

## USE OF A NEGATIVE PRESSURE DEVICE AS A TOOL IN THE TREATMENT OF EXTENSIVE FACIAL TRAUMA

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**Abstract:**Complex traumas must be approached aiming for clinical stabilization in the shortest possible time. We must use all the available arsenal, from drugs to the labor of surgeons trained to control possible foci of bleeding or infection.

Therefore, any technology that helps us achieve this objective in a shorter time, generating less morbidity and mortality for patients, must be explored, such as the use of negative pressure devices in complex facial and cervical trauma.

## INTRODUCTION

Facial trauma has a high associated morbidity and mortality, considering that it is an extremely vascularized region, whose bleeding can make it difficult to guarantee a patent airway, as well as lead to hemorrhagic shock. Exuberant innervation, when affected, can lead to irreversible or difficult-to-manage paralysis, generating great social stigmatization. In addition, its intimate contact with the neck can lead to exposure of prime areas such as the mediastinum, with a high degree of mortality.

It's important to report that in view of all the possible complications, that shortening the treatment period for this injury has a great benefit in terms of survival, as well as recovery of patients, so negative pressure devices enter the context of accelerating the stages of surgical treatment.

We know that among its functions are reducing the risk of infection, accelerating the granulation process, contracting the wound edges (decreasing the size of the exposed area), increasing blood flow and reducing local edema.

## METHOD

As a method, we used the review of the patient's medical record in a private hospital in the city of Niterói, as well as photos authorized by the patient and the reports of

the responsible plastic surgery team. Data for the year 2023.

## CASE REPORT

Caucasian, 18-year-old male patient, drug addict, with no other comorbidities, was the victim of complex facial trauma in a beating. He sought medical attention to assess the wounds on the day, and was released home with only analgesia. About 4 weeks after the incident, he sought a hospital unit again, reporting a significant hematoma on the left hemiface extending to the neck. He was admitted to the hospital hypotensive, tachycardic with altered level of consciousness. Being diagnosed with septic shock of cutaneous origin. Clinical stabilization maneuvers were initiated and emergency teams were contacted, including the oral and maxillofacial, otorhinolaryngology and plastic surgery teams.

He underwent imaging tests such as tomography of the head, neck and thorax, which showed numerous fractures on the face, in addition to extensive hematoma on the face and neck. He was hospitalized and referred for surgical exploration of the wound.

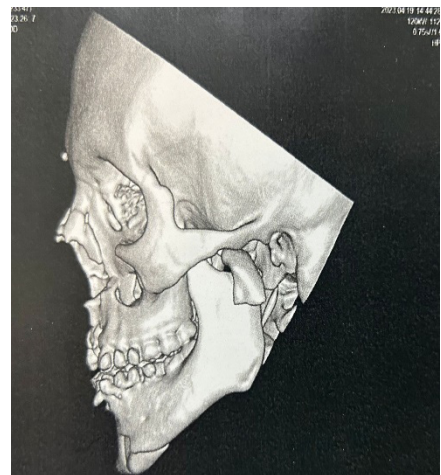




Figure1: Admission tomography with multiple complex facial fractures.



Figure 3: After the first debridement with great exposure, muscle, bone and vascular.



Figure 2: First assessment by the plastic surgery team before debridement, lesion with extensive necrotic area extending to the cervical region.



Figure 4: After 3 days, already in the granulation process with reduced exposure of noble structures.

After three debridements with dressing changes in the operating room, there was granulation on the noble structures, such as the cervical vessels, thus allowing the use of the negative pressure device. We chose to use pressures lower than usual (75 mmHg) due to

the delicate region and with few cases reported in the literature.

After two exchanges of the negative pressure device, with an interval of 7 days, there was consolidation of the granulation in the region, creating a suitable vascular bed to receive the graft.

It is noteworthy that several adjuvant products were used in the process, such as a dermal substitute on the area of granulation prior to autografting, in addition to bone grafting to fill in the loss of bone substances at the beginning of the treatment.

## CONCLUSION

Facial trauma is a major therapeutic challenge for the surgical and clinical teams involved. It involves the need for intensive surveillance and a high index of suspicion for complications such as mediastinitis or cutaneous sepsis. We observed in our case report that at the beginning of the treatment

the patient had a great exposure of noble structures in the cervical region and that an infection in the site would have a high index of mortality.

We observed that the negative pressure device considerably shortened the granulation time in the region, making autografting possible after 5 surgical approaches, ensuring a shorter hospital stay.

It is worth mentioning that the face, as a region of great aesthetic importance, benefits from full-thickness grafts or flaps, but in the specific case of this patient, the option was chosen to accelerate its skin coverage, reducing possible new infectious foci and allowing the teams of the oral and maxillofacial and otorhinolaryngology to start their work on the correction of bone deformities, it being possible, after improvement of the general picture, think of new approaches with the purpose of improving its appearance.

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Figure 5: After a new dressing change, we observed that the granulation had already covered important structures such as vascularization.



Figure 6: negative pressure device installed for bed preparation.





Figure 7: Bed ready to receive the graft after using the negative pressure device.



Figure 8: Partial skin graft taken from the thigh was placed.