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# Necrosis And Exposure Of The Definitive Smas Placture Thread: Treating The Complication - Case Report

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***Abstract***
*Facial aging is a physiological, interrelated, three-dimensional, dynamic and multifaceted process involving intrinsic and extrinsic factors, which affects not only the skin, but also the underlying bone structure, the facial musculoaponeurotic system (SMAS) and fat pads. Surgical temporal lift is an established technique for treating*

*ptosis of the upper and middle third of the face. The patient came to the Oral and Maxillofacial Surgery and Traumatology and Facial Aesthetic Surgeries Service of Unifil (Centro Univeristário Filadélfia, São Paulo Unit – Brazil). She presented with an infection, a large necrotic area, tissue loss, exposed plication threads, fever and increasing pain. A bacterial culture was performed, which showed Streptococcus pyogenes (group A streptococcus). Emergency surgery and intravenous antibiotics were required. It is widely known that interventions in the head and neck area resulting from surgical trauma are within the competence of the dentist, especially within a specific area of dentistry, namely, oral and maxillofacial trauma surgery. Therefore, the intervention described below is unequivocally within the legal and technical competence of the dentist, with expertise in this type of intervention and associated therapies, as it is a trauma resulting from surgery with a primary aesthetic purpose, whose intervention can be classified as reparative, in the emergency modality. This paper reports a serious complication of surgical temporal lifting and its resolution, through a clinical case report.*

***Keywords:*** *Face Lifting; Necrosis, Facial Necrosis, Dentistry, Oral and Maxillofacial Surgery and Traumatology, Facial Aesthetic Surgeries and Dental Law.*

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## I. Introduction

Facial aging is a physiological process that is composed, interrelated, three-dimensional, dynamic, and multifaceted by intrinsic and extrinsic factors, affecting not only the skin but also the underlying bone structure, the facial musculoaponeurotic system (SMAS), and fat pads. Although each anatomical layer undergoes its own aging process, there is also a dependence of the more superficial structures on the deeper layers. However, the main pathophysiological change of aging is the caudal downward displacement of the skin, subcutaneous adipose tissue, and the SMAS en bloc. [1,2,3]

Surgical temporalis lift is an established technique for treating ptosis of the upper and middle thirds of the face. It is characterized by a dissection in anatomical planes, above the subgaleal fascia, which runs seamlessly to the layer of the superficial muscular aponeurotic system (SMAS) in the midface. This approach allows for comprehensive elevation of the midface, robust canthopexy, and a significant brow lift in several facial vectors. Achieving facial rejuvenation of the forehead, eyebrow tail and midface is a fundamental part of the reconstruction process in facial aesthetic surgeries.[4,5]

In recent decades, the dissemination of facial aesthetic surgeries that promote facial rejuvenation from superficial and deep planes has led to excellent results through minimally invasive, conservative techniques that produce natural results; accessing vascular and nervous planes and structures that always arouse fear, especially when we talk about intraoperative and postoperative complications and occurrences. Knowledge of facial anatomy is essential for diagnosis, planning, treatment, prognosis and maintenance of expected results and to avoid possible complications and occurrences.[6,7]

It is a good omen to point out that interventions in the head and neck area resulting from surgical trauma are within the competence of the dentist, notably within a specific area of dentistry, namely, oral and maxillofacial trauma surgery.[8]

According to resolution number 63 of 2005 of the Federal Council of Dentistry (CFO), more precisely in articles 41 and 42, the competence of oral and maxillofacial surgery and trauma includes the surgical and adjuvant treatment of diseases, traumas, injuries and congenital and acquired anomalies of the masticatory system and annexes, and associated craniofacial structures, in addition to the treatment and correction of traumatic injuries.[8]

In turn, the use of adjuvant therapies such as laser therapy and platelet aggregates are authorized in dentistry through resolutions 82 of 2008 and 158 of 2015, both from the CFO, respectively.[9]

Therefore, the intervention described below is unequivocally within the legal and technical competence of the dentist with expertise in this type of intervention and associated therapies, since it involves trauma resulting from surgery with a primary aesthetic purpose, whose intervention can be classified as restorative, in the emergency modality.

