

## **OXYGEN OZONE GAS MIXTURE DISTRIBUTION AFTER INTRAMUSCULAR INJECTION: EVIDENCE FROM CT IMAGING (Computer tomography)**

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The intramuscular injection of oxygen -ozone is a successful approach in the treatment of the pain during the low back syndrome because the ozone displays a number of beneficial effects ranging from the inhibition of inflammation, correction of ischemia and stimulation of anti nociceptor analgesic mechanisms. Nevertheless, the amount of gas mixture, the concentration of ozone, the site and the depth of the injection in the muscular mass are still under debate.

To better evaluate the best technical injection modality, we performed a CT-guided muscular infiltration of ozone in a patient affected by lumbar pain. CT imaging was obtained from a TC 64 multislices (GE Light Speed VCT) centered on L4 in a patient underwent to CT scan for low back pain. The needle was inserted perpendicularly to the skin at L4-L5 level and ten slices above and under the needle with a thickness of 1,25 mm were performed before and after ozone injection of 10 ml of oxygen-ozone gas mixture at a ozone concentration of 15 micrograms/ml of gas.

CT images showed that ozone can arrives in depth throughout the path of least resistance represented by fascia and intramuscular septa of the multifidus muscle that are generally rich in fat. In particular it is usually well represented the cleavage plane that separates the multifidus from the longissimus muscle. Evaluating retrospectively 50 TC this septum is at a distance of  $27 \pm 5$  mm at L4-L5 level and  $34 \pm 4$  mm at L5-S1 level from the spinosis apophysis.

This preliminary result supports the thesis that the needle inserted perpendicularly at a distance of about 3 centimeters from spinosis apophysis is the best way to infiltrate deeply the muscular structure and consequently for improving the efficacy of the intramuscular ozone injection.