FACIAL BURN DURING ORTHOGNATHIC SURGERY: CASE REPORT

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ABSTRACT

Despite the fact that the advances in surgical techniques have contributed to the reduction in the number of complications associated with orthognathic surgery, problems resulting from different phases of treatment, treatment planning, and postoperative period may occur. This paper presents a case of facial soft tissue lesion, burn in the lower lip region, in a patient with Class III malocclusion during orthognathic surgery. A 22-year, 3-month-old male patient with Class III malocclusion was burned in the paramedian region of the lower lip due to unnoticed overheating of the low-speed handpiece during sagittal osteotomy of the left mandibular ramus. The injury to the patient could have resulted in legal repercussions against the dental surgeon. However, that did not occur. The satisfaction with the aesthetic and functional results, from the standpoint of both dental and facial aspects, was more important for the patient than the aesthetics of the burn sequelae. Although orthognathic surgery is a safe and widely used procedure in association with orthodontic treatment, the risk of complications always exists. No matter how skilled and self-confident the surgeon is, careful attention to the variables that can be controlled should be taken into account in order to reduce the chance of complications that may result in irreversible damages.

Key words: burn, facial, orthognathic surgery.

INTRODUCTION

Dentofacial deformities with different degrees of aesthetic and functional compromise are usually treated with orthognathic surgery, which may involve mobilization, repositioning and fixation of both maxilla and mandible.

This procedure has been shown to be successful for the correction of such deformities. (Chow, Singh, Chiu, Samman, 2007; Teltzrow, Kramer, Schulze, Baethge, Brachvogel, 2005).

The advances in surgical techniques have contributed to the reduction in the number of complications associated with orthognathic surgery (De Mol van Otterloo, Tuinzing, Greebe, Van Der Kwast, 1991); however, problems may result from several phases of treatment such as preoperative planning, orthodontic preparation and surgery. (Morris, Lo, Margulis, 2007). Postoperative complications have also been reported, complementing the list of phases of treatment. (Robl, Farrell, Tucker, 2014). Those complications may be classified according to their type, such as airway, vascular, neurologic, infectious, skeletal, TMJ disorders, and unfavorable aesthetic results. (Morris, Lo, Margulis, 2007).

Among the deformities associated with orthognathic surgery cited in the literature are nerve damage (Teltzrow, Kramer, Schulze, Baethge, Brachvogel, 2005; Iannetti, Fadda, Riccardi, Mitro, Filiaci, 2013), blood vessel lesions (Teltzrow, Kramer, Schulze, Baethge, Brachvogel, 2005; Robl, Farrell, Tucker, 2014; Panula, Finne, Oikarinen, 2001; Kim, Park, 2007; Steel, Cope, 2012; Lanigan, Hey, West, 1990; Piñeiro-Aguilar, Somoza-Martín, Gandara-Rey, García-García, 2011), ophthalmic complications (Watts, 1984; Kim, Chin, Park, Lee, Kwon, 2011; Lanigan, Romanchuk, Olson, 1993), problems related to insufficient vascularization (De Mol van Otterloo, Tuinzing, Greebe, Van Der Kwast, 1991; Morris, Lo, Margulis, 2007; Lanigan, Hey, West, 1990), presence of foreign bodies (Teltzrow, Kramer, Schulze, Baethge, Brachvogel, 2005; Panula, Finne, Oikarinen, 2001; De Queiroz, Curioso, Carvalho, de Lima, 2013; Laureano Filho, Godoy, O'Ryan, 2008), undesirable bone fractures (Morris, Lo, Margulis, 2007;. Iannetti, Fadda, Riccardi, Mitro, Filiaci, 2013), soft tissue lesions (Kim, Park, 2007; Steel, Cope, 2012), dental lesions. (Panula, Finne, Oikarinen, 2001; Kim, Park, 2007; Iannetti, Fadda, Riccardi, Mitro, Filiaci, 2013), airway compromise (Teltzrow, Kramer, Schulze, Baethge, Brachvogel, 2005; Van de Perre, Stoelinga, Blijdorp, Brouns, Hoppenreijs, 1996), oronasal communication (De Mol van Otterloo, Tuinzing, Greebe, Van Der Kwast, 1991; Morris, Lo, Margulis, 2007; Iannetti, Fadda, Riccardi, Mitro, Filiaci, 2013), temporomandibular disorders (Bays, Bouloux, 2005; Iannetti, Fadda, Riccardi, Mitro, Filiaci, 2013) and death. (Van de Perre, Stoelinga, Blijdorp, Brouns, Hoppenreijs, 1996). This paper presents a case of soft tissue lesion, burn in the lower lip region, in a Class III malocclusion patient during orthognathic surgery. In view of the above, the CEP / UFJF Research Ethics Committee, in accordance

