Mucocele of the lip treated by using 980 nm diode laser

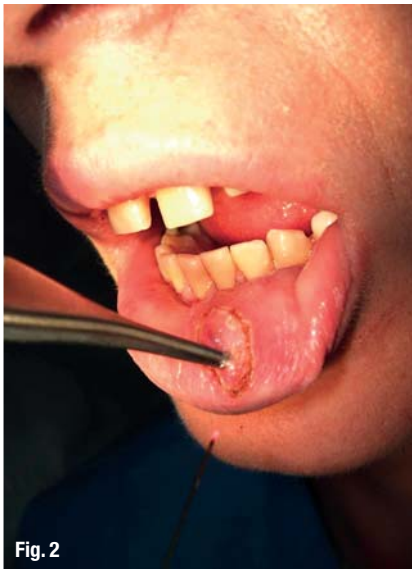
Authors_Dr Merita Bardhoshi, Prof. Dr Norbert Gutknecht, Dr Esat Bardhoshi, Dr Alketa Qafmolla, Dr Edit Xhajanka & Dr Neada Hysenaj, Albania & Germany

_Introduction

Mucoceles are defined as mucus-filled cavities that can appear in the oral cavity, paranasal sinuses or lacrimal sac. They are characterised by the accumulation of liquid or mucoidmaterial, giving rise to a rounded, well circumscribed transparent and bluish-colored lesion of variable size.[1,3,5,7] The consistency is tipically soft and fluctuant in response to palpation. Mucoceles are painless and tend to relapse. Etiologically, most mucoceles are considered to be secondary to traumatic or obstructive disorders of the mainly minor salivary glands—the preferential location being the humid mucosa of the lower lip. Mucoceles are usually asymptomatic, although in some patients they can cause discomfort by interfering with speech, chewing or swallowing. They can be different in size, small and large. However, in most cases these lesions rupture spontaneously or traumatically a few hours after being formed, with the release of a characteristic viscous mucoidfluid. This may give the mistaken impression of healing, since the lesion decreases in size or disappears. However, once the small perforation allowing release of the mucocele contents has healed, the secretions accumulate again and the lesion relapses.[5,9,15] In case of repeated trauma, the lesion may become nodular and firmer in response to palpation with rupture being more difficult in this situation. Treatment may be performed by conventional surgery, cryotherapy and more recently laser surgery. Carbon dioxide laser and high-intensity diode laser both have provided satisfactory results.[8] The purpose of this study was to evaluate the effectiveness of 980 nm diode laser in the treatment of mucocele of the lower lip and also to compare the results obtained after mucocele resection with scalpel versus 980 nm diode laser.

Fig. 1_Clinical diagnosis.
Fig. 2_Laser treatment.


Fig. 1


Fig. 2

_Patients and method

A total of 10 patients (six males and four females) aged 15 to 40 were treated for mucocele of the lip by a 980 nm diode laser. An initial clinical examination consisting of the past medical and dental history as well as thorough extra- and intraoral examination were performed on all patients. Complementary blood test, complete blood count and erythrocyte sedimentation rate made it possible to exclude infectious diseases. The collected data were evaluated and a clinical diagnosis for the type of lesion was established (Figs. 1). All patients were given a written and verbal information on the nature of laser treatment and signed informed consent forms were obtained prior to treatment. Treatments were con-

ducted from January 2007 to January 2011 at the Department of Oral Surgery (Dental Clinic of the University of Tirana, Albania). For all treatments, a diode laser was used (Sirona, 980 nm, cw, optical fibre 300 micrometer, 4 W). Treatments were conducted with infiltration anaesthesia of 2% lidocaine, 1 cc and excision was performed by surgical technique. The treatment area was cooled by the application of ice 2 to 5 minutes after treatment. Surgical fields were bloodless, no sutures were required and time of surgery was 2–4 minutes (Fig. 2). The specimens obtained were fixed in 10% formalin solution for posterior histological study to establish the definitive diagnosis. The resulting surgical wounds were allowed to heal by second intention (Fig. 3). After treatment, analgesic medication was prescribed to be used if necessary, but no antibiotics were prescribed. Ten clinical cases of mucoceles were treated by scalpel. An elliptic incision was made to fully enucleate the lesion along with the overlying mucosa and the affected glands. The operation proved more complicated when the lesion ruptured, since the loss of references made it more difficult to ensure complete elimination of the lesion. The wounds were finally sutured. The follow-up visits were scheduled ten days, one month, six months, one year and three years after surgery. All lesions were photographically documented at all stages of treatment and healing.

_Results

The study comprised 20 patients (twelve males & eight females), six cases presented between ten and 20 years of age, nine cases between 20 and 30 years of age, three cases between 30 and 40 years of age and two cases between 40 and 50 years of age. In most of the cases, there was no evident etiological factor. Mucoceles ranged from 1–3 cm in diameter, no pain was reported by all patients, and only seven patients referred discomfort associated with nibbling of the lesion. Immediately after the excision, all surgical fields were bloodles (Fig. 4). Histopathological examination confirmed the initial diagnosis. All patients were followed up seven days postoperatively for pain and swelling .

