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CASE REPORT

Management of a soft tissue tumor in a child with Worster Drought syndrome using 810 nm diode laser - A case report

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Background and aims: An out-patient surgical procedure in the paediatric age group is a tough task for a surgeon, more so when compounded with mentally challenging conditions like cerebral palsy. Every step involved, either administration of local anaesthesia or handling sharp surgical instruments around the face or achieving haemostasis, can be a challenge, with compromise on patient safety. Neither undue restraint nor general anaesthesia is advisable, considering the magnitude of the procedure. In such cases, a safe, rapid and effective technique that can be comfortably performed under topical anaesthesia without use of sharp instruments or needles would be an ideal option.
The purpose of this paper is to highlight one such situation, where an intra-oral soft tissue tumor was safely and effectively ablated using diode laser, under topical anaesthesia in a child with cerebral palsy concurrent with Worster Drought syndrome.
Results: Topical anaesthesia provided adequate conditions to ablate the tumor. A bloodless field was achieved, with no need for sutures. The procedure was completed in less than half the time required for a conventional approach. Postoperative follow-up of 3 months showed complete healing with no recurrence.
Conclusions: Portable diode lasers are an effective tool for minor oral surgical procedures in paediatric population especially, children who are mentally challenged.

Key words: 810nm diode laser · Worster Drought syndrome · Paediatric oral surgery.

Introduction

Worster Drought Syndrome (WDS) is a form of cerebral palsy presenting with oral manifestations like weakness/paralysis of the lips, tongue and soft palate [1-3]. These features make maintenance of oral hygiene difficult or often impossible especially in paediatric age group. Such children are often prone to teeth and periodontal problems. Even worse is the development of pathological lesions in such neglected mouth, because they are seldom noticed early and even if identified are difficult to be treated in an unconditioned child. This article describes the quick and effective management of a soft tissue tumor in a child with Worster Drought syndrome with an 810 nm diode laser.

Case report

An 11- year old female child was referred to our dental office accompanied by her mother. The child presented with a small warty growth in her right commissure of the mouth measuring about 5 mm. The circular

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mass has apparently been noticed before 15 days. Additionally, the child also had signs of neglected oral health along with drooling of saliva on the right side. History revealed that the patient has originally been diagnosed with Worster Drought Syndrome and is under treatment for the same.

A quick examination revealed a sessile mass measuring 3mm in the right corner of the mouth. The surface of the mass appeared warty and non-erythematous **(Fig1-3)**.

Considering the hyperactive nature of the child, it was decided to perform laser ablation of the mass under topical anaesthesia (8% lidocaine and 0.8% dibucaine). This was achieved using an 810 nm diode laser (Picasso Lite, AMD Lasers, Johnson City, USA) at 0.5W continuous wave mode. A 300micron, initiated fiber in contact mode was utilized for the ablation.

All standard safety protocols for laser safety were followed. The entire procedure lasted hardly about 2 minutes **(Fig4, 5)**. No bleeding was encountered and patient was comfortable. Oral paracetamol was prescribed on a need basis. The patient was reviewed sequentially at weekly and monthly basis **(Fig5-9)**.

Discussion

Cerebral palsy when compounded with WDS is a debilitating condition because of permanent disorder of the bulbar muscles leading to difficulty in swallowing, feeding, speech and salivary control [4, 5]. Such a situation can be worse in the unconditioned paediatric age group because of higher rates of emotional and