with the duties defined in Res. CNS 196/96, is manifested by the APPROVAL of the proposed research protocol. It is worth remembering to the researcher responsible for the project, the commitment to send the partial reports and/or total of his research to the CEP, informing the progress of the same, also communicating adverse events and eventual modifications in the protocol.

CASE REPORT

A 22-year, 3-month-old male patient with a Class III skeletal malocclusion, anterior crossbite, concave profile, SNA (sella–nasion–A) angle of 82^0, SNB (sella–nasion–B) angle of 87^0 and ANB (A point–nasion–B) angle of -5^0started his combined orthosurgical treatment to address his main complaint, which was dissatisfaction with his facial appearance (Figure 1).

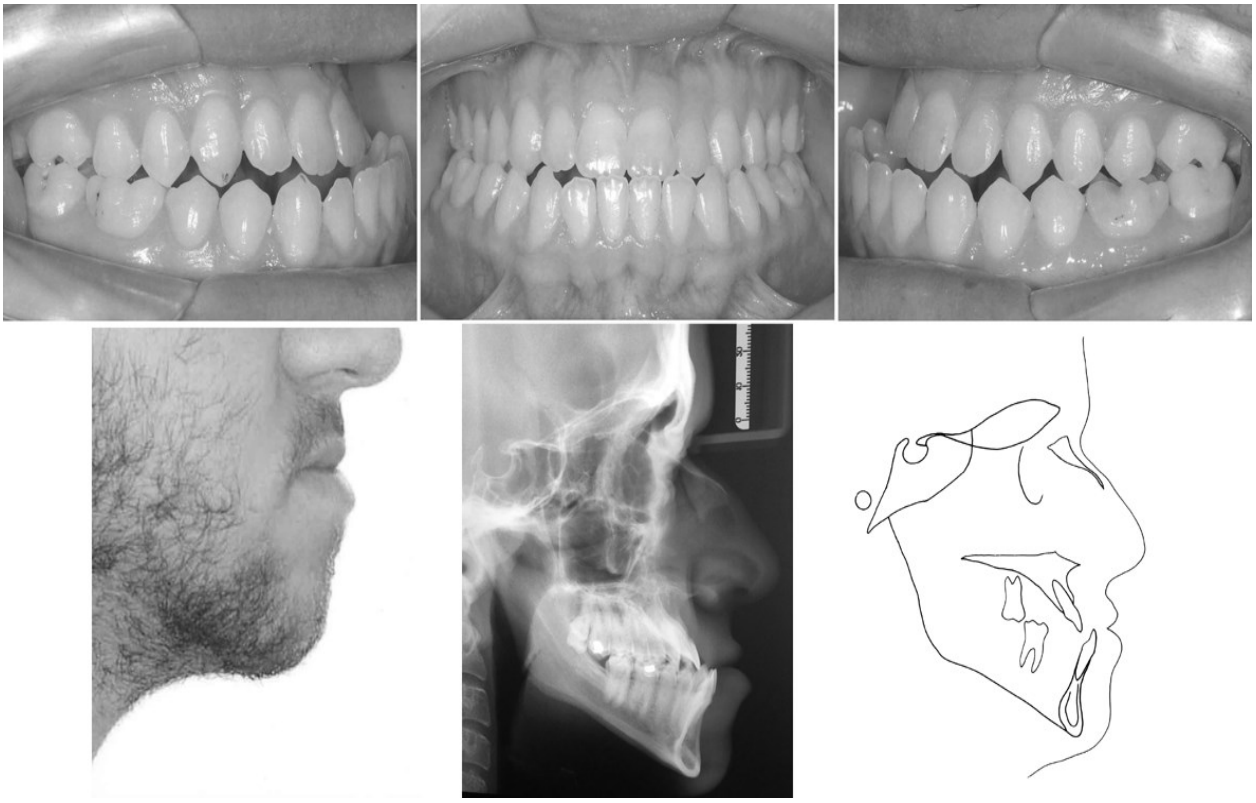

Figure 1: Pretreatment Images.

Five months after the start of orthodontic treatment, orthognathic surgery was performed, which consisted of maxillary advancement by Le Fort I osteotomy, mandibular setback by sagittal split osteotomy, advancement mentoplasty, septoplasty, and dorsum rhinoplasty (Figure 2).

