Midlife Clarity with Dr. Tracy Page

"Clarity Changes Everything"

Hosted by Dr. Tracy Page

Episode # 6 — PCOS is Insulin Resistance — Not a Hormone Disorder

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Hi, I'm Dr. Tracy Page, and welcome to the podcast. I'm so glad you're here. Today, I want to talk to you about another patient case. I find these really helpful because patients come to see me for all kinds of things. And like I've said before, we're more alike than we are different. So you're going to recognize something in this story that may be pertinent to you or some other woman you love, and I hope you'll share it with her. This is different because this is a patient who hasn't been able to have a baby, and she's 40 years old. And she thinks she's never going to have a child. And you might think, well, this doesn't apply to me. I already have kids. But the things that she was struggling with underneath the surface are actually the things that could fix her infertility.

And these are things that all of us need to work on. So you might be surprised how much, as I said, we are more similar than different. Okay, so let's start with: if you've been told that you have PCOS, polycystic ovarian syndrome, or if you've been trying to get pregnant and wondering why your body isn't cooperating, I want you to listen closely to this episode because what I'm going to share with you today is not what most OB-GYNs or even reproductive endocrinologists are telling their patients. So my 40-year-old had no periods for the last four years. She was gaining weight despite trying not to. She was anxious, exhausted, and quite honestly, I think she was terrified because in the back of her mind, the thought of not being a mother was pretty sad, and she thought motherhood was possibly not even existent for her. Her doctors gave her a diagnosis of polycystic ovarian syndrome, PCOS. They offered her birth control to regulate her cycles because her cycles were all over the place. And you know, she tried it, and she couldn't tolerate it. She gained more weight, her breasts were tender, and her cycles didn't regulate. And so she was just left with a label of PCOS and no real answers. And her body felt completely out of control. Now, you might know somebody who's going through this, or you may be going through this yourself. But what nobody had told her, what I'm going to tell you, is that the standard workup completely misses the diagnosis and how to help patients. She actually had three separate interconnected root causes that were driving every single one of her symptoms. And until those root causes are addressed, no fertility protocol is ever going to help her. She's not going to get her body back. She's not going to feel less anxious, and she's not going to lose weight. And so the PCOS part that you might have picked up on and said, " Oh,

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I don't have that". Actually, everything leading up to that diagnosis is what needs to be corrected. And some of us have similar problems. So what I'm going to do is walk you through her story, what we found, what it means, and exactly what to do about it. Because honestly, she's not alone. Many of you are out there. And if you're listening right now wondering if it's you, well, very well might be, or someone that you love. So welcome back to the podcast. I can't wait to share this information with you. She's told PCOS that she has PCOS, but really nobody told her that her gut, her thyroid, her insulin resistance- everything that she wasn't addressing was working against her ability to actually get pregnant in her case.

And in your case, it might be working against you to lose weight and to feel better and to be less anxious. So, as I said, I always change my patients' names. We're going to call this patient Mary. She's 40 years old. She came to us with what felt, on the surface, like a straightforward PCOS case. But as we dug into her history and her labs, it became clear that what was happening inside her body was far more complex and far more treatable than anyone had even told her. So she hadn't had a natural period for about four years, meaning she wasn't regular. Sometimes she would have a period; she might go months, two, four months, not have one, and then she'd have one. Then she went to a period where she didn't have a period at all. And there was complete silence from her body. No cycle, no ovulation, no hormonal rhythm.

She was dealing with weight that wouldn't budge no matter what she did. She had anxiety that had gotten bad enough that she'd been put on an SSRI. That's a serotonin medication. She couldn't fall asleep at night. And she tried birth control pills to regulate her cycle. But as I said, she stopped because she couldn't tolerate them. From the outside, she looked like, you know, she was healthy. And you wouldn't really know that she had anything else going on except for some excess weight. But her body was sending a distress signal that no one had fully decoded yet. And that's what we're going to talk about today.

