

# Potential Use of Local Ozone Therapy for Neonatal Mandibular Osteomyelitis

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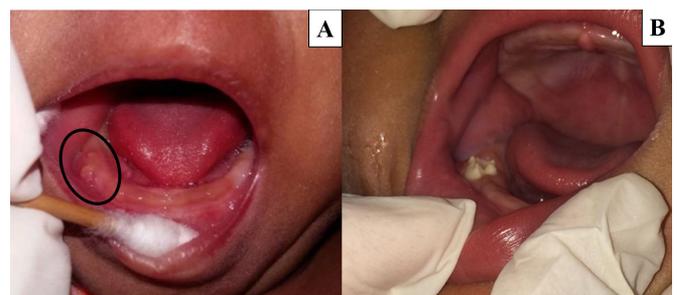
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The incidence of neonatal osteomyelitis (NO) in neonatal intensive care units is reported to be 1/1000 to 3/1000. The principal causative organism for osteomyelitis in infants and neonates is *Streptococcus*.<sup>1,2</sup> The microorganism enters the bone through hematogenous route. Direct microbial entry is possible, especially in cases of the recent traumatic injury leading to open wounds. In NO, the trauma could be induced during the delivery.<sup>3,4</sup> Vertical transmission may occur from a mother with suppurative mastitis, systematic infection or from contaminated nipple during breastfeeding.<sup>1,2</sup> Thus, in osteomyelitis, especially in neonates, it is vital to conduct a complete medical workup on the mother to confirm the source of infection in order to prevent reinfection. Although the initial clinical presentation of NO is subtle, it can progress rapidly with systemic complications. Thus, early intervention is of utmost importance.<sup>5</sup> Further, in NO of gnathic bones, the pain associated with the oral lesions may deter the neonate from breastfeeding; thus, malnourishment is a common feature in these cases. Unlike osteomyelitis in adults,<sup>6</sup> surgical interventions are not advised for NO as there is an increased risk of bone deformity. At present, most cases are treated with antibiotics, which although controls the infection, may not attenuate the

clinical symptoms preventing the infant from breastfeeding. Thus, an adjuvant treatment modality which can alleviate the symptoms at the earliest without any added complications is the need of the hour. In adults, osteomyelitis has been successfully treated with antibiotics and adjuvant ozone therapy.<sup>7,8</sup> There is sufficient evidence to indicate that ozone therapy could aid in bone healing.<sup>9</sup> Although at present there is limited data on the use of ozone therapy in osteomyelitis, in our own experience, we found that local ozone therapy (local application of ozonated water to the lesional site) in combination with antibiotics (IV vancomycin 15 mg/kg/dose 8 hourly for 15 days) substantially improved the clinical symptoms of a 19-day old patient diagnosed with NO (Fig. 1). Given the age group of NO, use of ozone gas could cause respiratory complication. Thus, the local application of ozonated water (prepared by infusing three cycles of ozonated gas into 100 mL of saline throughout 24 hours) could be a safer alternative. Thus, to conclude, given the overall effectiveness of ozone therapy in adult osteomyelitis<sup>7</sup> and the good response elicited in the 19-day-old NO patient to local application of ozonated water, further large-scale multicenter prospective studies are warranted to determine the therapeutic value of antibiotics with local ozone therapy in cases of NO involving the gnathic bones.



**Figs 1A and B:** (A) NO presenting as nodular swellings on the right mandibular alveolar process; in cases of pus discharge, cotton swab can be used to remove the pus before applying the ozonated water; (B) 9 months follow-up showing adequate healing with normal tooth eruption following treatment with antibiotics and local application of ozonated water

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