

Melissa Coates: A Champion's Fight Against Acute Limb Ischemia

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Abstract: Melissa Coates was a professional bodybuilder, model and wrestler, who underwent the amputation of her left leg at the age of 51, due to acute limb ischemia (ALI), eventually passing away within the year. This article offers a personal perspective on signs that were missed and steps that could have been taken along the way to dramatically impact outcomes, and presents a case for greater awareness and education on limb loss prevention.

Key words: *peripheral artery disease, acute limb ischemia, amputation, prevention, wound care, limb protection awareness, patient story*

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Introduction

My late sister, Melissa Coates, lost her left leg due to blood clots in the arteries causing acute limb ischemia (ALI) – one of the most dangerous yet least well-known forms of peripheral arterial disease. Her condition was not recognized and treated soon enough. Patients with acute arterial occlusion usually present with some of the *six P's*: pain, pallor, pulselessness, perishingly cold, paraesthesia, and paralysis. It is vital that medical practitioners have a high level of suspicion and evaluate the neurovascular status of patients presenting with leg pain.

I am a family physician at the Windsor Family Health Team in Windsor, Ontario, Canada and the primary care consultant to the Windsor-Essex Lower Limb Wound Prevention and Treatment Clinic. This clinic serves as the Windsor-Essex Ontario Health Team's response to the urgent need for improved access to wound prevention, wound care and lower limb health education, with the ultimate goal of reducing amputations in Ontario. Province-wide, this endeavour is called the Lower Limb Preservation Strategy (LLPS). The Windsor Family Health Team has played a pivotal leadership role in advancing these critical initiatives.



Melissa Coates onstage at the Ms. Olympia competition, Chicago, 1996



At the International Sports Hall of Fame, Columbus, Ohio, March 2016

Born in Thunder Bay, Ontario, Melissa Coates was a trailblazer in the world of professional bodybuilding and pro wrestling. Throughout the 1990s, she competed in the International Federation of Bodybuilding, winning the *Canadian Women's Bodybuilding Championship*, along with her professional debut, the *Jan Tana Classic*. She also placed highly in the *Ms. Olympia* and *Ms. International* events, successes that led her to be ranked 9th in the world in women's bodybuilding.

Melissa also had a successful career as a fitness model, gracing many magazine covers. She was also an actress appearing on many television shows and movies.

After retiring from bodybuilding in the early 2000s, Melissa trained with Hall of Fame pro wrestler, Killer Kowalski. She would later compete in World Wrestling Entertainment, Impact Wrestling and throughout independent wrestling leagues across North America. From 2014 on, Melissa performed as 'Super Genie', joining forces with legendary pro wrestler Sabu as his manager and partner. Together they performed for various pro wrestling companies across the globe.

Missed Diagnosis

In October 2020, my sister suffered from acute limb ischemia (ALI) of her left leg, which tragically resulted in an above knee amputation. At this time, she was 51-years-old and lived in Las Vegas. She had sought treatment for pain in this leg at an urgent care clinic six weeks prior to the amputation. The examining physician did not

evaluate nor document her neurovascular status, according to Melissa, and this was confirmed on subsequent review of her medical records. These included no mention of pulses, capillary refill, warmth, colour, fine touch, strength, nor reflexes. In fact, she was diagnosed with a "strained muscle".

A venous doppler was ordered, which came back normal, and was only requested because my sister voiced her concern regarding our family history of deep vein thrombosis (DVT). No arterial doppler ultrasound was ordered. Notably she had seen multiple doctors on several occasions over the previous two years regarding pain in her left calf and was told she had a "pulled muscle" or similar.

On October 10, 2020, Melissa's leg pain was so excruciating she felt the need to go to an emergency department. She was assessed and a CT angiogram was performed, showing a left common iliac artery thrombus and complete occlusion of the profunda and popliteal arteries. Intravenous heparin was started and catheter-directed thrombolysis was attempted. This therapy had to be discontinued due to the complication of an upper gastrointestinal bleed from a gastric ulcer which was treated via gastroscopy. She required fluid resuscitation, transfusion of five units of packed red blood cells, and had to be closely monitored.