So what Mary's complete workup looked like and revealed: each number meant something towards her fertility. So she had autoimmunity. She had elevated thyroid peroxidase antibodies. And that gave her a positive diagnosis of what we call

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Hashimoto's thyroiditis. So she actually had an autoimmune thyroid. Her TPO antibodies were 236. Normally, they should be under 35. Her TSH, thyroid-stimulating hormone, was 3.92, which was suboptimal for fertility. So in a perfect world, we'd want her conception TSH to be 2.5 or less. So we want it to be lower. Her free T3 was 3.4, which is okay in most cases, but that's low-normal active thyroid hormone. It won't be enough for her cells. It would be insufficient. So she needs that number to be a little bit better, especially in pregnancy. Her reverse T3 was high at 19.9. So it's elevated, and the body's blocking thyroid hormone due to chronic stress and inflammation. When reverse T3 goes up, it competes with free T3 because reverse T3 is inactive. It blocks active T3 from binding to the thyroid receptor, so your thyroid doesn't function at its best. Her hormones, her PCOS pattern, her free testosterone was 8.7. So it was high, and she had androgen, which is the testosterone excess, which was suppressing her ovulation. Her progesterone was 0.52, so not even one, which is critically low. This confirms she's not ovulating, and you need progesterone to get pregnant. Her estradiol was low, which is consistent with anovulation. Her metabolic state: fasting insulin was 11. It was elevated for her age. It was elevated just in general. We'd like fasting insulin to be less than 6, but this indicates significant insulin resistance; for fertility, we need insulin to be less than 6.

Her LDL was 106, mildly elevated, consistent with some metabolic dysfunction occurring behind the scenes. Her micronutrients: her vitamin D3 was low at 28; optimal for fertility and immune regulation is 60 to 80. Her B vitamins were suboptimal across the board, critical for methylation and ovulation. And her homocysteine was 8.5. It should be below 7. So it was elevated. Homocysteine is a methylation red flag. So she had a methylation problem, and she didn't even know it. She just thought she had a can't-get-pregnant" problem, right? Now here is what makes this case so important. Each of these numbers in isolation might seem very manageable, but together they tell a story of a body in which every major system involved in fertility- the thyroid, the immune system, the metabolic system, and the nutritional foundation system- is compromised. They're all simultaneously compromised. And they are not separate problems.

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They're all connected. And they all start in the same place. So let's talk about root cause. I want to spend real time here because if you have PCOS, or if you know someone who does, understanding this science could completely change the conversation you're having with your doctor. So let's go to root cause number one: insulin resistance, the engine of PCOS. Here's the single most important thing I want you to understand about PCOS. It is not primarily a hormone disorder. It's a metabolic disorder driven by insulin resistance. The primary hormone is insulin. It's a metabolic disorder driven by insulin resistance. Hormone chaos, elevated testosterone, absent periods, and anovulation are all downstream consequences. And if you treat only the hormones without treating the insulin, you'll never fully resolve PCOS. Here's the mechanism. When insulin is chronically elevated, as in Mary's case with a fasting insulin of 11, it signals the ovaries to produce more androgens, meaning testosterone. More androgens, specifically testosterone, suppress follicle development. No follicle development means no ovulation. No ovulation means no progesterone. No progesterone means no period. And no ovulation means no pregnancy. Do you see how it's connected? Mary's progesterone of 0.52 isn't a hormone problem to fix with progesterone. It's a metabolic problem to be fixed by addressing the insulin resistance that prevented ovulation in the first place. So again, let me go back to the pyramid. So high insulin, okay, so remember that if we have a high fasting insulin, it signals the ovaries to produce more androgens, which is testosterone. More androgens, specifically testosterone, suppress the development of follicles in the ovaries. No follicle development means no ovulation. No ovulation means no progesterone. No progesterone means no period. And no ovulation means no pregnancy.

