

# Ozone Therapy: A Natural Approach to Healing and Wellness

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## ABSTRACT:

**Background-** Ozone, a colorless natural gas which is typically acrid in odor has several properties that benefit the human being from various diseased states. It is produced naturally from electrical discharges and thunderstorms from UV rays emitted through sun over the stratosphere. It also protects the earth from harmful UV radiations. Ozone can be made medically by using special generators that convert the oxygen molecule into ozone. The benefits of ozone therapy were evaluated from 1980s itself. Magnesium dioxide (MgO) and activated charcoal are the most preferred catalytic destructors for ozone. The half-life of ozone in Indian climate is around 22 minutes. Ozone therapy provides various benefits including the activation of immune system in limiting spread of infectious diseases, improving oxygen metabolism, stimulating release of growth factors, promoting blood circulation in a targeted organ and regulating oxidative stress. Ozone therapy is differentiated into various types, based on its route of administration and the targeted outcome. These methods allow ozone to address a wide range of health issues, including pain, inflammation, infections, and chronic conditions. Each type can be tailored according to individual needs for maximum benefit. Major Autohemotherapy is the most widely practiced therapy for chronic conditions such as arthritis.

EBOO is an advanced form of ozone therapy that consists of a developed oxygen-ozone exchanger wherein blood collected from an individual is ozonated and is returned to the regular blood stream. The **Ozone Forum of India** is an established committee guiding safety, education and research of ozone therapy in India. A detailed study on various aspects of ozone therapy is discussed below along with the case studies that exhibit the positive therapeutic outcomes of the patients.

**Keywords:** MAHT- major autohemotherapy, EBOO- extracorporeal blood oxygenation and ozonation, AIDS- acquired immunodeficiency virus, IgG- immunoglobulin G, MgO- magnesium dioxide, ATP- adenosine triphosphate, IBD- inflammatory bowel disease, BOTO- breathe only through ozone, G6PD- Glucose-6-phosphate-dehydrogenase, OFI- ozone forum of India.

## INTRODUCTION

Ozone is a natural, unstable gas made of three atoms of oxygen from the atmosphere. The gas is colorless, acrid in odor and is 10 times more soluble in water than oxygen. It cannot be stored anywhere and must be used at once as its half life is approximately 40 minutes at 20 C. Ozone is the third most potent oxidant which absorbs harmful ultraviolet radiations from the atmosphere which is why it is considered to be dangerous at high concentrations.

Ozone became a normal practice by 1914 – 1918, physicians were familiar about the ozone's antibacterial

properties and has utilized them as topicals for wounds and burns. Around 1980s, reports revealed that physicians from Germany were successfully treating HIV patients with autohemotherapy. By the end of 1857-Werner Von Siemen has developed first ozone generator for production of ozone in a clinical setting. Following Albert Wolff studies has led to the treatment of severely infected wounds or abscesses in 1915. The inculcation of rectal insufflation technique with the help of silk catheters was introduced by Albourg in 1937. In 1977 Rokitansky has tried applying ozone therapy for diabetic foot gangrene which gave excellent results in improving the vascularity of dead tissue. As the time passed, Fahmy introduced ozone injections for treating rheumatoid and osteoarthritis. Dr Otto Warburg finds the cause of cancer to be lack of oxygen at cellular level which can be replenished through combination of oxygenation and ozonation. After the 150 years of usage, ozone therapy is approved in 22 countries.

**Table 1: Chronological uses of ozone therapy**

YEAR	CONDITIONS TREATED WITH OZONE
1987	Abscess, acne, AIDS, allergies, liver cirrhosis, cystitis, bed sores, gangrene, hepatitis, tumors, osteomyelitis, wound healing.
1988	Staphylococcus and fungal infections, radiation injuries, fistulae, hemorrhoids, diabetes, atherosclerosis, periodontal disease, gastric ulcers, eczema and skin ulcers.
1989	Cancer treatment- Noted to show significant increase in IgG levels facilitating immunostimulatory activity.
1991	Used in rhinoplasty and post operative complications.

**OZONE THERAPY**

The production of ozone is made possible through two different ways that is medical ozone where ozone is produced in a clinical setting by utilizing pressure swing technology, oxygen tanks and cylinders. The other way is through industrial production. Medical ozone generators are the devices which generate ozone molecules by utilizing pure medical grade oxygen for various clinical purposes. Magnesium dioxide (MgO) and activated charcoal are the most preferred catalytic destructors for ozone. The half-life of ozone in Indian climate is around 22 minutes. The Hot climate in India is advantageous, as ozone is quickly destroyed in hot weather. The German medical society for ozone therapy conducted a study where 644 therapists were polled about the side effects to ozone therapy amongst 384,755 patients. Out of which, notably 40 cases of side effects were noted indicating the risk of 0.0000007%. The dosage calculation of ozone treatments differs in different age groups and is typically dependent on volume and concentration. The dosage is gradually escalated from a low dose in the initial stages to medium doses which produces the best effect. Ozone tends to form ionic oxidants, Vitamin C is capable of wiping both ionic and non-ionic oxidants. Hence, vitamin dosing is mostly avoided or given after 2 hours of ozone therapy to prevent antagonism. The therapy contributes to better therapeutic outcomes when combined together with yoga, physiotherapy, nutrition and mobility.

