

## Breathing new life into wounds that won't heal

By OMESHNIE NAIDOO

Oxygen. We take it for granted, but the use of the gas as a medical healing tool has had incredible success over centuries and continues to do so.

Physicians, scientists and ordinary people alike have long been intrigued by the use of increased atmospheric pressure.

Accounts of its use in medical practice date back to the fifth century. However, it was only after oxygen became more regularly used in medicine in the 1700s, and the discovery of its combined benefits, that its true healing potential began to be investigated.

Today, about 40 years after it was first applied to heal wounds, concentrated oxygen at a high pressure is used successfully to save the crushed limbs of trauma victims, to heal thermal burns, to eradicate chronic bone infections and treat non-healing wounds in those suffering from diabetes, congestive heart failure, stroke, vascular disease, cancer and many other ailments.

Known as hyperbaric oxygen therapy, this simple and painless treatment is essentially about breathing highly concentrated oxygen at an increased pressure. This forces the much-needed oxygen into the blood, stimulating the growth of new blood vessels, fighting infection and boosting healing.

Doctors at the Hyperbaric Medicine and Wound Care Centre at Netcare St Augustine's Hospital in Durban say breathing oxygen at an increased pressure causes much more oxygen to be dissolved in plasma (blood fluid). The plasma then delivers the oxygen in much greater concentration to the damaged tissue.

Oxygen reduces swelling in acute injuries, stimulates growth of new blood vessels in tissues with an inadequate blood circulation and enhances the functions of the immune system in fighting infections.

Applying the pressure

The hyperbaric unit at St Augustine's is six years old and the apparatus looks like a mini submarine.

On the inside, the capsule-shaped compression chamber is divided into two sections - a main lock for treatment of patients at pressure and an entry lock for transfer of patients or medical staff into the main lock.

At the start of a session, which is usually about two hours long, the entire chamber is pressurised at about two-and-a-half times normal atmospheric pressure.

The patient wears a "helmet" which supplies him or her with 100% oxygen, which also removes exhaled carbon dioxide. The reason for not oxygenating the entire chamber is to prevent fire. Combustion is fuelled by oxygen and to prevent any accidents there are strict rules, such as the use of only natural-fibre clothing and a restriction on what is taken into the chamber.

Everything inside the chamber is monitored and controlled by an operator who sits at an external control table and can see and communicate with the attendants and patients inside the chamber.

The amount of time a patient spends in the chamber depends on diagnosis. An acute case may require 10 sessions, while a chronic case may need about 30. A two-hour treatment session can cost R1 500.

The therapy is not without risk of side effects or complications. These vary from oxygen overdose - which can cause nausea and even a seizure - to pressure-related pain in the middle ear or sinuses.

However, the hyperbaric physician at the unit says all cautionary measures are taken to minimise these risks. Most importantly, the unit is reserved for cases where the therapy is absolutely necessary and offers life-enhancing benefits to the patient. He adds that in extreme cases time is a critical factor.

"When there is the danger of losing a limb, one should be taken for hyperbaric treatment within the first six hours of injury if the treatment is to be effective. Many people make the critical error of seeing the therapy as a last resort when, in fact, it should be an integral part of the initial approach."

The most common use of hyperbaric therapy is to treat divers with "the bends" or decompression sickness, an excessive amount of nitrogen in the blood.

Hyperbaric therapy has also shown incredible results in acute cases of crushed limbs and

thermal burns, as well as with chronic non-healing ulcers and in the case of cancer patients who have radiation-induced damage.

In Durban, there have been many other fascinating cases.

In one instance, a breast cancer survivor developed a painful and offensive ulcer in her armpit. She had developed the cancer 25 years earlier and the surgery to remove the lymph nodes in her armpits had left her arm immobile.

The cancer recurred and after operating on the tissue which had previously received radiotherapy, an ulcer developed that oozed and was difficult to clean or dress because of its location. It disappeared after a matter of weeks in hyperbaric therapy.

Another devastating incident involved a 25-year-old man brought in with the flesh on his face terribly burned. He had cut open a drum containing chemicals with an acetylene torch. It blew up in his face. A few hyperbaric treatments and the correct wound care ensured remarkable healing of his wounds.

#### Diabetic wounds

Diabetics who often develop wounds that don't heal are also common hyperbaric patients. They sustain wounds they are often not even aware of as they have lost feeling in their feet. A simple thing such as a stone in a shoe can mean they will walk on it over and over again until it gnaws a hole there.

The doctor says, however, that it is important to recognise that not all wounds can benefit from the therapy.

"Diabetic foot ulcers that have a poor blood supply may well respond to the therapy, but other wounds, such as venous stasis ulcer, can be successfully treated with wound care, with no need for hyperbaric therapy. It is only those wounds that do not heal due to the lack of oxygen to those cells that can be treated by this method."

Often a holistic approach which includes wound care, hyperbaric therapy and surgery is necessary.

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