An Overlooked Therapy Cut My Knee Replacement Recovery Time in Half

4 MIN READ

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One study found 74% fewer post-surgical complications in patients who did it beforehand. So why aren’t more surgeons talking about HBOT?

Two years ago, I had **knee surgery**. They opened it up, placed some implants, sewed me back together. Standard stuff. Within 48 hours, my leg — everything from my foot to above the knee — had turned into a gigantic purple balloon. It took roughly a month for the swelling to subside, and that month dictated everything: how much I could move, how fast the muscle rebuilt, how quickly I got back to my life.

This past January, I had a more invasive procedure on the same knee: a partial replacement, in which the surgeon pulled the old implants, ground down the bone, and installed new hardware. By every measure, it should have been worse.

It wasn’t. This time, the swelling was minor. The incision healed clean and fast and I was off crutches in a fraction of the time. The difference: **hyperbaric oxygen therapy**, or HBOT, which uses a highly pressurized environment to deliver more pure oxygen to the tissues than the body could absorb under normal conditions.

I’d known about HBOT for years but had filed it away in the “interesting but not for me” mental drawer. After surgery #2, I decided to pull it back out. I called **Dr. Scott Sherr**, one of the world’s foremost authorities on HBOT, and asked what to do. He laid out the protocol: 90 minutes of pressurized enclosure in the tank at 2.4 atmospheres, with three 10-minute breaks of breathing regular air versus full oxygen.

Two sessions before surgery, eight sessions after.

To understand why it worked, I sat down with Dr. **Alan Katz**, MD, and **Rosemary Byrne**, MSN — Medical Director and Clinical Director at Hyperbaric Medical Solutions, where I did my treatments.

What Does HBOT Actually Do?

The mechanics of HBOT are simple. You lie inside a sealed acrylic chamber that's pressurized at 1.5 to 3 times greater than normal atmospheric air pressure (equivalent to being about 46 feet underwater) and you breathe 100% oxygen for 90 minutes. During that time, you take three short "air breaks" to breathe medical air — compositionally the same as regular air, but ultra-purified. Your total time in the chamber, including compression and decompression, runs about 110 minutes long.

The biology is where it gets interesting. Under pressure, oxygen dissolves directly into your blood plasma at concentrations regular breathing can't approach. Byrne told me that after an HBOT session, you're carrying "about eight to 10 times more oxygen dissolved into your bloodstream" than normal.

"Everything that you're doing in that space is to just accelerate what the body would naturally do," added Dr. Katz. Here's what that extra pressure and pure oxygen does:

It controls swelling.

This was the big one for me. "Oxygen is actually a potent vasoconstrictor — your vessels get smaller," Byrne explained. "But because you're carrying so much more oxygen dissolved into your bloodstream, you can have the vasoconstriction with less flow but better oxygenation."

That results in far less swelling, which is good news for the healing process. While edema initially helps repair tissue by sending white blood cells to the injury site, prolonged fluid retention can have the opposite effect, attacking healthy surrounding tissue. Once swelling sets in, **muscle activation** gets inhibited, and everything downstream — strength, range of motion, function — slows to a crawl.

It mobilizes stem cells.

A single HBOT session roughly doubles the number of stem cells circulating in your bloodstream, and repeated sessions compound the effect. One **well-cited study** found that 20 sessions at 2.0 ATA increased circulating CD34+ stem cells (found in blood and the immune system) by approximately 800%. Doing two sessions before surgery means you walk into the OR with your repair crews already deployed.

It shifts your inflammatory profile.

There are a few ways that HBOT can lower your levels of chronic inflammation. One is that it prevents white blood cells known as **neutrophils** from sticking to and damaging blood vessels or inflamed tissue. Another is that it helps regulate cytokines — small, specialized signalling proteins that act as chemical messengers in the immune system.

“The cytokines that are pro-inflammatory are reduced by hyperbaric, and the cytokines that are anti-inflammatory are elevated,” Byrne said. This isn’t a small effect — it’s a fundamental re-tuning of how your body responds to the trauma of surgery, and it helps explain my quick recovery.

In fact, Dr. Katz noted that the impact is on par with powerful medications. “It’s been compared to a big dose of steroids. Using hyperbaric oxygen in that setting is like

using steroid prednisone, but it’s a heck of a lot safer. You’re treating it with oxygen.”

It boosts your immune system and suppresses bacteria.

Surgical-site infections are often caused by anaerobic bacteria, which by definition have a low tolerance for oxygen. A surgical wound with poor circulation is exactly the sort of hideout these bacteria thrive in best, while a well-oxygenated wound is hostile to them.

HBOT also works synergistically with prophylactic antibiotics, which I was on after surgery.

Together, these create a two-pronged attack against infection, both environmental and chemical.

It accelerates incision healing.

Since oxygen is the primary raw material the body runs on when it’s trying to heal, and each session supplies it in abundance, HBOT can also accelerate incision healing. “It is intricately involved in numerous biological processes including cell proliferation, angiogenesis, and protein synthesis, which are required for restoration of tissue function and integrity,” **one study** noted.

Byrne offered two more reasons that my incision closed visibly faster than after my previous surgeries: “There’s an increase in collagen production and an increase in white blood cell production,” she said.