Over the next few days, interventions included placement of a left iliac artery stent, and a minimally effective endovascular thrombectomy. She also underwent fasciotomies and negative pressure wound therapy. Sadly, the acute limb ischemia was not recognized soon enough and despite these multiple attempts by interventional radiology and vascular surgery, she required an above knee amputation to save her life.

Hence, the family feels Melissa's initial physical examination at the urgent care clinic was inadequate and resulted in life-altering consequences.

Blood clots have plagued our family, but Melissa escaped these maladies until this acute limb ischemic event. Other than occasional cigarette smoking, and a remote left knee anterior cruciate ligament repair, she was the healthiest member of our family. Her athletic career required her to eat



Melissa as 'Super Genie' with Sabu, UK Tour, October 2017

healthy and to exercise on a regular basis.

We suspect the clots in her leg were caused by a combination of our family predisposition and a hypercoagulable state due to a COVID-19 infection. Although Melissa's nasal PCR swabs were negative during her prolonged hospitalization, her COVID-19 serology was tested shortly after discharge and came back positive.

This confirmed that she had been infected with COVID-19 earlier that year.

Melissa spent over five weeks in hospital with no visitors allowed due to the pandemic restrictions. Then began the arduous process of getting fitted for a prosthetic leg and learning to walk. Changes in the residual limb's shape and volume, a natural part of the healing process, required repeat casting of the prosthetic which caused frustrating delays in her rehabilitation. She suffered from phantom limb pain, as well as depressed mood and anxiety and, required multiple medications.

My sister passed away unexpectedly in her sleep on June 23, 2021, just a few days after her 52nd birthday. Her autopsy showed a dilated cardiomyopathy, moderate coronary atherosclerosis, calcified ulcerated atherosclerotic plaques of the thoracic and abdominal aorta, and calcific atherosclerosis of the left popliteal artery. It was very frustrating for my brother David and I, who are both physicians, to be unable to assess our sister in-person due to the chaos from the pandemic, including the border closings, hospital visitation restrictions and the unavailability of vaccinations. My daughter, Kassandra, who had antibodies from the first wave of COVID-19, was able to visit and help Sabu take care of her Aunt Melissa during this difficult time.

Posts from my sister's social media poignantly illustrate the devastating effects, both physically and psychologically, that she endured as a result of her amputation (See Sidebar: *Melissa's Story*).

Medical Discussion

Acute limb ischemia (ALI) is defined as a sudden loss of arterial perfusion to a limb resulting in progressive ischemia, which can cause severe tissue damage and limb death. In ALI, the symptoms are present for less than two weeks.¹ Acute limb ischemia carries a very high risk of morbidity and mortality, with 20% of patients requiring amputation. The 30-day mortality rate is 10-15%, and the one-year mortality rate is 40%.² Annual incidence is approximately two per 10,000 population per year.³

Acute limb ischemia is a medical emergency requiring immediate diagnosis and treatment. Complete occlusion of blood flow without collateral perfusion may lead to irrevocable damage to the affected limb within four-six hours.⁴ The longer the affected limb is not correctly recognized, the higher the risk of tissue damage, limb amputation and death. Therefore, it is imperative for clinicians to accurately assess symptoms relating to ALI in an effective and time-sensitive manner.

Patients with ALI usually present with sudden onset of some of the six 'Ps': pain, pallor, pulselessness (measured by palpation or hand held doppler), perishingly cold/poikilothermia (loss of temperature regulation), paraesthesia (numbness and/or loss of sensation) and paralysis (a change in the motor strength).⁵

The research published in cardiovascular literature points to inadequate clinical examinations in patients seeking treatment for ALI. A significant number of people do not always experience the anticipated or typical symptomology of this condition; they may have only some but not all of the six 'P's. Paresthesia and paralysis are often late signs of the ischemic damage. Pain may appear as an earlier symptom but may improve as nerve tissue dies.⁶

Risk factors of ALI include hypertension, smoking, hypercholesterolemia, diabetes mellitus,

Melissa's Story

Dec 11, 2020

I've been home from the hospital for two weeks now after going through an awful life-altering event that required my having to have my left leg amputated in order to save my life. The doctors still don't know the cause of the blood clots in my left leg arteries. So far, I've only been told it seems to be an autoimmune disorder. I'm 15 years younger than the age most people might have this happen. Never had a blood clot till now. Though I did go to the doctor about five times [over] the past two years about the pain in my left calf, including a trip six weeks before my surgery. I was always told it was a pulled calf muscle. So, I wasn't really, really concerned over the pain in my foot and calf that came back around Oct 10. It's very upsetting to think this all could have been avoided.