After four weeks, the wound healing characteristics of all clinical cases were evaluated. Patients treated with diode laser reported good, comfortable healing without complications (Fig. 4) or functional disturbances, versus ten scar formations and four relapses with scalpel. After six months to one year, no recurrence was observed in patients treated with laser versus three cases treated with scalpel. No lip paresthesias were recorded after the treatment of both of the two groups of patients.

_Statistical analysis

We have presented some of the cross tabulations using SPSS16 (Statical Package for Social Sciences). Data for patient characteristics are given as mean and standard deviation in order to obtain information and to observe the difference between the scalpel and laser procedure. For each step we have recorded pain, functional disturbance, swelling and recurrence on a standard visual analogue scale from 0 to 4. The maximum value for pain is one, showing that the response is mild pain. We recorded just one case with such kind of pain in the laser procedure. The mean is 0.625 and the standard deviation is 0.25.

AD




Fig. 3


Fig. 4

Fig. 3_Healing by second intention.
Fig. 4_ Immediately after the excision, all surgical fields were bloodless.

We have also checked for any relationship between pain and age. A cross tabulation is presented in the case processing summary as well as a Pearson correlation for both of the two procedures. The Pearson correlation in this case shows that the correlation between pain caused in laser procedure and age is correlated negatively with the coefficient of -0.02, which is however not sufficient statistically at 5 % and 1 % (p-value is 0.943).[1] This correlation between these two variables is not genuinely significant at the rate of significance as chosen above. While the Pearson correlation between pain and age for the scalpel is also negative, suggesting that these two variables are correlated negatively and still not sufficiently statistically significant at the rate of 5 and 1 % level of significance.

_Discussion

In our study 52 % of the lesions were found in males. In all our clinical cases, mucocele growth was generally found to be slow. In the course of the anamnesis, some patients reported accidental traumatism and suction habits. Lesions vary in diameter between 0.2 mm and 2 cm without symptoms. Using the scalpel, some authors[1,3,5,8,9] propose the removal of both the affected and neighboring glands in order to prevent relapse. Special care is required to avoid damaging other glands or ducts with the suture needle, as this may become a cause of recurrence. The total treatment time with laser was 3 to 5 minutes, the same as authors state in the literature reports.[2,7,12] This was lower than the treatment time by scalpel which required sutures after the full enucleation of lesion by an elliptic incision, whereas wounds treated by laser surgery healed by secondary intention regardless of their depth. However, the size of the surgical wound is increased compared to the size of the lesion.

Laser surgery is an option of choice for pediatric and geriartric patients who have difficulties tolerating long surgical procedures. Authors recorded no postoperative bleeding or healing complications with laser surgery.[15,17,20] This was reflected in our study's postoperative period as the patients recovered without complications. We recorded no recurrence, no lip paraesthesias, no relapses after treatment of mucocele with 980 nm diode laser. Furthermore, we observed complications in the healing process of the patients treated with scalpel. These complications ranged from recurrence, scarring and relapse attributable to damage to the neighboring minor salivary glands cause by scalpel or needle upon suturing. Other advantages of the laser versus cold surgery include bloodlessness and a highly decontaminated surgical bed which allow for less swelling and pain during the postoperative period. Moreover, as is reported in literature,[14,16,17,18,19,20] these advantages also allow for the appearance of fewer myofibrobasts resulting in comparatively lesser wound contraction.[12,13] Our postoperative results of minimal pain and no or minimal swelling coincides with the observations of other authors.[1,3,5,7] No analgesics or antibiotics were needed in any of the patients treated with laser, other than all patients treated with cold scalpel.

_Conclusion

Laser surgery is a modality for the treatment of mucocele with beneficial effects and advantages. Intraoperative advantages were a good coagulation, a good visualization of the operative field and the short operating time, which made it possible to minimise fear and anxiety in the patients during the procedure. The advantages of laser surgery also include a reduction of relapses and scar formation, offering the best aesthetic outcome in comparison to the scalpel. Laser surgery is therefore an asset not only for the patient but also for the surgeon._

Editorial note: A list of references is available from the publisher.

_contact laser

Dr Merita Bardhoshi
University of Medicine
Department of Oral Surgery
Dibra Street 63
Tirana, Albania

Tel.: +335 5672042658
Fax: +335 542253675
meritabardhoshi@yahoo.com



WFLD World Federation for Laser Dentistry

Formerly ISLD, founded in 1988

14th World Congress for LASER DENTISTRY

PARIS, July 2nd, 3th & 4th, 2014

Maison de la Chimie

28, rue Saint-Dominique - 75007 Paris

wfld@clq-group.com

THE 5TH INTERNATIONAL EVENT ORGANIZED BY

DENTAL LASER ACADEMY

www.dental-laser-academy.com

WFLD-paris2014.com