It is worth noting that the dentist is the professional who has the technical and legal capacity to perform secondary restorative treatments, one of the causes of which may be an unsuccessful primary aesthetic surgery, due to regulatory force.

Thus, it is impossible not to record the great criticism of the rules of Dental Law, which attribute to the dentist the competence to repair traumas and injuries, which, often, have a degree of complexity much higher than that of primary aesthetic surgery, as is the clinical case described here.

This paper reports a serious complication of surgical temporal lift and its resolution, through a clinical case report.

**Report Clinical Case**

Patient A.R., a 56-year-old female smoker, underwent facial rejuvenation treatment using the Surgical Temporal Lift technique with a plastic surgeon. She attended the Oral and Maxillofacial Surgery and Traumatology and Facial Aesthetic Surgeries service at Unifil (Centro Univeristário Filadélfia, São Paulo Unit – Brazil). She presented with infection, a large necrotic area, tissue loss, exposed plication threads, fever and increasing pain (Fig. 1). A bacterial culture was performed, which revealed Streptococcus pyogenes (group A streptococcus). Emergency surgery and intravenous antibiotics were required. We debrided the surgical temporal lift flaps and all necrotic tissue was completely removed. We performed support sutures with 4.0 nylon thread to help approximate the edges, due to the large tissue loss (Fig. 2).

**Figure 1.** Initial appearance. **Figure 2**. Clean surgical wound.

During the surgery, during debridement, cleaning and dissection of the tissues for a non-resistance suture, a hemorrhage occurred in the superficial temporal artery, which was cauterized (Fig. 2).To assist in closing the surgical wound, we used Platelet Rich Plasma (Fig. 3, 4, 5 and 6).

**Figures 3,4.** PRP.

**Figure 5.** PRP sutured to the surgical wound with 4.0 nylon thread. A major complication is the hair factor.

**Figure 6**. Complete suture and closure of the PRP with 4.0 nylon thread, in the immediate postoperative period.

After 15 days, medicated and monitored, the patient returned for the suture removal. After removal, there was still a small area of necrosis. Debridement, cleaning, washing with gentamicin 80 mg/2 ml and suturing with nylon 4.0 thread were performed and the final healing result was observed after another 15 days (Figs. 7,8,9).

**Figures 7,8,9.** Evolution of the healing process.

The patient is undergoing multidisciplinary treatment, undergoing tissue repair sessions with IPRF and low-frequency therapeutic laser therapy.

## II. Discussion

Facial aging is a complex process involving interrelated changes in bone, muscle, fat, and skin. It is characterized by deterioration of skin tone and texture, deflation due to loss of bone and fat, soft tissue decline due to loss of muscle tone and skin elasticity, disproportion as sagging and/or hypertrophy occurs in different facial areas at different rates and chronological times, and dynamic discord, or loss of balance between interacting muscles. Recognizing the anatomical changes underlying changes in facial appearance, both specifically and structurally, can allow the facial aesthetic surgeon to treat patients more precisely and effectively, seeking optimal results.

## III. Complications

The quest to minimize complications in facelift surgery continues to this day. As with all cosmetic surgery, a thorough history and physical examination are the first step in avoiding complications in facelift surgery. The patient's medical history, surgical history, smoking status, and goals should be discussed.[8,9]

A comprehensive facial aesthetic analysis should be performed, and physical examination findings such as skin tone, skin thickness, rhythmic characteristics, micro- and macrogenias, and hyoid bone position should be noted.[8,9]

Proper surgical technique, with or without release of the retaining ligaments and with minimal or no tension on the skin closure, can help minimize complications such as hypertrophic scars, skin loss, malposition of the hairline, and changes in earlobe position.[8,9,10]