Okay, so the statistics on insulin resistance and PCOS. Up to 80% of women with PCOS have some degree of insulin resistance, even those who are not overweight. Insulin resistance is present in approximately 75% of lean women with PCOS and nearly 95% of overweight women with PCOS. Elevated insulin directly stimulates ovarian theca cells to produce androgens, creating the high testosterone seen in PCOS. Women with PCOS and insulin resistance have a 5 to 8 times higher risk of developing type 2 diabetes. Normalizing insulin sensitivity in women with PCOS restores ovulation in up to 80% of cases without any hormone intervention. 80% of the cases. So Mary's fasting insulin of 11

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is a serious early warning sign. For fertility and long-term metabolic health, insulin should be below 6. So here's a key point. PCOS is insulin resistance wearing a hormonal costume. Fix the insulin and the hormones often fix themselves. So if you know a young lady or an older lady who's struggling with pregnancy, and she's been told she has PCOS, or she's been told she has high testosterone, or she's been told that she doesn't ovulate, you have to share this information with her.

Root cause number two: Hashimoto's thyroid disease, the misdiagnosis. This finding changed everything for Mary, and it has been completely overlooked. Her TPO antibodies came back at 236. The upper limit of normal is 35. That is Hashimoto's diagnosis, an autoimmune attack on the thyroid gland until definitely proven otherwise. Here's why this matters so much for fertility. The thyroid is not a side player in reproductive health. It is a central regulator. Thyroid hormones are required for proper follicle development, progesterone production after ovulation, maintaining a healthy uterine lining, and supporting an early pregnancy. When thyroid function is impaired, even slightly, the entire reproductive axis is affected. And I hate to say this, and I have seen it, and it's sad. I have seen women come into my clinic who have had one, two, sometimes three miscarriages, and no one has ever checked their thyroid. No one has ever checked their levels to see what's going on. Okay, so Mary's TSH is 3.92, and it might get stamped as normal because it falls within the guidelines of a normal range, but it's not optimal by any means. The conventional range goes up to 4.5 or even 5, but the American Thyroid Association recommends a TSH below 2.5 for women who are trying to conceive. And Mary's reverse T3 is 19.9, which tells us her body is actively blocking the conversion of thyroid hormone into its usual form, which is free T3, which is likely driven by chronic inflammation from her Hashimoto's itself.

So, Hashimoto's and fertility: here are some statistics. Hashimoto's thyroiditis affects approximately 1 in 8 women over their lifetime, making it the most common autoimmune disease in women. Women with subclinical hypothyroidism, a TSH of 2.5 to 10, have a 2 to 3 times higher rate of miscarriage in the first trimester. And elevated TPO antibodies are associated with a 3 to 4 times higher risk of pregnancy loss, even when TSH is normal. So even if their TSH is normal, they're still at risk, and that's pretty significant.

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TSH above 2.5 at conception is associated with significantly impaired implantation and higher early pregnancy loss. So if their TSH is above 2.5 at conception, they have significantly impaired implantation and higher early pregnancy loss. PCOS and Hashimoto's coexist in approximately 25 to 30% of women with PCOS, far higher than chance alone would predict. Undiagnosed Hashimoto's is a leading cause of unexplained infertility in women under 35. So again, if you're a mom listening to this, this might be pertinent for your daughter. Treating Hashimoto's before conception can reduce miscarriage risk by up to 50%. 33 years old and you don't understand why you're not getting pregnant, you may have Hashimoto's, and it's never been checked. So this lady, she's in her 40s. She's gone several years without a period, and years before that, she had an irregular period. At the root of her thyroid dysfunction is an autoimmune attack that has been silently progressing, entirely undetected because no one ever ordered a TPO antibody test. So, here's the pearl: a TSH of 3.92 looks normal on a lab report. It is not normal if you want to have a baby.

Okay, root cause number three: the gut. This is the upstream driver that nobody treated. This is where I want to spend a little extra time, because this is the piece that most conventional fertility workups completely ignore, and it may be the most important piece of all. Mary came in with what was described as a subclinical gut dysfunction. Her nutrient levels told the story. Low vitamin D, which is absorbed in the gut, depleted B vitamins, elevated homocysteine indicating poor methylation, and borderline iron. These deficiencies do not happen in a gut that is functioning well. I would say they are the fingerprint of impaired absorption, intestinal permeability, or, as you might have heard of it, leaky gut- and gut dysbiosis, an imbalance in the gut microbiome. That's what gut dysbiosis means. And here's the critical scientific insight that changes everything. The gut and the immune system are not separate systems. They are the same system. And you know what? I don't care what topic I'm talking about; I have this conversation every single day with someone. So let me repeat that. The gut and the immune system are not separate systems. 70 to 80% of the immune system lives in and around the gut. When the gut is inflamed and permeable, what is commonly called leaky gut, immune activation increases. That immune activation drives autoimmunity. In Mary's case, it is almost certainly a primary driver of her