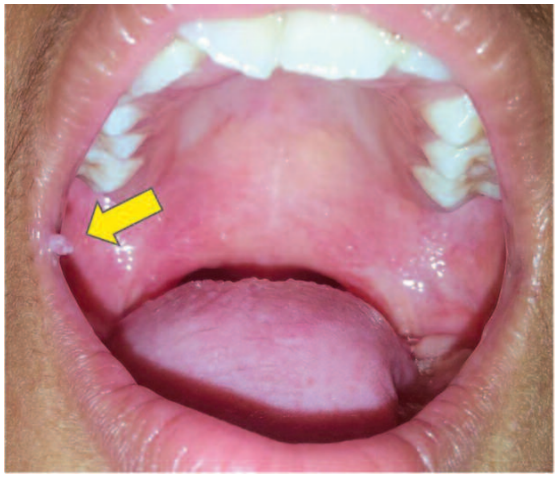

Figure 1: Preoperative frontal view

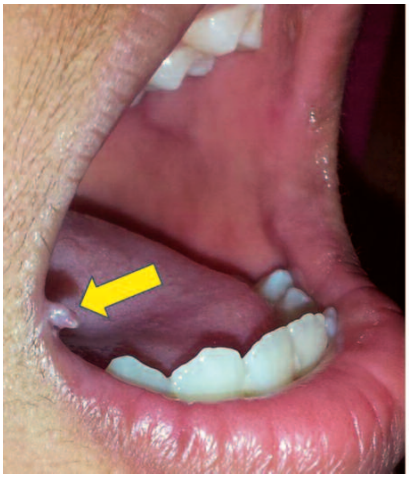

Figure 2: Preoperative lateral view

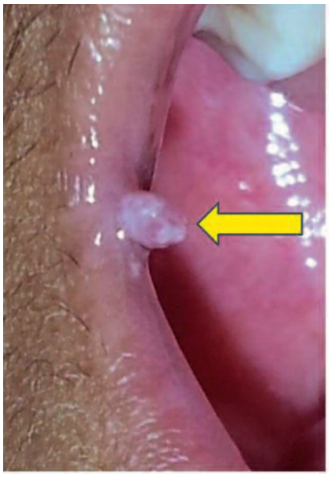

Figure 3: Enlarged view of the tumor

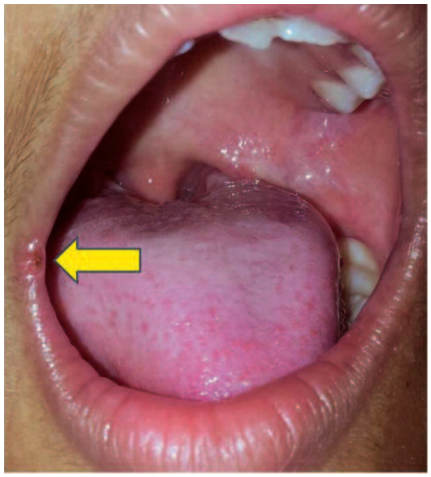

Figure 4: Immediate postoperative frontal view

behavioural disorders [6]. The patient discussed here too had such signs and a resultant poor oral hygiene. The soft tissue tumor on the commissure was an additional issue to the existing problems such as lip biting and drooling of saliva due to uncoordinated jaw movements.

According to Marx & Stern "Tissue masses are often generically referred to as tumors without distinguishing their specific pathology and their anticipated behavior or natural course" [7]. Tumors may also occur in patients with developmental disorders as it occurs in any other individual. In this case, the tumor, though asymptomatic in terms of associated pain, posed problems in terms of difficulty in maintaining the hygiene of the involved region, due to the drooling of saliva, the habitual biting, manipulation of the growth by the child and associated poor esthetics. Such constant injuries to the lip due to the reasons mentioned above may cause the development of traumatic fibromas and diagnosis is mostly clinical in these cases. Hence in this case the tumor had to be ablated owing to the practical difficulties encountered. Thus, a clinically benign tumor measuring about 3mm, which is planned for laser ablation, did not offer material for microscopic examination for obvious reasons and hence a histopathological diagnosis was not practical.

Outpatient minor surgical procedures in the dental office, for such patients should ideally include an approach which is quick, safe and less traumatizing to the mental and physical status. According to Kafas et al "The great advantage of diode laser frenectomy in paediatrics should be the avoidance of needle-infiltrated