It is important to consider the vector of skin resorption so that late postoperative complications such as vertical sweep deformity can be avoided. Salivary fistula is a relatively rare complication but can be encountered in facelift surgery, particularly when ptotic submandibular glands are partially excised. Greater auricular nerve injury is the most common nerve injury, and marginal mandibular nerve injury is the most common. Motor nerve injury. Infection, necrosis, and deep vein thrombosis are rare in facelift surgery but are serious problems when encountered.[8,9,10,11,12,13]

**Scars**

Good healing is usually a predictable outcome after facelift and neck lift surgery, but adverse scarring is always a possible outcome after any type of surgery. Scars may appear thick, red, and raised along all or part of the incision line (a hypertrophic scar) or, more rarely, may involve tissue beyond the incision itself (and may resemble a poorly healed burn), which is known as a keloid scar. In addition, scars may adhere to underlying structures or become abnormally pigmented. Additional treatments may be required for adverse scarring.[14,15,16]

**Skin discoloration**

While bruising (along with swelling) is an inevitable consequence of facelift and neck lift surgery, it is possible for pigmentation changes to occur in the skin surrounding the surgical site. In Caucasian skin, this usually manifests as increased pigmentation or darkening of the skin; in darker skin, pigmentation may decrease around the scar and lighten. With extensive bruising, permanent increased pigmentation in the affected areas is possible (although this is uncommon).[14,15,16,17]

**Fat necrosis**

Fat cells in the subcutaneous tissue (under the skin) have a relatively poor blood supply and are quite susceptible to traumatic damage. As a result of surgery, some of the fat tissue may die and form scar tissue (which can be felt as a bulge under the skin). If large areas of fat tissue are necrotic, this may require removal or result in prolonged discharge from the incision. If an area of fat necrosis becomes infected, it will cause an abscess, which will require surgical drainage. Abnormalities in the contour of the skin may be caused by fat necrosis.[16,17]

**Seroma formation**

A seroma can best be thought of as a collection of fluid under the skin at a surgical site. The composition of a seroma is very similar to that of blood, but without the actual blood cells (it contains proteins and salts similar to those in blood) and is usually the result of the accumulation of lymphatic fluid (this is the 10% of fluid that escapes from the capillaries into the tissues but does not return to the veins through the small blood vessels, but rather through the lymphatic drainage vessels) or the direct production of inflamed tissue (think of the tissues "sweating" the fluid). If this occurs, there is a chance that it will need to be drained (usually by simple aspiration with a needle or syringe, although in rare cases it may require further surgery to remove it completely).[17,18]

**Skin Necrosis**

It has been well established for over 30 years that active smoking increases the risk of skin sloughing associated with facelifts. The incidence is 12 times higher in active smokers compared with nonsmokers. Although data are scarce, a minimum of 4 weeks between smoking cessation and any cosmetic procedures is recommended. Means of reducing the likelihood of skin sloughing in former smokers include (1) maximizing vascularity of the skin flap using a composite or deep-plane facelift technique; (2) minimizing skin undermining; (3) using a shorter retroauricular incision; and (4) reducing skin flap tension. It is unclear when a former smoker's risk approaches that of a nonsmoker. Because the literature supports findings of anatomic small vessel disease in skin specimens from active smokers, it is suspected that a former smoker may remain at increased risk for wound healing problems. However, this is not documented.[17,18,19,20]

**Sutures**

Most surgeries involve the routine use of deep sutures (stitches) in and under the skin. These sutures are usually designed to dissolve, but in some individuals they may take longer to dissolve than intended or may provoke a foreign body reaction. In these cases, small pockets of inflammation (granulomas or stitch abscesses) may form that resemble an infection but are actually caused by the underlying stitch. Similarly, the stitch may pierce the skin and cause discomfort. In these cases, the stitches will need to be removed.[21]

