

The FDA and Medicare Approve Hyperbaric Oxygen Therapy for Failing Grafts and Flaps

Numerous studies conducted over the last twenty years show that hyperbaric oxygen therapy (HBOT) supports the healing of failing or compromised grafts and flaps, even those with underlying complications, such as radiation injuries, tissue or bone infection and diabetes.



How Hyperbarics Helps



Increases flap and graft salvage rates



Stimulates angiogenesis



Speeds surgical repair



Increases tissue oxygenation by 1,200%



Speeds ischemic tissue survival



Up-regulates growth factors



Stimulates stem-cell reproduction & mobilization

What Research Says

Our Provider partners have referred hundreds of patients to us for failing grafts and flaps, of which we have seen a higher than 90% success rate. You know well that grafts and flaps are a necessity in reconstructive surgeries to replace or repair

damaged tissues. However, we also know these grafts or flaps at times fail to heal properly, leading to complications such as infection, tissue death, and impaired blood flow.

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Fortunately, hyperbaric oxygen therapy is approved by Medicare and many private insurance

companies, such as Kaiser and Blue shield, to heal compromised or failing grafts and flaps.

Mechanisms of Healing

- 1. Angiogenesis:** One of the main mechanisms of action of hyperbaric oxygen therapy (HBOT) is the stimulation of angiogenesis, or the formation of new blood vessels. Oxygen is essential for the process of angiogenesis, as it is required for the growth and maintenance of new blood vessels. HBOT increases the delivery of oxygen to the damaged tissues, which stimulates the growth of new blood vessels and improves blood flow to the area.
- 2. Increases oxygen by 1,200%:** In addition to promoting angiogenesis, HBOT also increases the availability of oxygen to the cells in the area, which enhances the cells' ability to function properly and aids in the healing process. Oxygen is essential for the production of ATP, the energy source for cellular metabolism. By increasing the availability of oxygen, HBOT increases ATP production and helps cells function more efficiently.

There have been numerous studies investigating the use of HBOT in the treatment of compromised or failing grafts and flaps. For example, a study published in the Journal of Plastic, Reconstructive & Aesthetic Surgery found that patients who received HBOT after undergoing free flap surgery had significantly better outcomes than those who did not receive HBOT. The HBOT group had a significantly lower rate of flap loss and a significantly higher rate of complete flap survival. Another study published in the journal Undersea and Hyperbaric Medicine found that HBOT was effective in treating compromised skin grafts in

- 3. Anti-inflammatory:** HBOT also has anti-inflammatory effects that can be beneficial in the healing of compromised or failing grafts and flaps. Inflammation is a natural response to injury, but excessive inflammation can impair the healing process and lead to tissue damage. HBOT reduces inflammation by decreasing the production of pro-inflammatory cytokines and increasing the production of anti-inflammatory cytokines.
- 4. Enhances immune system:** Finally, HBOT has been shown to enhance the immune system's ability to fight infection. HBOT increases the production of white blood cells, which are essential for the immune response. By enhancing the immune system's ability to fight infection, HBOT can reduce the risk of infection in compromised or failing grafts and flaps.

patients with diabetes. The study found that patients who received HBOT had significantly better healing outcomes than those who did not receive HBOT.

As a physician, if you encounter patients who have experienced complications with grafts and flaps, hyperbaric oxygen therapy can be a valuable tool in your treatment arsenal. Providers who refer patients to us typically have a higher patient satisfaction score than those who do not.

Feel free to give us a call or note the patient referral form below.

Research Studies

Hyperbaric Therapy for Skin Grafts and Flaps

Mark W. Jones, Jeffrey S. Cooper, October, 2022

Hyperbaric oxygen therapy can help maximize the viability of compromised tissue, thereby reducing the need for regrafting or repeat flap procedures.

Hyperbaric Oxygen Therapy for the Compromised Graft or Flap

Ashish Francis, Richard C. Baynosa, 2017 Jan 1;6(1):23-32. doi: 10.1089/wound.2016.0707

Hyperbaric oxygen therapy can increase the likelihood and effective size of composite graft survival, improve skin graft outcomes, and enhance flap survival.

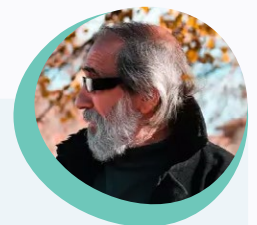
The effect of hyperbaric oxygen on compromised grafts and flaps

Shawna Kleban, Richard C. Baynosa, Undersea Hyperb Med . 2020 Fourth Quarter;47(4):635-648. doi: 10.22462/10.12.2020.13.

HBOT enhances graft and flap survival by decreasing the hypoxic insult, enhancing fibroblast function and collagen synthesis, stimulating angiogenesis and inhibiting ischemia-reperfusion injury.

Patient Experiences

Bay Area Hyperbarics has healed hundreds of patients with diabetic wounds of the extremities over the last 24+ years.



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David, a retired software project manager, had a 100% arterial occlusion for which he received an arterial stint. When a 2 1/2 inch diameter wound on his right leg with a graft wouldn't heal, he came to HBOT. After receiving his prescribed HBOT sessions, the wound closed, and he was able to resume his typical activities.

David, 64

A wound on his leg, with a skin graft, would not heal. After HBOT, the wound closed.

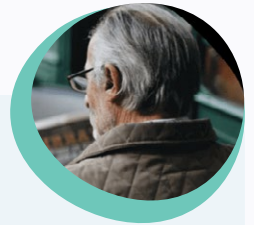


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Amita was an active hiker, but because of gangrene, lost all the toes on her right foot. Unfortunately, the surgical wound from the amputation would not heal, and her doctors were planning to amputate her foot. After a series of HBOT sessions, her wound healed up. A year later when we checked in with Amita, the wound was still healed.

Amita, 22

Gangrene on her foot would not heal. HBOT prevented amputation.



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John had compartment syndrome and infections after having received multiple surgeries over 6 months. He also had a failed graft. John's doctor sent him to HBOT to prepare him for a new graft, which was successful. After applying the new graft, John's doctor sent him back to HBOT to help the new (threatened) graft heal. In the end, John's grafts all healed.

John, 72

Had skin grafts that had trouble healing. HBOT helped the threatened grafts heal.

Refer a Patient

Refer a patient in three easy steps.

1 You submit patient's information

As a provider, your office fills out and faxes back the Patient Referral Form. Have questions? Call us!

2 We get authorizations

We make sure the patient understands treatment and then follow the prescribed protocol to get the patient on the road to recovery!

3 Patient starts HBOT

Our medical staff meets with the patient to ensure that HBOT is appropriate, and contacts Medicare or private insurance to receive authorization.



Scan for Patient Referral Form

 **Call Us: (408) 356-7438**