Jan 16, 2021

Here's my first day trying to learn to walk on a prosthetic leg since I lost my leg October 23. I was in the hospital five weeks dealing with this awful situation, no visitors allowed due to COVID. It was just the most shocking, sad, and painful experience. The doctors tried to save my leg but were unsuccessful. Too much damage had already been done to my lower leg. A trip to urgent care six weeks before the amputation had been my opportunity to save my leg, but the doctor didn't diagnose me properly or do the right tests. So this is where I'm at now. I'm trying to stay positive and fight the depression and trying to figure out a new course of life and ways of supporting myself, on top of handling medical bills and trying to get a good prosthetic leg that will allow me to function as closely as possible to before, but nothing will ever be the same. Just not sure how to handle this all. A friend set up a GoFundMe for me to help me pay off bills and to find a way to get a great prosthetic leg. I know COVID has wiped a lot of people out financially, but for anyone who can help, here's the link.

Jan 25, 2021

It's another new day to try to master this starter leg I've gotten to replace the real leg of mine. So very, very, very much harder to relearn to walk with my knee gone than if they had cut under my knee. I love all the positive comments and love sent my way... it helps make this bleak situation so much more bearable for me. I'm trying to raise enough money to afford the best leg that would return me to workouts and the wrestling ring. It was made for military amputees so that they could return to duty. So, you can tell it's an amazing leg and would give back to me, as close as possible, the quality of life I once had. I promise you if I get this prosthetic leg, that you will see me back in fitness shape doing photo shoots, and you will also see me back in the ring. I have to beat this challenge. I never would have thought how limiting and how much it affects me to not have two legs. I have to have someone around to help me at all times, and especially to make sure I don't fall down, which I did for the first time last week ... luckily it was on the side of my remaining left leg, and not on the bottom where the scar is. If an amputee falls on the end of their leg they have to have more tissue removed, and go through this whole three months of challenges everyday again, which would be just awful, especially for someone like me who has always been used to being active. So, I'm trying to be careful, trying to master this starter leg, and then I would be able to possibly get a much higher-end prosthetic leg that would allow me to do the things I used to do, help get me the quality of life I've been used to.

Feb 14, 2021

Working out so hard to be able to walk again after my terrifying situation last October that almost took my life, not just my leg. My final choice was either to die or let my left leg be amputated. What a terrible decision to make for someone like me, who's entire career, identity, and finances have been based off my body being fit and strong and athletic. This all has really broken my heart. But I try to feel good in that I'm still around to visit and be with my family and my closest friends. I love them all so much that the choice was obvious, as it should be to anyone over closing life or chasing life. It's just a tougher relationship that I'm having with myself now, as I've lost so much of my identity and my work. Please keep the prayers and good vibes coming. I can feel them healing me and I hope to be feeling like myself again very soon.

At the moment I have just gotten my starter leg, which I must learn how to walk with first before I can move onto a higher quality leg that can allow me to work out in the gym the way I used to, and to valet in the wrestling ring the way I used to also. I loved these parts of my life and it's been so hard having to give them up for now. All I can hope is that my ability to enjoy these things in my life again won't be too far off. I just want to be me again.

Keep in touch, and much love to all!

xo Melissa

peripheral arterial disease (PAD), atrial fibrillation, coronary artery disease and increased age.

Symptoms of intermittent claudication, caused by PAD, include muscle pain often described as cramping of leg muscle distal to an arterial stenosis. Notably, this pain occurs when walking a specific distance and resolves within ten minutes of ceasing exercise. Screening for PAD, utilizing the Ankle-Brachial Index (ABI) test, could be performed within these populations as a preventative strategy against ALI. Clinicians should suspect ALI when patients with these risk factors present with any of the six 'Ps', especially sudden onset of limb pain.