**BENEFITS**

- Increases oxygen, glucose and ATP delivery within the tissues.
- Facilitates vascularization and tissue generation.
- Activates immune system and helps in limiting spread of infectious diseases.

- Stimulates release of growth factors.
- Promotes blood circulation in a targeted organ.
- Enhances vascular and hematological modulation.
- Industrial uses- Drinking water purification, waste water treatment, odor remover and food preservation.

## MAJOR AUTO HEMOTHERAPY

Major auto hemotherapy is considered to be the most advanced and reliable approach to supplement ozone into a human body. This technique was developed a severe decades ago and the recommendations vary depending on the clinical circumstances. In this technique, the blood is collected from vein and is allowed to circulate through a ozone resistant gas exchanger with the help of a pump for 5-10 minutes which is then returned into the circulation via lateral vein of the body. The blood exposed to ozone gas deactivates pathogens and strengthens immune system functioning. It can be performed several times in a week or spaced out to once weekly or once in a month. The technique is practiced in all the countries of Europe. The International Scientific Committee of ozone therapy found an occurrence of just 6 complications out of every 100,000 therapies ( 84% of them were due to incorrect administration and non-sterile handling). If an individual is undergoing physical therapy or naturopathy, MAHT can still be a good option for efficient outcome. The major difference between the major and minor autohemotherapy is that, only a small amount of ozone gas is mixed with small volume of blood and then the mixture is injected as a shot to stimulate the immune response in a minor autohemotherapy. The studies from different aspects of world prove the MAHT procedure to be significantly improving various conditions.

## EBOO ( Extra corporeal blood oxygenation and ozonation)

EBOO is an advanced form of ozone therapy that consists of a developed oxygen-ozone exchanger wherein blood collected from an individual is ozonated and is returned to the regular blood stream. The procedure is similar to hemodialysis and is majorly used for detoxifying and enhancing immune responses. The process is carried out outside the body hence, is termed as extracorporeal (outside). A number of conditions can be treated with this technique such as , chronic infections, diabetes ,auto immune diseases, rheumatoid arthritis and cancer.

The other routes of administering ozone are as follows

### 1. Ozonated water

Ozonated water is an excellent way to disinfectant from bacteria, virus and other infections. The water solubility of ozone is ten times higher than oxygen. The ozonated water is generally meant to treat gastritis, esophagitis, cholecystitis and peptic ulcer diseases. Ozone water can also be passed through catheter into rectum which helps in cleansing bowel which is useful for patient's with colitis, IBS and constipation. (Recommendation: 500-1000ml). It is advisable to drink a minimum of 2-3 glasses of ozone water first thing in the morning. It strongly inhibits accumulation of dental plaque and are widely used in the preparation of gargles for aphthous ulcers, gingivitis and periodontitis in dentistry.

### 2. Ozonated oil

Ozonated oil is a powerful anti-microbial, anti-inflammatory ingredient that aids in wound healing and regeneration of dead tissue. The oil is prepared by bubbling ozone through any vegetable oil (olive or sesame oil) in a glass container. The oil is meant to be applied on the affected part as long as required. It helps in releasing toxins, reducing swelling and sterilizing epidermis to facilitate wound healing.

### 3. Ozone bagging

Ozone bagging is a closed system in which ozone gas is fed into a special resistant bag that best fits the affected part of the body. This technique is indicated in case of extensive, chronic and persistent skin diseases such as herpes zoster, eczema and psoriasis. Other surgical indications of bagging include diabetic ulcers, varicose veins, venous ulcers and wounds.

### 4. Ozone Funneling

Ozone funneling is used where bagging is not possible. The technique improves blood flow towards the targeted area. This procedure shows significant results in furuncles, bed sores, fistulas, abscesses and cirrhosis of liver. The recommended concentration of ozone above head, neck and face is around 10-20 ug/ml while below head, neck and face is around 30-50 ug/ml.

### 5. Ozone steam bath

Sauna is a effective and pain less detoxifying treatment that stimulates immune system and assists sweating that removes toxins from the body. It facilitates purification, detoxification and rejuvenation of dead skin cells on the body. Body suits are indicated when steam bath is not suitable for a patient. Steam baths are restricted for patients suffering from psoriasis and asthma.

### 6. Insufflations

Insufflation is a route of administration that includes the act of blowing air, gas or any other medium into a body cavity. Ozone therapy is insufflated through ear, rectum and vagina of an individual. The uses of insufflations vary based on the route of administration. Rectal insufflations are as effective as major auto hemotherapy wherein, ozone is absorbed through the walls of colon.

### 7. BOTO (Breathe only through ozone)

Ozone when passed through any oil ( olive or sesame oil) forms ozonide's which is responsible for decreasing upper respiratory tract infections and allergies.

The other modes of ozonation include intraarticular, intra discal, intramuscular and para spinal injections along with ozonised saline solutions.