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Hashimoto's. So now I hope you understand the gut. But it goes even deeper than that. The gut also plays a direct role in hormone metabolism. And again, I have this conversation about the gut and hormone metabolism with every woman that walks through my door. This is an entire community of gut bacteria called the estrobolome. I think I said it right. It's spelled E-S-T-R-O-B-O-L-O-M-E, for those of you who want to write it down, and it regulates how estrogen is processed and recycled in the body. When the gut microbiome is disrupted, estrogen metabolism is disrupted. And I have this talk with every woman who goes on hormones. I always say you have to fix the gut before you put the hormones in, or you're just going to run into problems. And I will tell you, the Wisconsin Institute of Functional Medicine, which I own, has been open for five years in May. And I've taken care of thousands of women. I'm just going to divert here for a moment. What I have learned over those years, with all those women, is that if you don't have a healthy gut, you cannot have hormones working properly. You have to treat the gut. If you give hormones and you can't get them regulated, it's not a hormone issue. It's a gut issue every single time. Okay, I diverge. When the gut microbiome is disrupted, estrogen metabolism, as I said, is disrupted. And in women with PCOS, that disruption amplifies hormone imbalance even further.

So let's talk about the gut-fertility-autoimmunity connection by the numbers. So here are some statistics. 70 to 80% of the immune system is housed in gut-associated lymphoid tissue, making gut health central to any autoimmune condition. So you see, it's not even just hormone regulation; it's autoimmune conditions. Women with Hashimoto's have measurably higher rates of intestinal permeability, leaky gut, than women without autoimmune thyroid disease. Gut microbiome disruption is found in up to 90% of women with PCOS in recent sequencing studies, so that 90% of women with PCOS has some type of gut microbiome disruption. Women with PCOS show significantly lower gut microbiome diversity compared to healthy controls, and that's linked to worse insulin resistance and androgen excess. So women who have low gut microbiome diversity compared to healthy controls have worse insulin resistance and they have androgen excess. The estrobolome gut bacteria that metabolize estrogen directly influence hormonal balance. Disruption contributes to estrogen dominance patterns. So remember that those special bacteria that metabolize estrogen, they influence

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hormonal balance. Any disruption contributes to estrogen dominance patterns. Vitamin D deficiency, and Mary's level was 28, is found in up to 67 to 85% of women with PCOS. It is both a consequence and a driver of immune dysfunction and insulin resistance. I always tell my patients that vitamin D is like a hormone in the body. It's not just a vitamin. Elevated homocysteine- and remember, Mary's was 8.5- is associated with impaired embryo implantation, early pregnancy loss, and neural tube defects, and it's correctable with methylated B vitamins. So we can actually correct that. A lot of times people think about folate and methylfolate, which is very important, but all the B vitamins are super important, and they may need to be methylated if she has a methylation problem.

Mary doesn't just need a gut supplement. She needs a GI-MAP test, a comprehensive stool analysis that will show us exactly what pathogens, what dysbiosis, and where her gut microbiome is off, and permeability markers such as zonulin, so that we know if she has leaky gut or gut permeability. We can treat her gut specifically if we have these answers, and that's why we just don't give probiotics. We actually want to know what's going on in your gut, and your gut is different than somebody else's gut. A generic probiotic is just not enough, not in her case, and honestly, not in most cases. When PCOS and Hashimoto's coexist, the gut is almost always the common upstream driver. Treat the gut, and you treat both. So now you understand why the diagnosis of PCOS is so much more than just that.