Primary care providers should aggressively manage these cardiovascular risk factors to prevent ALI. Patients with symptomatic PAD should be prescribed the combination of rivaroxaban and aspirin, as per the COMPASS trial.⁷

Acute limb ischemia is a complex condition with numerous etiologies. These include thromboembolic events caused by atrial fibrillation or from aortic or popliteal aneurysms, as well as in-situ thrombosis caused by unstable arterial plaque rupture, congenital coagulopathies or

hypercoagulability caused by malignancies and by infections such as COVID-19. Embolic ischemia causes the classic presentation of sudden onset of pain, whereas thrombotic ischemia tends to present more gradually.¹

In patients with chronic PAD, collateral vessels may have formed. This can make onset of symptoms vague and patient presentation ambiguous.¹

A retrospective study from Sweden showed that the initial clinical evaluation of patients with ALI is often inadequate. Current guidelines for the management of ALI recommend use of the six 'P's as well as the ankle brachial pressure index (ABI). Pain was best documented in 93.2 % of the patients, whereas ABIs and pulses were least documented at 55.3% and 47.2%, respectively. A sufficient examination was deemed to include documentation of at least five of the 6 P's and ABI, but was performed in only 55.3% of the patients. Complete documentation of pulses, ABI, and/or assessing ≥ 5 of these diagnostic criteria had the lowest major amputation/mortality rate at one-year follow-up. Lack of adequate initial clinical examination resulted in higher likelihood of the adverse outcomes of amputation or death.⁵

Common misdiagnoses include muscular sprain/strains, tendinopathies, compartment syndrome, gout, deep vein thrombosis, lumbar radiculopathy, cerebrovascular accidents and many other conditions. Acute limb ischemia also needs to be differentiated from chronic or critical limb ischemia (CLI), which presents with rest pain lasting more than two weeks, with or without foot wounds/gangrene.

Suspected cases of ALI should be referred immediately to vascular surgery as imaging prior to referral may delay limb-saving procedures.^{8,9} Delayed treatment, as noted throughout the research, increases likelihood of limb loss and patient mortality.

Pesmatzoglou et al. (2025) performed a retrospective study which recorded all emergency department hospitalizations of patients with ALI between 2018 and 2024. Both groups of patients, including correctly identified ALI cases



Melissa learning to walk on her prosthetic leg, February 2021

and those initially misdiagnosed with a delayed diagnosis of 24 hours or more, were examined for negative health outcomes. Shockingly, of the patients who were misdiagnosed, the median time from initial symptom presentation to receiving a definite diagnosis was approximately 38.8 days. It was further noted that many of these patients with delayed diagnosis of ALI were primarily referred to non-vascular-related specialties, thereby perhaps, limiting treatment options vital to limb preservation and patient survival.¹⁰

Londero, Nørgaard, and Houliand (2014) suggested that delays in management and treatment of ALI occurred due to multiple reasons, including patient delay in seeking treatment, delay caused by a referring practitioner, emergency department wait times and wait times for diagnostic imaging. Although not all factors can be mitigated, enhancing public education and campaigning for ALI awareness could improve patient knowledge and encourage seeking of treatment.¹¹

It is paramount that clinicians be vigilant with cases presenting with signs and symptoms of the six 'P's with the goal that they are assessed with a complete and accurate neurovascular evaluation. Furthermore, clinical evaluation of ALI utilizing the Rutherford classification system, arterial doppler ultrasound and/or CT angiogram, is recommended and helps to guide treatment modalities.³

Emergent restoration of tissue perfusion is needed via intravenous heparin administration, which prevents thrombus propagation, if not contraindicated by bleeding factors. Further intervention via endovascular methods including catheter-directed thrombolysis, embolectomy/thrombectomy and/or peripheral bypass is required if occlusion continues to persist.

If tissue revascularization cannot be established or is deemed irreversible, amputation may have to be performed as a life-saving measure. Although significant innovations in medical technologies and treatments have been made, the high rate of limb loss and patient mortality associated with ALI persists.