## CONTRAINDICATIONS

- G6PD deficiency- Ozone can increase oxidative stress in an individual. G6PD is an enzyme that helps protect red blood cells from oxidative damage. When there is any disturbance in its levels, the body becomes more vulnerable to oxidative stress. In case of severe oxidative stress, it may sometimes lead to destruction of red blood cells leading to hemolytic anemia, jaundice, and other complications.
- Hyperthyroidism- Hyperthyroidism refers to an overactive thyroid, which leads to abnormalities in body responses (rapid heart rate). Ozone therapy may trigger the responses and worsen the regular functioning of the body.
- Active bleeding- Ozone has the ability to cause vasodilation (widening of blood vessels), which could accelerate bleeding thus making it harder for the body to control.
- Immunosuppressive state- Ozone interferes with the immune system's ability and may increase susceptibility to infections.
- Pregnancy- There is a possibility to note side effects affecting both mother and fetus which is why, ozone being a strong oxidizing agent is contraindicated during pregnancy.

## OZONE FORUM OF INDIA

The **Ozone Forum of India** is an established committee guiding safety, education and research of ozone

therapy in India. It brings together various healthcare professionals from various medical fields who are interested to initiate ozone therapy to treat different health conditions. The group conducts various programs, workshops, and seminars throughout the year. Committee also continues to work on research and clinical studies. Here are some case studies comparing the efficacy of ozone treatment in various conditions recorded by OFI.

### Case study 1

**Mr. M**, 44yrs, Male

C/O: Ulcer on both legs, since 15 yrs.

H/O of severe pain and swelling mostly on left than right.

K/C/O DM / HTN (on medication).

O / E:

Lt. Leg – Ulcer on lateral aspect of lower leg, above ankle joint – 4inch x 4inch.

Rt. Leg –Ulcer on medial aspect of lower leg, above ankle joint – 3c.m. x 4c.m.

Blackish Discoloration of both lower legs with pus.

**Treatment advice**-Rectal Insufflation: 20 sittings

**Result:** Pain was much better by 10 sittings with significant improvement in healing.



**BEFORE**



**AFTER**

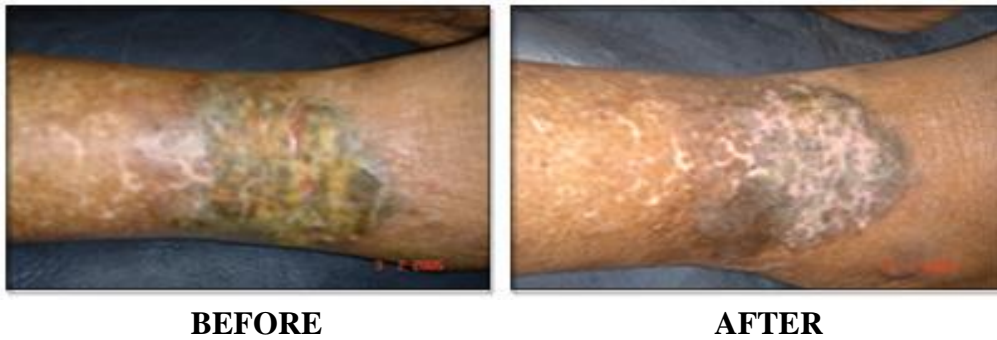
### Case Study 2

**Mr. K**, 71 yr old man presented with rough, thick, dry scaly skin on both the ankle joints that has been there from the last 10 years. Gradually started on right side followed by the left side within 3 years. He complained of itching since 3 months.

**Observation:** Dry, rough, yellow-colored lesions with fissures were present on the anterior aspect of the right ankle- Indicating chronic eczema

**Treatment advice:** External Ozone application with bagging was recommended along with the local application of Ozonated. Therapeutic regimen was accompanied by rectal insufflations for faster relief from itching.

**Results-** The itch completely resolved after 15 sittings with significant healing.



### Case study 3

**Ms. J, 54 yrs** old women presents with pain in both the knee joints ongoing from 2 years. She was recommended to undergo knee joint replacement previously.

**Treatment advice:** Subcutaneous peri articular ozone injections were given in the knee joint.

**Results-** A course of 2 ozone injections were given weekly for 4 consecutive weeks. By the end of fourth week, her pain was reduced by 80% with increased mobility.

### CONCLUSION

Ozone therapy has been showing excellent outcomes in various aspects of medicine including neurology, orthopedics, internal medicine, endocrinology, gastro-enterology and dentistry. It is a promising, natural treatment option that utilizes the power of oxygen in the healing process, benefiting a variety of health concerns. Scientific application of ozone treatment across the world proves that, it can help with pain management, infections, immune system support, and inflammation reduction. There has been a confusion on the ozone's toxicity which is the major cause of preventing widespread acceptance. The therapeutical approach is indeed a safe and efficient way to cure a condition, when administered by qualified professionals at a stable dose and concentration. The status of an individual who is undergoing ozone treatment can better determine the improvement in quality of life from a chronic condition or illness.

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