Okay, let's talk about nutrient foundation and why Mary can't ovulate without it. Okay, so micronutrients and methylation, they're the fertility foundation nobody else talks about. I want to take a few minutes to talk about something that doesn't get nearly enough attention in fertility, especially when we're talking about how to optimize your fertility. Micronutrients and methylation, because Mary's labs show significant deficiencies in nutrients that are absolutely non-negotiable for ovulation and healthy pregnancy. Vitamin D is the fertility hormone, amongst many other things. Vitamin D is not just a vitamin. Remember, I said that. It functions more like a hormone in the body, and ovarian cells have receptors for it. It also has receptors on uterine cells and immune cells. Mary's level of 28 is considered deficient. For fertility support, we want to see levels

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between 60 and 80, closer to 80. Below 30, the research is detailed: implantation rates drop, miscarriage risk rises, and autoimmune activity increases. Women with vitamin D levels below 30 have significantly lower IVF success rates. Some studies show live birth rates up to 40% lower. Vitamin D receptors are found on ovarian follicles; deficiency directly impairs follicular development and egg quality. Low vitamin D is strongly associated with elevated TPO antibodies and more aggressive Hashimoto's progression, and supplementing to optimal vitamin D in women with PCOS has been shown to improve menstrual regularity, reduce testosterone, and improve insulin sensitivity.

So methylation and B vitamins are your body's master switch is kind of how I think about it. So Mary's homocysteine is 8.5, so right away I knew that her B vitamins were off. Optimal should be below 7, and ideally closer to 6. Elevated homocysteine signals that the methylation cycle isn't running properly. Methylation is a fundamental biochemical process. It happens billions of times per second in every cell in your body, and most of you probably don't know that. It is required for DNA repair, hormone detoxification, neurotransmitter production, and it's critical for fertility, proper egg development, and embryo formation as well. When methylation is impaired, typically due to B vitamin deficiencies, genetic variants like MTHFR, or gut malabsorption, the consequences are huge. Elevated homocysteine damages blood vessels that support the uterus and the ovaries. It impairs the development of the follicle. It increases miscarriage risk, and it can affect fetal neural tube development if pregnancy does occur.

So, some facts. Elevated homocysteine above 10 is associated with a 2 to 3 times higher risk of recurrent pregnancy loss. Homocysteine above 7.5 in early pregnancy significantly increases risk of neural tube defects, even when standard folic acid supplementation is occurring. Methylated B vitamins, 5-MTHFR plus B12, are required to normalize homocysteine. Standard folic acid is insufficient for women with MTHFR variants. So in these cases, you need methylated folic acid. B vitamin deficiency impairs progesterone production, directly connecting methylation dysfunction to the anovulation Mary's experiencing. So now you see how it's all connected. This is why we don't just give Mary a standard prenatal vitamin and send her home. We give her activated, methylated B vitamins specifically because her gut absorption is impaired.

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And if she has a methylation variant, synthetic folic acid won't do the job. So this is so important. Her methylation isn't working. She has a variant. Her gut absorption isn't good. So you can't just give her regular folic acid or a regular prenatal. You have to give her activated, methylated B vitamins.

Okay, what we did and why. Let's go into the roadmap, because understanding the problem is only half of the issue. You want to know what to do. And in Mary's case, it gives a beautiful, clear priority order that I think is relevant for so many women listening right now, whether you have PCOS or not.

Priority one: fix insulin resistance first. Honestly, it's one of the best things you can do for longevity. Everything else depends on this. Until insulin comes down, testosterone stays up. Until testosterone comes down, ovulation can't happen. This is the foundation. Okay, what do I give her? Myo-inositol, 2 to 4 grams a day, the most evidence-backed supplement for insulin sensitivity, specifically in PCOS. Multiple randomized controlled trials show it can restore ovulation. So, myo-inositol to fix insulin resistance. Berberine, 500 milligrams, 2 to 3 times a day with meals. Clinical data show comparable effects to metformin for insulin resistance in PCOS without all the side effects of that drug. Protein-first eating: aim for 30 grams of protein at each meal. Protein blunts insulin response and reduces appetite-driving hormones. Post-meal walks, 10 to 15 minutes after eating, have been shown to reduce postprandial, or post-eating, glucose and insulin spikes by 20 to 30%. And resistance training, 3 to 4 times a week, the most powerful tool for improving long-term insulin sensitivity, also reduces testosterone in women with PCOS. What's our target? Get fasting insulin below 6. When insulin normalizes, we expect testosterone to begin falling. And when testosterone falls, ovulation becomes possible again. And I didn't give her any hormones.

