairment or coagulation failure or whatever. And then you need to stop the bleeding, obviously.

And I reckon there's three general scenarios where you might be trying to do these three things. You might be trying to do it on the phone, might be trying to do it in labour ward, or you might be trying to do it in theatre. So if you can imagine for me that you've got a grid of nine boxes, and your three columns are on the phone in the labour ward and in theatre, and your three rows are communicate, resuscitate, and stop the bleeding. Let's head off and assume that now you're in labour ward. And when you're in labour ward, I guess some of you will be a bit surprised by how much blood loss is considered to be absolutely normal during labour and delivery. And so we accept 500 mls for free, which is a fair bit in any other context.

But let's say you've just delivered a mum. It's her third baby. Big baby, spontaneous, quick labour. And now there's brisk loss such that you think, look, this is 750ml that has been lost straight away after delivery. Okay?

So you might ring the doctor. And that will be you very soon. And on the phone they need to communicate. So the first thing is call for help. This is an obstetric emergency. So it might be a code pink or there might be another code in your hospital, but call for help. Get the history. Find out are there any pre-existing risk factors that we need to know about? Has she got pre-eclampsia? Has she got von Willebrand's disease? Assess the risk factors. Are there risk factors for atony or retained placenta? And then make sure that we've got an active group and antibody screen that's already been sent off so that the lab at least know that they could start giving group specific non cross matched if we needed to, and it will make the cross match a bit quicker.

Okay. So they're the team that you need to let know. That's the communication side of things. Let your colleagues know. Have out the code pink, shout out for other people to help you and make sure that people on the labour floor know, hey, there's something big going on in our room and we just need to get on top of it. Okay, so the second thing that we're going to do in the room is resuscitate. So we need to have somebody who is going to be our scribe and, and who is going to assess the loss. And increasingly we are all moving towards weighing loss. And although that's not perfect, it's much, much better than us just visually estimating it. So that means that all the pads, all the blueys, any of the drapes, any of those things will all be weighed so that we can estimate more reliably how much blood someone's lost.

The scribe also needs to be responsible for doing very frequent observations; blood pressure, pulse, conscious state, respiratory state, popping on an oximeter and making sure she's well oxygenated.

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If the mom's feeling lightheaded, you might be wanting to pop her head down. And if the people in the room have got the capacity to do so, we should get them to put in an IV, not a small one. Put in a 16 gauge IV so that we can start resuscitating with fluid.

Okay, so that's communicate, resuscitate. Now stopping the bleeding. What can you do in labour ward? So you're on the phone at the moment. And the first thing that you want to do is tell them, hey can you rub up a contraction. Can you give the oxytocic? If you've already given the oxytocic you can repeat this. If you haven't delivered the placenta yet, can you deliver the placenta and can we pass an indwelling catheter. So these are the things that you've done before you've even arrived on labour ward on the phone. You've told people what to do, get help, get the history, find out the risk factors, get a group and antibody screen going, assess the loss. Start someone as a scribe to record observations, head down, pop the drip in. And then in terms of stopping the bleeding, can you rub up a contraction, give the oxytocic, make sure the placenta is delivered, pop a catheter in and I'm on my way.

Okay. So now you walk in you're in the labour ward, all right. And you're now actually taking charge of the situation. So you need to think about what am I going to do next in terms of communicate, resuscitate and stop the bleeding? So if the bleeding is still ongoing, by the time you get there and someone's done all of these things already, then you want to start communicating by keeping theatre, anaesthetics and pathology in the loop, because you might end up taking this patient to theatre and you might need some blood or blood products pretty quickly, and you're going to need someone to help you with resuscitation and anaesthetics. Now, quite commonly, if someone's called a code pink by now an anaesthetist might be with you. And that's great, because then they can take over the resuscitation side of things and the obstetric team can take over the stop the bleeding side of things.