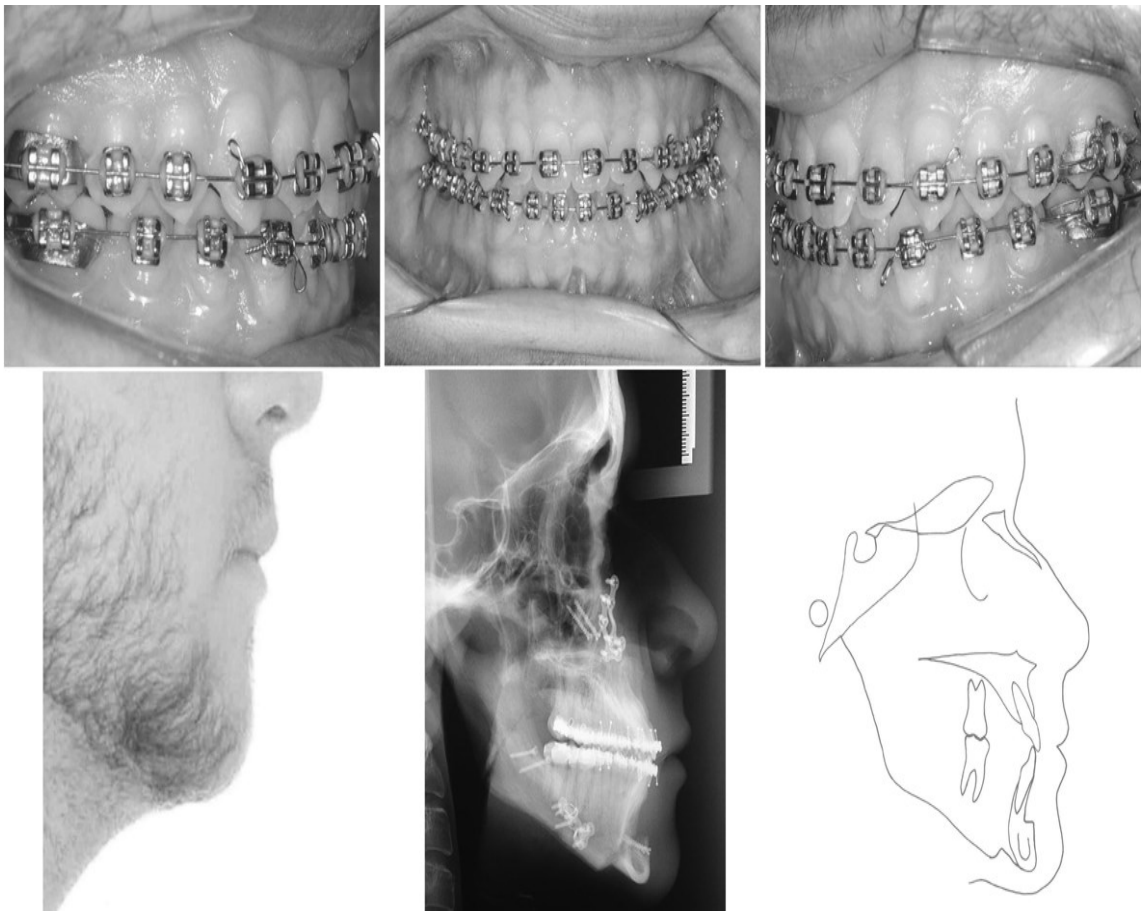

Figure 2: Postoperative Images.

According to the surgeon's report, there was an unnoticed overheating of the low-speed electric handpiece during the sagittal osteotomy procedure on the left side, which burned the paramedian region of the patient's lower lip (Figure 3). The patient was given instructions on how to take the medications during the postoperative period and