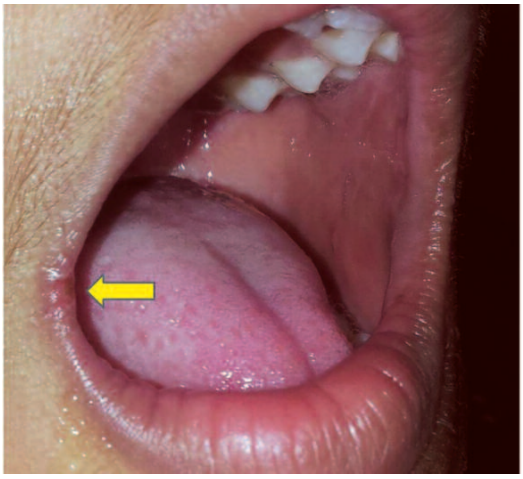

Figure 5: Immediate postoperative lateral view

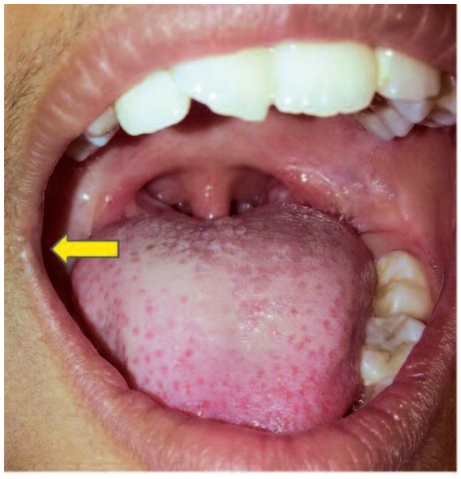

Figure 6: 1 week postoperative frontal view

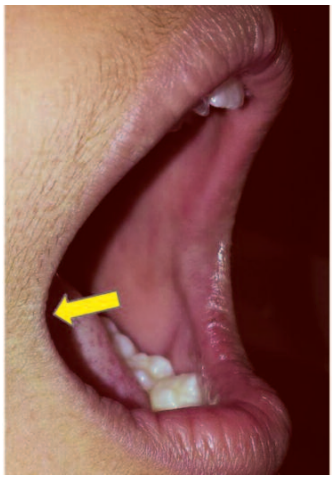

Figure 7: 1 week postoperative lateral view

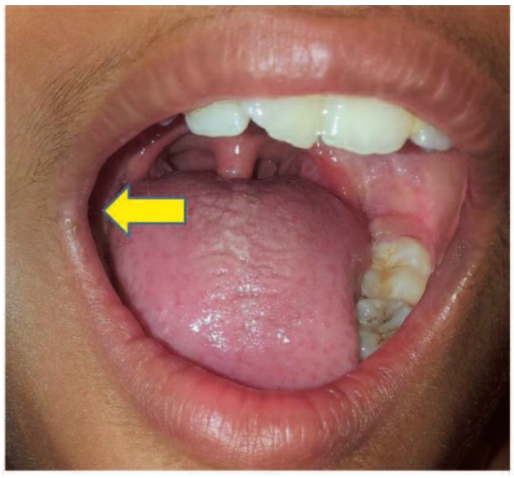

Figure 8: 3 months follow up frontal view

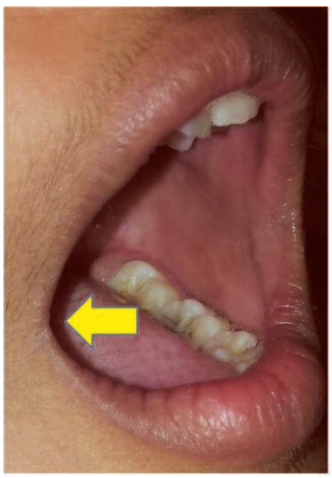

Figure 9: 3 months follow up lateral view

anaesthesia" [8]. A logical method would be laser ablation under topical anaesthesia and fortunately, the early intervention helped in ablating a tumor of manageable dimensions.

Though the tumor was small in dimension, it still had a propensity to bleed, considering the rich vascularity of the maxillofacial region. The sealing of small vessels through protein denaturation and Factor VII stimulation by laser could offer a bloodless operation. The surface coagulum that forms over the wound can serve as a protective dressing [9] and need for placing sutures can be eliminated completely. Target tissue disinfection due to local heat produced, decreased postoperative tissue shrinkage and scar formation of eschar layer also accounts for the decreased scarring associated [10, 11]. The 810 nm diode lasers is a very useful tool for surgical procedures on the oral mucosa [12, 13]. The light is well absorbed by pigmented tissue helping in denaturation and haemostasis [14]. Hence, laser ablation was definitely a superior alternative to standard excision using BP blade.

Peri-operative pain is an important consideration especially in special children for obvious reasons. Laser ablation does provide analgesia in this period. This is attributed primarily to the ability of lasers to induce suppression of bradykinin activity. Additionally, the bio-stimulatory effect of 810nm diode laser could also be a contributory factor for reduction in postoperative edema and healing time [15,16]. Transcutaneous delivery of photons by laser results in failure to elicit a vivid pain response during the ablation enhancing patient cooperation [17]. This phenomenon explains the possibility of operating with mere topical anaesthesia.

Conclusion

810nm diode laser is a fast, safe, reliable alternative to conventional surgical techniques in minor oral surgery on an outpatient basis, especially for mentally and physically challenged paediatric patients. The procedure could be conveniently performed under mere topical anaesthesia, hemostasis is seldom a concern and preoperative and postoperative analgesia is adequately taken care of by the laser. This helps in good patient compliance.

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