So from a resuscitation point of view, again recording loss and observations, some IV volume, some IV oxytocic. So start an oxytocin infusion. We'd normally go 40 units over four hours. So ten units an hour. Start some oxygen if that might be needed to assist with oxygen delivery, and make sure that bloods have gone off for an FBE cross match and clotting profile. Okay, so that's the communication and resuscitation side of the things that we're going to do in labour ward. But it really doesn't matter how well you resuscitate the mum, we're not going to be able to fix this without stopping the bleeding. And remember, the utero placental bed has about 600ml a minute going through it. So however much you pour in fluid at the top end you've definitely got to stop the bleeding at the bottom end.

So to stop the bleeding category, first of all get someone to check the placenta. Is it intact? If there's a big chunk of the placenta missing then we just need to go straight to theatre and go and find that. So exploring the uterine cavity. So get someone to check the placenta as best you can, inspect the genital tract and repair it. So sometimes we'll find that there's just a massive bleeder from the base of an episiotomy or a tear. And as soon as you put the sutures in it, drama's over. haemorrhage stops, everybody leaves. Mum and baby get on with breastfeeding and the drama is over. So have a good look, as best you can at the length of the vagina and the perineum and repair any obvious genital tract trauma that you can see.

In terms of uterotonics. We're now going to give ergometrine. So usually 0.25mg IV 0.25mg IM. And then our other uterotonics that we can use are misoprostol. So we'd usually give that rectally a thousand micrograms of misoprostol and then a prostaglandin. So something like carboprost that we give as an im injection.

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At this point we would give tranexamic acid as well. We give a gram of tranexamic acid knowing that we might need to repeat it in 15 minutes if we've had an inadequate response. Okay. So we've probably now reached the limits of what we can do in labour ward. Right? So remember we've communicated, kept theatre, anesthetics, pathology in the loop with resuscitation. We've counted the loss. And the obs, corrected the volume,given IV oxytocin as an infusion, taken all the bloods that we need FBA cross match four unit's clotting profile. And then in terms of stopping the bleeding, check the placenta is intact, is complete. Inspect the genital tract and repair it. And then give maximum uterotonics to try and get that uterus contracting. Ergometrine, misoprostol, the syntosin and infusion we've already talked about and then potentially carboprost. And look, I think if we are still bleeding at this point and I think just about anybody who gets to 1500, it's time to go to theatre. So we've managed as best we could on the phone. We've managed as best we could in labour ward. Now let's move to theatre.

So when we go to theatre, communication means that you need to talk to a few other people. You might need to phone a friend. And it would not be uncommon for me to call for surgical backup, maybe from a gynecologist or another surgeon or another obstetrician, just because time and blood loss can get away from you. And it's sometimes very helpful to have another pair of hands. So often it's a senior registrar. But if you need to call for another consultant, you should. You might be wanting to talk to a transfusion specialist. So quite commonly by this point, we may all be about to call a code white. Code white is our massive obstetric haemorrhage response. And when we activate our major haemorrhage protocol, this just lets the blood bank know, hey, we're going to need blood and factors pretty quickly, and we might need a transfusion specialist to guide us about what exactly we need. This might be a point that you're going to think about. Do I need to let ICU or high dependency know that we're going to need a bed?

And in some hospitals they might consider calling interventional radiology at this point. So we're now starting to think about a broader group of people. Surgical backup, getting pathology really in the loop, maybe thinking about ICU or HDU and possibly interventional radiology. Okay, so that's communication. What about resuscitation? Remember the principles are always going to be maintain circulation and oxygenation. You're also want to treat and prevent coagulopathy. So the resuscitation side of things now is probably going to be taken over by your anaesthetist when you go to theatre. So they are likely going to give this patient a general anesthetic. Very occasionally we might use a regional if it's a very effective regional, and it's already in place, but quite commonly will be drifting people off to sleep for this. So they will then maintain circulation and oxygenation. They might want to put a central line in. They might want to put an arterial line in. They're going to start actively thinking about managing coagulopathy now that we've started to lose a fair bit of blood. So this is going to be tranexamic acid, as I've mentioned already, if that hasn't been given, it should be given now. And the other thing we want to start thinking about our what are some of the complications we're going to be running into now?