cicatrization progression was monitored during finalization of orthodontic treatment. Figure 3 represents the lesion's aspects after 30 days (b), 90 days (c) and 1 year and 5 months (d) after orthognathic surgery. A scar can be observed at the burn site.

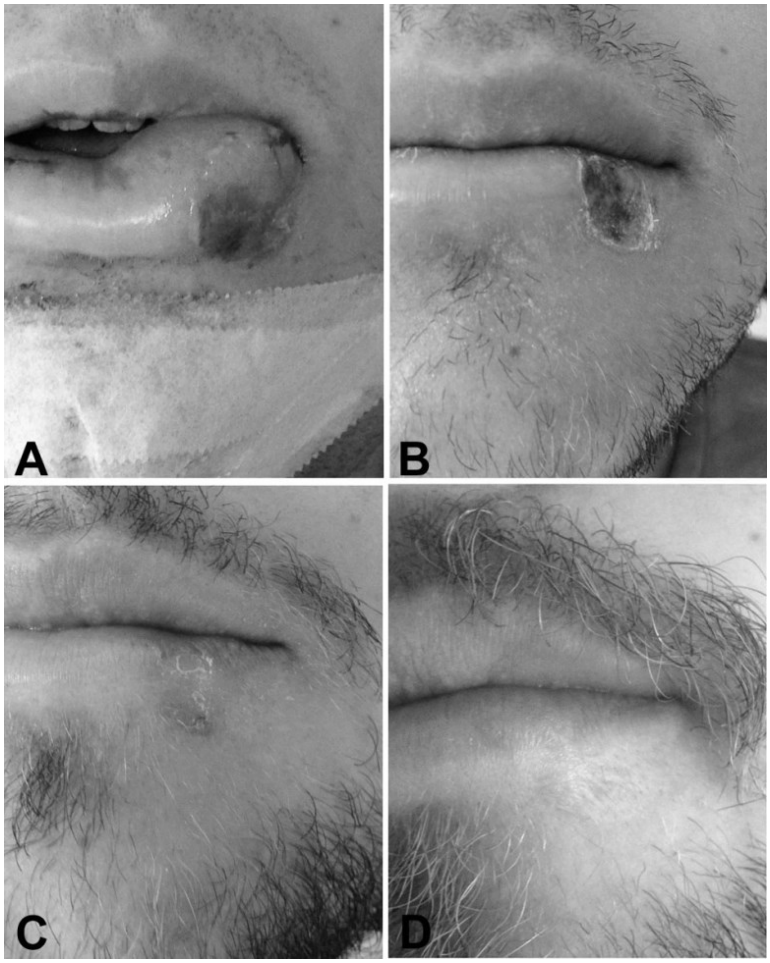

Figure 3: Lesion's aspects: 1 day (a) 30 days (b), 90 days (c) and 1 year and 5 months (d) after orthognathic surgery.