**Other complications**

**Asymmetry:** No one has a symmetrical face and there will be differences between the sides, both in the soft tissue and in the bony skeleton. Although the same procedure is performed on both sides of the face in facelift and neck lift surgery, it will not correct pre-existing asymmetries and therefore there may be variation in the results obtained from one side to the other.[22,23,24]

**Hair loss:** Hair loss may occur in areas of the face where the skin has been lifted (this is relevant for male patients in relation to the beard area) or along the incision line. The occurrence of hair loss is not predictable and may or may not be permanent.[22,23,24]

**Unsatisfactory results:** Although good results are expected, there are no guarantees expressed or implied about the results that may be obtained. You may be disappointed with the results of facelift and neck lift surgery. These include risks such as asymmetry, unsatisfactory or highly visible surgical scars, unacceptable visible deformities, bulging and rippling of the skin near suture lines, poor healing, wound breakdown, and loss of sensation or movement. The effects of surgical scars may not be correctable. Additional surgeries may be needed to improve results.[22,23,24]

**Long-term results**

**Long-term results:** The appearance of your face and neck will change with future changes in body weight, aging, sun exposure, and hormonal changes (such as medications and menopause), as well as other circumstances unrelated to your surgery. Future surgeries or treatments may be necessary to maintain the results of your face and neck lift.[22,23,24]

Fat is an ideal and readily available filler due to its autologous nature and low surgery-related morbidity. However, the rate of resorption is unpredictable, and this biological phenomenon often results in the formation of scar tissue or oily cysts. This has led surgeons to seek techniques that improve the viability and quality of fat grafts. Platelet-rich plasma (PRP) consists of a fraction of blood plasma with high levels of platelets, obtained by centrifugation and separation of the different cellular fractions. Platelets contain growth factors that stimulate neoangiogenesis and cellular differentiation. Platelets in PRP are obtained in an anticoagulated state, therefore inert, and require activation (usually performed by the addition of calcium chloride and/or thrombin) to release their growth factors.[25,26,27,28]

Activated platelets secrete growth factors and cytokines, which make them useful for tissue repair and induction of blood vessel formation. Therefore, PRP has been studied in association with fat grafts, dental implants, orthopedic surgery, tendon and muscle repair, skin injury recovery, ophthalmic surgery, plastic surgery, facial aesthetic surgeries, and other situations that require stimulation of tissue repair.[25,26,27,28]

The procedure is performed as follows: First, after collecting the whole blood, the PRP tube is gently inverted 5 to 10 times to ensure complete mixing. Second, the blood is centrifuged in a centrifuge calibrated at 1500 g and 8000 rpm for 6 minutes, ensuring that the tubes are perfectly level. After centrifugation, the blood components separate: red blood cells settle firmly below the separation gel, while platelets accumulate above it. Approximately 2 mL of the top layer, which is platelet-poor plasma, is then carefully withdrawn with a syringe. The PRP tubes are then inverted again 5 to 10 times to effectively resuspend the platelets in the remaining plasma, resulting in 1 mL of highly concentrated platelet-rich plasma.[25,26,27,28]

Platelet aggregates play a crucial role in regenerative medicine, offering several benefits that boost the healing process and tissue regeneration. Some of the benefits include: 1. Stimulation of the healing process: Platelet concentrates contain growth factors that promote the proliferation and migration of cells responsible for tissue regeneration, accelerating wound healing; 2. Anti-inflammatory action: Platelet concentrates can reduce inflammation in injured tissues, helping to control the immune response.[9,29,30]

Scars result from the healing process of cutaneous wounds, leading to fibrosis and altered skin morphology. All wounds heal with some scar formation, and multiple scars can develop following surgery, trauma, and cutaneous inflammatory processes. Scars can have significant aesthetic, physical, and psychological impacts on patients, leading many to seek treatment. Several treatment modalities have been utilized, with increasing evidence demonstrating the efficacy of lasers in improving different types of scars, including keloids, hypertrophic scars, atrophic scars, and acne scars. Modern advances in laser technology have increased the ability of laser devices to improve the appearance, symptoms, texture, and flexibility of all types of scars.[31,32,33]

