Management of recurrent mucocele with diode laser – Case report

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Abstract

Mucocele is a “benign mucus filled cavity which is usually present in the oral cavity, lacrimal sac, and paranasal sinuses.” It is not a true cyst and it rarely resolves on its own, thus making surgical removal necessary in most cases. The need for surgical removal poses to be a challenge, especially in children and patients with behavioral problems. Various treatment options like cryosurgery, micro-marsupialization, intra-lesion injection of corticosteroid, conventional surgical removal and laser ablation have been described in the literature. Few studies have demonstrated the use of LASER for removal of mucocele in adults. The present case describes a case wherein a Diode Laser was used for excision.

Introduction

Mucocele is a “benign mucus filled cavity which is usually present in the oral cavity, lacrimal sac, and paranasal sinuses.” The appearance of mucocele is a pathognomonic sign. The location of the lesion, any previous history of trauma, rapid appearance, size, and blue color of the lesion indicate a diagnosis of superficial mucocele. Depending on the size and location, it may be associated with an external swelling, and also with interferences in mastication and speech discomfort. The lower lip is the most commonly affected site. The two types of mucoceles generally observed are extravasation and retention type, of which the extravasation type is commonly seen in children while the retention type is rare.

Shallow mucoceles burst and release straw coloured fluid, and deeper ones are known to last longer and cause discomfort. They are seen as bluish soft and transparent cystic swelling that most often resolve spontaneously. The color of the mucocele largely depends on the size of the lesion, their proximity to the surface and elasticity of the overlying tissue; making deeper mucoceles appear normal in color.

But if untreated they get organized and more fibrous making surgical removal necessary, which can be challenging in children and patients with behavioral problems. Cryosurgery, intra-lesion injection of corticosteroid, micro-marsupialization, conventional surgical removal and laser ablation are some of the treatment options that have been used with success and are described in the literature.

Surgical excision of mucocele using a scalpel is the most commonly used method and it involves complete resection of the mucocele along with neighboring minor glands to reduce the risk of relapse. The use of laser comes with the advantage of being simple, less time consuming, bloodless procedure with minimal scarring and postoperative discomfort and less rate of recurrence. Laser has been used effectively in pediatric patients as well as patients with behavioral problems.

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Diode laser for excision was chosen because of its distinct advantages of small size and low cost. They can give a well-defined cutting edge, as well as coagulation and hemostasis during excisions.28

Case Report

A male patient aged seven years came to the Department of Pediatric and Preventive Dentistry accompanied by his father, with a chief complaint of small swelling on the right side of lower lip.

The patient reported that the swelling was sudden in onset and it gradually increased in size and it was associated with pain on palpation (Figure 1). No history of discharge and fever was associated with the swelling. It was also reported that child developed a similar asymptomatic swelling, which suddenly appeared four months back, in the same region of similar size for which the patient consulted a dentist in the general hospital 1 month back and underwent surgical scalpel excision of the swelling on the same day, but it recurred after 15 days.

On a thorough intraoral examination, two small soft dome shaped swellings on right labial mucosa of the lower lip of approximately 5 X 5 mm oval in shape and 2 X 2 mm in size and round in shape was discovered (Figure 1).

The smaller swelling was firm on palpation and the larger one fluctuant, both were associated with pain. The surface appeared reddish pink in color and the swelling was tender on palpation.

An informed consent was obtained from the patient’s father. The lesion was excised under 1ml local anesthesia [2% xylocaine Adrenaline (1: 2,00,000)], using 980nm wavelength diode laser at 1W in continuous wave mode and the charred tissue was removed gently in between the procedure to minimize the heat produced in the local area (Figure 2 a & b).

The specimen was subjected to a histopathological examination (Figure 3, 5 & 6). Postoperative instructions were given which included the use of 250 mg Paracetamol as required and the patient was recalled after one week.
Discussion

Mucocele is the most common minor salivary gland disease and has a high rate of prevalence among pediatric patients. It is seen to occur equally among males and females. It is the 17th most common salivary gland lesions seen in the oral cavity and represents the second most frequent benign soft tissue tumor of the oral cavity, following irritative fibromas.

Mucoceles have a characteristic dome shaped mucosal swelling with an accumulation of mucin. They are usually blue and present with a transparent hue and the size varies from 1-2 mm to several centimetres. Extravasation mucocele results from a severed salivary gland duct which causes spillage into the soft tissues around the gland. This extravasation occurs mostly due to mechanical trauma, causing rupture of the ductal system of the salivary gland that leads to mucin spillage. This mucin spillage into the adjacent soft tissues leads to the formation of mucous extravasation cyst. The clinical appearance of both extravasation and retention mucoceles is similar.

The lower lip is most commonly affected by mucoceles, and rarely is it seen on the upper lip, palate, retromolar region, buccal mucosa, lingual frenum or dorsal tongue. The other lesions that present on the upper the lip are fibroma, lipoma, mucus retention cyst and sialolith. They can be distinguished from the mucocele based on the clinical appearance, color, consistency and etiology.

In the present case, there was recurrence within 15 days after scalpel excision. A variable recurrence rate has been observed if not excised along with the feeder gland. A diode laser was used for excision of mucocele in the present scenario, which showed minimal patient discomfort, postoperative pain, and edema with no bleeding.

Jin et al., in their animal study reported that the diode laser is considered a good cutting device for oral mucosa. A diode laser in comparison to other lasers, like Argon, Neodymium:Yttrium-Aluminum-Garnet (Nd:YAG) and carbon dioxide lasers, is intensely absorbed by hemoglobin,
resulting in elevating temperature and thus causing coagulation and carbonization of soft tissues, such as the oral mucosa and results in minimum scarring and discomfort.\(^{29}\)

Laser surgeries in comparison to scalpel surgeries have various advantages - minimal or no anesthetic is needed, no damage to dental hard tissues, easy to perform, less discomfort, minimal or no bleeding, shorten healing time with reduced postoperative bleeding and edema. Lasers are portable and compact in design with efficient and reliable benefits for use in soft tissue oral surgical procedures.

Histologically, it has been observed that laser wounds contain significantly lower number of myofibroblasts which results in less wound contraction and scarring, and ultimately improved healing.\(^{31}\) On the other hand, some of the disadvantages of laser include eye damage by laser light, so protective eyeglasses are required. Cutting is slower than electrosurgery with an odor of burning flesh. The working should be free combustible gases.\(^{32}\)

**Conclusion**

Hence, removal of mucocele with the help of diode laser has various beneficial effects such as less procedural timings, good surgical site visualization, minimal anesthesia and hemostasis. Laser application makes it possible to reduce apprehension and fear among pediatric patients and therefore helps in reducing chairside time.

**References**