DISCUSSION

The increase in knowledge on anatomy, advances in the areas of anesthesiology and diagnostic imaging, the use of rigid fixation techniques, as well as progress in the area of orthodontics have allowed orthognathic surgery to be a routine practice (Van de Perre, Stoelinga, Blijdorp, Brouns, Hoppenreijs, 1996). Despite the reports on serious complications of orthognathic surgery published in the literature, their frequency appears to be very low and this type of surgery may be considered a safe procedure. (Panula, Finne, Oikarinen, 2001). Most of the more frequent complications associated with orthognathic surgery occur with such a frequency that a detailed discussion with each patient is justifiable. Unfortunately, it is not possible to predict which patients will develop a specific complication. (Bays, Bouloux, 2005).

Since the vast majority of patients undergoing orthognathic surgery wear orthodontic appliance, a thorough attention should be given to these cases because of the likelihood of loosening of orthodontic accessories, which may result in contamination of the surgical field, migration of such accessories into bone segments or into the airway causing breathing obstruction (De Queiroz, Curioso, Carvalho, de Lima, 2013; Laureano Filho, Godoy, O'Ryan, 2008). Van de Perre, Stoelinga, Blijdorp, Brouns, Hoppenreijs (1996) stated that possible complications may be largely avoided in anticipation by both the surgeon and the anesthesiologist and that in more serious complications, which cannot be completely avoided, adequate and prompt care may prevent tragic situations.

De Mol van Otterloo, Tuinzing, Greebe, Van Der Kwast (1991), in turn, stated that many of the complications related to orthognathic surgery might be prevented by a careful control of the surgical technique. Attentive surgical instrumentation and appropriate pre-surgical orthodontics may be of great value in the reduction of complications.

The burn occurred during the sagittal osteotomy procedure on the left side of the jaw, and all technical variations of the procedure used, and a variety of other procedures used in orthognathic surgery, include the use of straight piece. Thus, this article serves as a warning for the use of such instruments in a general way.

Lanigan, Romanchuk, Olson (1993) observed that most of the ophthalmic complications associated with orthognathic surgery involve structures on the right side of the skull, probably due to the fact that most surgeons are right-handed. The same author recommends that if unexpected complications occur during surgery, it is wise to be conservative and prudent, and interrupt the surgical procedure or

perform simpler procedures than those originally conceived (Lanigan, Hey, West, 1990). Thus, it can be noted that the human/professional factor, despite being the most difficult to be controlled and predicted, is of paramount importance in preventing complications.

In the present case, the burn of the lower lip did not represent any risk of death for the patient, nor compromised the function of any organ in the area of surgery. However, it had influence on one of the most important factors for the patients who seek this type of treatment: facial aesthetics.

Handpiece overheating may be considered an uncommon event during orthognathic surgery. The surgeon in charge did not report what caused such overheating, but some routine procedures such as checking lubrication and testing the handpiece performance before surgery could have prevented the burning from happening. There are no cases of lip burn due to overheating of the hand piece during cutting of bone tissue in orthognathic surgery reported in the literature.

Vaseline ointment to prevent soft tissue damages, as reported by Kim, Park (2007) is also an important procedure in the field of preventing lesions. The injury to the patient could have resulted *in legal* repercussions against the dental surgeon, but in this case, it did not. The satisfaction with the aesthetic and functional results, from the standpoint of both dental and facial aspects, was more important for the patient than the aesthetics of the burn sequelae. This article serves as an alert for mouth-to-mouth surgeons regarding preventive maintenance of the surgical motor and trans-operative care when an extensive bony cut is performed with the handpiece during orthognathic surgery.

CONCLUSION

Despite the fact that orthognathic surgery is a safe and widely used procedure in association with orthodontic treatment, risks during different phases of treatment are a reality. No matter how skilled and self-confident the surgeon is, careful attention to the variables that can be controlled should be taken into account in order to reduce the chance of complications that may result in irreversible damages.

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SUPPLEMENTARY MATERIALS

Patient´s Consent to Publication was provided with this submission.

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