Priority two: treat the Hashimoto's aggressively. This is the priority that was missed in Mary's case, and it's non-negotiable if her goal is fertility. With a TPO of 236, we're dealing with an active autoimmune attack on her thyroid. Two interventions are backed by strong evidence that every woman with Hashimoto's needs to know. Number one, strict gluten elimination. You're not going to love me, but this is important. Strict gluten elimination is a non-negotiable for Hashimoto's. And this doesn't mean only

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if you have PCOS; you should listen to this if you have Hashimoto's too. Multiple studies show that molecular mimicry between gliadin, a gluten protein, and thyroid tissue drives autoimmune attack. Gluten elimination has been shown to reduce TPO antibodies by 30 to 50% over six months. So, with six months of no gluten, you can reduce your antibodies by 30 to 50%. Selenium, 200 micrograms a day, is the most evidence-backed supplement for reducing TPO antibodies. A 2022 meta-analysis confirmed significant reductions in TPO antibodies with selenium supplementation. But hold on. If you have not had your selenium level checked, please, please do not start supplementing, because selenium toxicity is a real thing. So get your level checked first to see if you need to supplement. Vitamin D3 is another one you should have checked, because it's fat-soluble and can become toxic in the body. A, D, E, and K are all fat-soluble and should always be checked before supplementing. But if you do need a supplement to get to that 60 to 80, vitamin D3, 5,000 IUs with K2, daily, is critical for immune modulation and reducing autoimmune activity, and it also directly supports thyroid hormone conversion. And the last one, TSH below 2.5, is the fertility-specific thyroid target. Mary's 3.92 requires active intervention before any attempt at conception.

Let's talk about the gluten piece, because I know that feels big, but I want to be really clear about the science here. Gluten is not bad for everyone. But for a woman with Hashimoto's, the structural similarity between gluten proteins and thyroid tissue means that every time her immune system responds to gluten, it is also attacking her thyroid. Okay, this is not a fad diet recommendation. It's a molecular biology intervention. And there are so many people who are gluten-free. Some need to be, some don't. Sometimes it's just a personal choice. But if you have Hashimoto's, you should be gluten-free, because every time you eat gluten, you're basically attacking your thyroid.

Okay, priority number three: investigate and heal the gut. Before we put Mary on a long list of supplements, which I don't like to do, we need to know what actually is happening in her gut. That means a GI-MAP test: a comprehensive stool analysis that looks at pathogens, beneficial bacteria, and inflammation markers, and whether she has intestinal permeability, or what you call leaky gut. And we use markers like zonulin to determine that with a GI-MAP test. Why does this matter before supplementing?

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Because if she has significant dysbiosis, meaning her microbiome is off, or she has pathogens that are present, or she has opportunistic bacteria that have overgrown, adding prebiotics could actually feed the wrong bacteria and make things even worse. We treat what we find specifically for each person based on their own test. So, a GI-MAP plus the island test, the gold standard for comprehensive gut analysis, or you can do a GI Effects/gut zoomer that looks at the same things. It reveals dysbiosis, pathogens, permeability, and digestive enzyme status. A gut restoration protocol typically includes targeted antimicrobials or antifungals, again based on her results if needed, followed by strategic probiotic reintroduction and gut-healing nutrients based on what they're missing. L-glutamine, 4 to 8 grams a day, is the primary fuel for the intestinal cells and supports repair of intestinal permeability. But again, we have to know whether or not you have that before we start using that supplement. Healing the gut in autoimmune patients has been shown to reduce systemic inflammation and, in Hashimoto's specifically, reduce antibody levels over time. So that's why we're treating the gut.