With knowledge of these complex alterations, facial aesthetic surgery can suggest some possibilities to reverse them, identifying the corresponding distorting forces. The goal of facial aesthetic surgery is not to achieve a standard surgical result, but to determine anatomical corrections to reestablish the facial contour in balance with the entire body.[34,35,36,37]

## IV. Legal Obligation

From a legal standpoint, the obligation of the dentist in the area of aesthetic health falls under what is known in Dental Law as an obligation of result. In other words, a surgery or intervention for aesthetic purposes is legally required to present an improvement in the diagnosed dysfunction. The obligation of result, as a rule, does not tolerate worsening of the condition, or even the hypothesis of non-appearance of the result.[38]

On the other hand, improving the aesthetic defect does not mean giving in to the patient's wishes; however, the initial state of the treated area needs to be improved within the aesthetic standards permissible for the patient on an individual basis, according to their previous conditions and characteristics. Aesthetics also has a prognosis, and it is precisely at this point that the obligation to achieve the beautifying effect arises.[39]

Therefore, the possibility of a certain result for a given patient must be crystal clear between the healthcare professional and the patient. It is precisely in relation to the prognosis that the obligation to achieve a result is limited, therefore, the professional working in aesthetics must have mastery and expertise in the techniques performed, good documentation, and a relationship of trust with their patient.[40]

Although the requirement for a fruitful result in terms of aesthetic interventions is unreasonable, since a good result depends on several factors, it is important to point out that this understanding is consolidated by the national courts and applicable legislation, and it is up to the professional performing the procedure to prove the motivation for a result outside the standards.[40]

In turn, the case in question involves a secondary intervention for restorative purposes. Unlike the legal obligation imposed on cosmetic surgeries, in cases of treatment of complications and incidents, there is no obligation to achieve a beautifying effect. It is known that complications and incidents can occur as a result of several factors, ranging from incorrect indication, inadequate technique, lack of patient monitoring in the postoperative period, as well as factors of the body and failure to observe the necessary and prescribed care by the patient. In the case of restorative surgery or intervention in the event of complications and incidents, the legal obligation becomes one of means. In this way, the healthcare professional is obliged to use the available means in the most appropriate way, so that a good result can occur. In contrast to the obligation of result, in these cases, there is no legal imposition of a positive result, obviously, when good technique and good use of the means available for the respective intervention are respected.

Secondary or restorative interventions require the patient to fully understand their ultimate purpose, which often cannot restore the aesthetic appeal of the treated area, since the main objectives are to contain damage or even to keep the patient's life out of danger.

This consent and understanding from the patient must be documented in a specific and personalized consent form. The document must describe the initial condition of the affected area, the possibility of a poor prognosis, risks, care required for post-procedure care, possible limitations and aesthetic and functional sequelae. It is recommended that images of the affected area be recorded before the intervention, using photographs and videos, as well as monitoring the clinical progress using images, videos and other detailed records in the medical record.

## V. Conclusion

Facial cosmetic surgery continues to grow in popularity. It focuses on improving facial appearance. Many patients seek treatment to reverse changes that occur with aging, such as sagging skin, decreased volume of tissue around the face and neck, fine lines, sagging jowls, and double chins. Oral and maxillofacial surgeons specialize in performing a variety of surgical and nonsurgical cosmetic procedures to improve facial appearance.

The facial cosmetic surgeon must be prepared to deal with a range of complications. Understanding the form and function of the head and neck, a thorough history and physical examination, a comprehensive preoperative discussion of the patient’s goals, careful surgical planning, and meticulous execution can help minimize these complications.

**Conflict Of Interest:** No.

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