Given the high incidence of arterial thrombosis

in patients during the COVID-19 pandemic,¹² we suspect that Melissa's case of ALI was due to post-thrombotic sequela of a recent COVID-19 infection. This devastating infection portends a 3.3-fold higher risk of death and a 2-fold higher risk of amputation from ALI than in cases of ALI without COVID-19.¹³ Other contributing factors in Melissa's case may include rapid progression of atherosclerosis caused by COVID-19 infection,¹⁴ family history of venous thromboembolism and cardiovascular disease, and occasional cigarette smoking. After her hospitalization, we recalled that our father had an angioplasty of a femoral artery stenosis at age 55. The fact that she complained of calf pain for two years suggests that Melissa may have had undiagnosed intermittent claudication, increasing her risk for ALI.

Awareness, Education And Future Steps

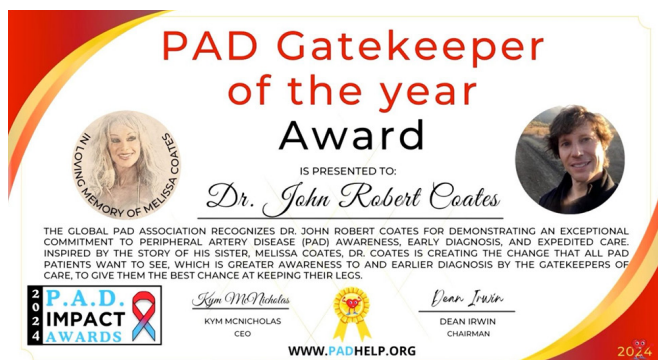
Acute limb ischemia is a condition with high morbidity/mortality that leaves patients with devastating and permanent health outcomes; however, it is not commonly recognized nor understood by the public. A 2007 American study indicated that only 26% of people surveyed were familiar with PAD. Within the "PAD-aware" group, only half were aware that smoking and diabetes increase the risk for PAD and only 14% knew that PAD could lead to amputation.¹⁵ A Canadian survey showed that only 36% of adults 50 years of age and older were aware of PAD.¹⁶

Future steps and recommendations for effective ALI diagnosis and management include raising awareness and providing education initiatives for both the public and medical professionals. Research indicates that due to inadequate clinical diagnosis of ALI, combined with its high mortality rate, there is a strong impetus for enhanced clinical training for medical students and a necessity for change in curriculum to provide satisfactory education and examination of vascular status.⁵ It is strongly encouraged that all health-care professionals be vigilant and act with a high index of suspicion and urgency when patients present with diagnostic characteristics of ALI.

Awareness campaigns by organizations such

as Wounds Canada and the American Limb Preservation Society are invaluable in this regard. In particular, patients with a diagnosis of PAD need to be educated about aggressive medical management of cardiovascular risk factors, smoking cessation, the benefits of regular exercise and a heart healthy diet. They should be encouraged to seek medical attention urgently if they experience sudden onset of limb pain and/or any of the other six 'P's. Referrals to regional lower limb preservation clinics or to other foot care providers should be considered. Furthermore, vaccination against COVID-19 and influenza should be encouraged to decrease the risk of ALI.¹⁷⁻¹⁹

One of my sister's goals before her passing was to raise awareness about limb loss to help prevent others from going through her ordeal and to help those in need of prosthetic limbs, which are incredibly expensive. My work with the Lower Limb Preservation Strategy in Windsor-Essex and with Wounds Canada will help to fulfill Melissa's wish to save limbs and lives. I speak for my sister to honour her life and legacy, and to warn others of the signs and symptoms of blood clots and peripheral arterial disease so that others do not have to suffer or die from these conditions.



In October 2024, I was honoured to be recognized by the Global PAD Association for my work on peripheral arterial disease including my efforts in helping develop the Windsor-Essex Lower Limb Preservation Strategy, and my participation in Wounds Canada's PAD Awareness Month campaign. I would like to dedicate this award to my late sister Melissa Coates who lost her left leg due to acute limb ischemia.

The Global PAD Association is a non-profit organization based in United States that helps patients with PAD access education and assistance to obtain timely and effective life and limb-saving care. padhelp.org

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