Priority number four, we're going to go just a little long today: restore ovulation through the metabolic route. Mary's progesterone of 0.52 tells us she's not ovulating, but the answer isn't simply to give her progesterone. The answer is to do the upstream work: fix the insulin resistance, support the thyroid by taking out gluten and giving whatever nutrients are needed, and heal the gut. Then watch what happens to her cycle. In many women with PCOS, once insulin resistance normalizes and thyroid function improves, ovulation will return. So you have to give it a chance to work. And I always say this to patients: if we do it right, we only have to do it one time. And if we treat the upstream things first, some things typically get better on their own. I always tell patients, it's kind of like if you had a farm, treat all your farm animals before you look for the zebras and the unicorns. And so you have to treat the basics first. Okay. All right, you can track her basal body temperature and do LH testing. Both of them are affordable at-home tools that can give us real-time data on whether ovulation is occurring. If, after three or four months of foundational work, the cycle hasn't restored, then we can consider cyclic progesterone support and targeted ovulation stimulation protocols. So

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we just want to give it at least three or four months, because she may start ovulating and producing progesterone on her own just by fixing those upstream things.

Priority number five: repeat the nutritional foundation. Vitamin D3, 5,000 IUs a day with a fatty meal, targets blood levels of 60 to 80. Methylated B complex with 5-MTHFR, active folate, and methylcobalamin B12, so it has to be methylcobalamin, not cyanocobalamin, not synthetic folic acid, not synthetic B12. Reassess whether she needs iron after her gut heals, because absorption is impaired until gut permeability is addressed. Omega-3 fatty acids, 2 to 3 grams of EPA and DHA daily; they reduce inflammation, support egg quality, and reduce androgen levels in PCOS. Then add zinc, 25 to 30 milligrams a day; it supports ovulation, progesterone production, and immune regulation, and zinc is commonly deficient in PCOS. But remember, if you're going to be on zinc for more than 12 weeks, you also have to replenish copper. It's a 15-to-1 ratio. Otherwise, you'll get copper depletion and then other problems.

Priority six: reduce physiological stress load. Mary's reverse T3 of 19.9 tells me her body perceives chronic stress, and that's the response: reverse T3 goes up. It can be physical stress, mental stress, emotional stress; it doesn't matter. It is converting active thyroid hormone into a blocked, inactive form called reverse T3. This is the body's survival mechanism. It slows metabolism to conserve energy during periods of threat, which is why her metabolism isn't working well and she's gaining weight instead of losing it. The solution isn't just stress management, which is nice to have but doesn't always work. It's reducing caffeine, which amplifies cortisol and worsens thyroid hormone conversion. It's improving her sleep onset, because every night of poor sleep is another cortisol surge that blocks thyroid function and drives insulin resistance. And it's reviewing the SSRI she's taking. Some medications can actually worsen insulin resistance and weight resistance, which may be contributing to her current state. So I never take patients off SSRIs or any medications when they first come to see me. But once they're on a protocol and I start to see results, we talk about what we can take away to improve their outcomes. If she reduces caffeine to below 100 milligrams a day, it's been shown to meaningfully reduce cortisol and improve reverse T3 conversion in women with thyroid dysfunction. And if she sleeps below seven hours, it definitely increases her insulin resistance by 20 to 25% and

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significantly raises her cortisol, both of which worsen everything Mary has. So she has to sleep more than seven hours a night.

Okay, what's your action plan? What do you want to do this week if you have PCOS? So here are the actionable items that I want to go over with you.

One, ask for a complete thyroid panel, not just TSH. Say these exact words: "I'd like a full thyroid panel, including TSH, free T3, free T4, reverse T3, TPO antibodies, and TG antibody," so there's thyroglobulin antibodies and thyroperoxidase antibodies. If you have PCOS, infertility, or autoimmune history, these are non-negotiable. A TSH alone is like checking one tire of a car with four tires. So you just tell them, "I need all four tires checked." And they might look at you and tell you no. Then you find a functional medicine physician who will check them.