Things like hypothermia and acidosis and hypercalcemia, all of which can make uterine atony more refractory and can also predispose you to more of a DIC like phenotype. Okay. So they're going to manage the coagulopathy. And this is going to involve blood and clotting factors. And whether that's cryo, or FFP or platelets, there's usually a point of care coagulation assessment that's done to decide what do we need in terms of platelets, cryo, FFP and blood.

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And then they're also going to look at is the patient cold. So usually put a bear hugger on them which is that nice warm blow up blanket that goes over a patient. Because remember she might have now been sort of half an hour or an hour in stirrups, wet drapes, naked from the waist down. So we really need to get on top of hypothermia to make sure that we don't compound some of these problems. treat any acidosis and any hypocalcemia.

Okay, so in theatre, that's communication and resuscitation. Finally. Now we need to stop the bleeding. And so we've got a few options open to us. Obviously what we would like to do is conserve fertility. But on the other hand what we have to do is stop the bleeding and save her life. So let's go through fertility conservation first. First thing we're going to do is an examination under anaesthetic and a repair of any genital tract trauma. So this means when the patient's asleep, the legs will go up in lithotomy, alright and we'll gently insert a hand into the uterine cavity and feel around all of the uterine walls to make sure that the cavity is empty. That is, there's no stuck placenta on a wall of the uterus. And we're also going to be checking to make sure the uterus is intact, that our hand doesn't just sort of float straight out into the peritoneal cavity because there's been a uterine rupture in labour. So that's the examination under anaesthetic of the uterine cavity.

And then once we're sure that the cavity is empty and intact, then we're going to go on and examine the rest of the genital tract. Look at all the cervix. Look at the vagina vulva, perineum and repair any of that damage that needs to be done. If there's ongoing bleeding from above, this will usually be refractory atony. And so now we've got a couple of options.

First thing we can do is put in what's called a backri balloon. So this is a balloon catheter that we pass through the cervical os into the uterine cavity. And we blow the balloon up a bit like a catheter balloon, but with a great greater capacity. And we might put 3 to 500ml of warm, normal saline in there. And this really tamponades the walls of the uterine cavity and compresses down all those blood vessels that are circulating with 600 mls a minute going through the placenta bed. So the bakri balloon we put inside the uterus, and then we pack it in with a vaginal pack.

The second thing we could do is a laparotomy. So we open the abdomen and we can do what's called a B-Lynch suture. And a B-Lynch suture is effectively a compression suture that we apply to the uterus to manually cause the uterus to contract down and stop bleeding. You can also do arterial ligation. That is what you tie off the uterine arteries or the internal iliac arteries. But once you've done those things, tried the bakri balloon, that's failed. You've moved to a laparotomy, done a B-lynch suture for whatever reason that's failed. Or devascularization of the pelvis either with interventional radiology or surgery. I think if all of these things have failed and she's continuing to bleed, then we've reached the time of the hysterectomy and so the hysterectomy should proceed reasonably quickly.

We know that the single biggest predictors of maternal mortality with haemorrhage is too little, too late. Not going to theatre soon enough, not having a clear plan, not going for definitive surgery early enough. So that is the thumbnail sketch of how we would manage postpartum haemorrhage.

So I hope that communicate, resuscitate, stop the bleeding you find useful. Even when you're just dealing with normal deliveries or normal cesarean sections that you can see that those three principles apply. And after what was otherwise expected to be a normal birth, you might be managing this partly over the phone. Then we need to think about what will we do in labour ward? And finally, what's the moment that we go to theatre?

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So I hope this has been helpful. Remember, you are such a valued part of the team. So offer to scribe. Offer to go and get the postpartum haemorrhage kit. Offer to go to theatre.

Ask if there's anything you can do to help. we would love to have you completely embedded in any of these obstetric emergencies as well, because you're all going to be doctors soon enough, and we want to make sure that we give you the best opportunity to learn from all these very practical experiences that you'll have on rotation. So I hope you have a great day in clinic, in theatre, in labour ward. Wherever are you going to be today. I'll look forward to talking to you on the next MOGCAST. Okay. Bye for now. “

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