Why Pre-Op Sessions Matter

The pre-op piece is the part most people miss. Doing HBOT before surgery means you arrive at the operating table well-oxygenated, with stem cells mobilized and an immune system primed to respond. You have the surgery — controlled trauma, by definition — and you go back into the chamber to manage the swelling, suppress inflammation, and keep the tissue alive.

Some researchers have sought to isolate the benefits of pre-op treatment in particular. A **2019 study** of 356 patients undergoing abdominoplasty found that those who did HBOT before surgery had 74% fewer complications afterward compared to those who didn't (8.4% vs. 32.6%, respectively). Necrosis occurred in 6% of the non-HBOT group and zero patients in the HBOT group. The results held steady when the researchers controlled for other variables, meaning HBOT appeared to be the defining factor.

"Most of what you're trying to do [before surgery] is essentially priming the tissue for surgery," explained Dr. Katz. "When you did just even two treatments before your surgical case, you've more than doubled your circulating stem cells. Stem cells, as you know, are the cells in your own body that are going to go out and lead the repair process. If you have more than twice the normal amount in circulation right before the procedure, you're up and ready to go."

The plastic surgery world figured this out years ago. In New York, Florida, and California, a number of high-end plastic surgeons require HBOT as part of their facelift protocol — one or two sessions pre-op and five or so afterward — specifically because reducing post-op edema reduces downtime and the risk of delayed healing, Dr. Katz said.

Professional athletes have also known this for a long time. The clinic where I went sees a steady flow of pro hockey players and other elite athletes who use HBOT to compress recovery times, both for nagging injuries and surgical rehab.

“We also see patients whose surgery didn’t go as well as one would have hoped for — there’s more swelling than one would have expected, the wound doesn’t look great — they’re sent in post,” Dr. Katz added. “Sometimes it’s used as a non?elective procedure if there truly is tissue compromise. There it’s done more emergently, with full medical necessity, as opposed to it being ‘luxury.’ But in the luxury space we’re seeing a lot of patients now who have chosen to recover quicker.”

3 Practical Considerations

If you’re considering HBOT as part of your recovery process, a few logistical notes:

1. **Your age could factor in.** The therapy could become more beneficial as you age, and your natural healing abilities slow. “A five?year?old is going to heal quicker than a 25?year?old. The 25?year?old is going to heal quicker than the 50?year?old. The 50?year?old is going to heal quicker than the 90?year?old. There’s a natural decrease in that healing response. HBOT is being used to just push things along for you,” said Dr. Katz.

2. **Prepare to hit pause.** Since each session can last almost two hours, it’s a good idea to prepare yourself for the actual experience of treatment. The pressurized pure-oxygen environment means no phone, no laptop, no metal of any kind. You’ll need to wear anti-static hospital scrubs. You can watch TV through the acrylic, which is how I finally caught up on Stranger Things.

3. **Side effects are usually minimal, but possible.** Beyond the time cost, the side effects are minimal; according to the **Mayo Clinic**, most complications are infrequent and temporary. Some people feel ear discomfort during compression, the same sensation as not equalizing properly while diving, but it resolves easily with a swallow or a yawn. Others may notice sinus pressure, short-term changes in sight, or temporary decline in lung function. Very rarely, people can experience seizures or lung collapse. Personally, I found the sessions relaxing.

“The use of hyperbaric oxygen is an often underutilized tool,” noted Dr. Katz. “It’s a medication like many others — it’s probably safer than almost anything else people are taking. It’s certainly safer than Tylenol and Advil that are sitting in your medicine cabinets right now.”

That said, he also has a safety warning: “Not all ‘hyperbaric oxygen’ is hyperbaric oxygen.” In other words, not all places that say they offer hyperbaric oxygen are offering medical?grade, safe hyperbaric treatment.

Choosing a safe clinic is paramount, the doctor adds. That means seeing a doctor specifically trained in hyperbaric medicine, in a medical?grade setting, with trained technicians observing you for the duration of the treatment. “Make sure that all these safety procedures are actually taking place and happening,” Dr. Katz advised.

What I’d Say to Someone Considering HBOT

There are over **1.5 million knee and hip replacements** performed in the US every year. A meaningful percentage of those patients are going to spend weeks or months trapped by swelling, slow incision healing, and the cascading downstream consequences. Most of them have no idea HBOT exists, and the ones who do often assume it’s only for hyperbaric medicine’s classic indications like decompression sickness, carbon monoxide poisoning, or radiation injury.

To those people: it’s worth a conversation with your doctor before you’re already three weeks into a slow recovery. HBOT isn’t a substitute for physical therapy. It’s not a substitute for a good surgeon. It doesn’t replace any of the work you have to do to come back from a major procedure. What it does is collapse the timeline. It removes swelling from the critical path. It gets you to the point where you can actually do the rehab faster.

Byrne’s parting message to me was simple, and worth passing on: “You don’t have to wait until there’s a complication. There’s so much benefit in doing it more proactively. And it’s not just oxygen — it’s the inflammatory and immune response that can be so powerful as well.”

For anyone over 50 with months of recovery ahead of them, 20 hours of HBOT to compress that timeline is one of the better trades available in modern medicine. The team at Hyperbaric Medical Solutions treated me with kindness and care throughout, and I’d do it again before any future surgery without a second thought. I hope more people find out this option exists before they ever need it.

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