Okay, step two: ask for fasting insulin in your next blood draw. Most doctors do not order this unless you ask. A fasting insulin above seven in a woman with cycle irregularities or fertility challenges is, like I said, a red flag. And it's fixable. This is a single number that may explain more about your PCOS and your infertility than any hormone test you've had. So please ask for fasting insulin.

Number three, check your vitamin D and then actually optimize it, not just normalize it, but optimize it. A level of 30 is not just deficient by conventional standards, it's kind of low, but for fertility, thyroid health, and immune regulation, you want to be between 60 and 80. And if you've been told your vitamin D is fine at 32, push for 5,000 IUs a day with K2, with food, and retest it in three months. Do not ignore it.

Number four, ask about a GI-MAP test with zonulin. It's a test you should have. That, or a gut zoomer, should find out what's going on in your gut. Both these tests are available. You just need to have them done, because your gut is a separate system; it's the root cause of your immune system, your hormone metabolism, and your nutrient absorption. So treating it specifically, not generically, changes everything. You need to have it done.

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Number five, if you have Hashimoto's or elevated TPO antibodies, try a strict, I would push for 90-day, gluten-free diet. Not gluten-light, but gluten-free. Not mostly gluten-free, but gluten-free. Strict. Give your immune system at least 60 to 90 days without the molecular trigger that may be driving the attack on your thyroid. And then retest your TPO antibodies; you might be surprised. And get your selenium level checked too.

Number six, switch to myo-inositol if you have PCOS. This is the most evidence-backed supplement for restoring insulin sensitivity and ovulation in PCOS, and it is vastly underused. Start with two grams twice daily. Pair it with resistance training two to three times a week and protein-first meals. This combination can really be powerful, and it is so simple. Again, myo-inositol, M-Y-O, hyphen, I-N-O-S-I-T-O-L.

Number seven, optimize your homocysteine by switching to methylated B vitamins. If you're taking a prenatal with folic acid and you have a gut absorption issue or an MTHFR gene variant, you may not be converting it properly. Ask your doctor to check your homocysteine level. If it's above seven, switch to methylated folate (5-MTHFR) plus methylcobalamin B12.

Your period isn't a luxury. It's a monthly health report card. When it goes missing, your body is asking you to listen more closely. And it's not just about hormones. There are so many things before we get there.

Okay, I want to leave you with what I took away from Mary's case and why I find it so meaningful. No period. She has Hashimoto's that nobody caught. She has insulin resistance that nobody treated. She has gut dysfunction that nobody investigated. And she has a growing fear that her body's broken. And she wants to have a baby. You may have all of those things and not even want to have a baby, right? Her body's not broken. Her body is responding loudly, clearly, and correctly to conditions that haven't been identified or addressed yet. Each symptom has its own signal, and every signal points back to the three treatable root causes. This is the pre-disease window. This is the moment when we can get it right. The right interventions can not only restore her cycle and her fertility, but also prevent metabolic chaos in the future, right? Okay, and she

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might end up with overt hypothyroidism if we don't treat her Hashimoto's, and then the autoimmune disease will get worse, and then it will just be like a cascade of events.

Okay, the teaching pearl from this case is: PCOS is not a hormone disorder; it's a metabolic disorder driven by insulin. And when PCOS and Hashimoto's exist together, because you can have PCOS without autoimmunity, but when they exist together, the gut is almost always the common upstream driver that nobody's checking or treating. If you have been told you have PCOS and been handed birth control pills, you deserve more than that. If you have been struggling to conceive and you've been told your labs are normal, you deserve a deeper dive. If you have an irregular cycle and nobody has ever checked your TPO antibodies, thyroid antibodies, or fasting insulin, you deserve to look at those and get answers. This is what functional medicine is for: not to replace your OB-GYN- we're not here to do that- or your reproductive endocrinologist, but to find the root cause that makes everything else possible.

If this episode spoke to you, please share it with a woman who needs to hear it. You probably know her. You know she's struggling. You've heard her story. And if you want to dig deeper into your own labs and find a provider who can run this kind of comprehensive workup, reach out to us; go to our website. We're happy to help you. Take care of your whole body, not just the parts that are being treated. And I'll see you next week with another patient case and another topic that could actually change your life.

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