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Microsurgical Reconstruction in the Pandemic by Covid-19

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Abstract

Introduction: The SARS-CoV-2 (COVID-19) Pandemic had a significant impact on the development of surgical services in general and forced the establishment of action protocols for the different pathologies in order to take maximum care of human resources and capacity. installed in hospitals to deal with this global contingency.

Objectives: To present a casuistry of 7 patients with microsurgical reconstruction of head and neck pathology in advanced stages and lower limb pathology during the COVID-19 pandemic.

Materials and Methods: retrospective work and physical and digital medical records were reviewed. Five patients with advanced head and neck disease and 2 patients with lower limb disease were included.

Results: Five patients underwent surgery for advanced head and neck disease: 3 patients with stage IVa squamous cell carcinoma of the oral cavity, 1 patient with stage IV advanced squamous cell carcinoma of the skin, and 1 patient with a complex fracture of the lower jaw due to a gunshot wound. With chronic oro-cutaneous fistula, with exposure to the osteosynthesis material, poor occlusion, and significant weight loss due to difficulty feeding. Two patients underwent surgery for the pathology of the lower limbs in the lower third of the leg, one for a severe open fracture with a soft tissue defect and the other for an arterial ulcer.

Conclusion: Microsurgical reconstructive surgery can be performed with good levels of safety for health personnel and for patients affected by advanced pathologies of the head and neck and other pathologies that require free flaps. It is essential to strictly respect the protocols to avoid contagion in the hospital environment, understanding that every patient who enters the hospital must be considered as COVID (+) until proven otherwise.

Keywords: Microsurgical Reconstruction; Pandemic; Covid-19

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Introduction

Pandemic by SARS COV-2 (COVID-19) had a significant impact on the development of surgical services in general and obligate to establish action protocols for different pathologies in order to maximize human resources and the installed capacity of Hospitals to deal with this world contingency.

Although specific data on exposure to COVID-19 and surgical specialty, Thoracic surgery, are associated with a higher risk of Covid-19 transmission to sanitary equipment, due to the high risk of the airline [1]. The virus has been detected in the bronco-alveolar liquid, sputum, feces, blood and blood and Urine, in respiratory drops [2].

We were even summoned to collaborate in the direct care of patients with COVID-19 since our hospital was designated as a provincial head hospital for pandemic management.

Parallel to this situation, the pandemic could not stop the advance of the oncological pathology of the head and neck or the pathology of trauma in general. At first, the offices remained almost empty for the

fear of the patients attending the hospital, and also, by the decision of the health authority, it was decided to restrict external consultation.

This caused many patients to have a loss in follow-up and in many cases an advance of their disease, which was reflected in late consultations and pathologies in advanced stages.

National and international recommendations were aimed at deferring benign pathology and only treating oncological or unstrabable trauma pathology. Patients should be operated on by more experienced surgeons to optimize time in the operating Allow.

However, in some patients, by the advanced stage of their disease or because the defect to be rebuilt could not be resolved with a local flap, it was decided to use a free flap, establishing a protocol, to protect the human resources and physical resources of the hospital.

These resources are limited in number, even in large medical centers, and can barely be renew-19 [1].



Objectives

Present a casuistry of 7 patients with the micro-surgical reconstruction of head and neck pathology in advanced stadiums and lower limb pathology during the COVID-19 pandemic.

Materials and Methods

Retrospective work. Physical and digital medical records were reviewed. 5 patients with advanced head and neck pathology and 2 patients with lower limbs pathology were included.

The following security protocol was established:

- Use of PPE (personal protective equipment) Level III during surgery: Cofia, Escafandra, Antiparras, Facial Mask, Barkijo N95 Without valve + surgical chin, double waterproof nightgown, double pair of gloves, and double disposable boots.
- All patients were tested for SARS-COV-2 detection with PCR (polymerase chain reaction) 48 hours before surgery.
- Insulation of the patient and cohabiting 7 days before the surgical procedure was requested.
- In all cases, patients and their relatives signed an informed consent made especially for surgeries in the pandemic context.
- Surgery is performed sequentially. First, enter the respective team. After the resection, the potentially polluting surfaces (air-digestive route) are sealed with Tegaderm and after 20 minutes the reconstructive equipment enters.
- Use of Barkijo N95 throughout the hospital stay by the patient.
- HNF-PCR of control in case of COVID symptoms, both of the surgical equipment and of the patients.

Results

Five patients were operated on by advanced head and neck pathology: 3 patients with squamous carcinomas of oral VAT stadium, 1 patient with scalage carcinoma of advanced skin Stadium IV, and 1 patient with complex fracture of lower maxilla Chronic gold-cutaneous, with exposure of the osteosynthesis material, bad occlusion and significant weight loss due to difficulty food.

Two patients were operated on by the lower limb pathology in the lower third of the leg, one due to a serious exposed fracture with soft tissue defect and the other by an arterial ulcer.

The most used flap was the anterolateral thigh [3], followed by the free flap and the radial flap [2].

Of the 4 patients with oral cavity pathology, 2 (50%) presented as a complication of a low-débito-cutaneous fistula, which was managed conservatively, and food gastrostomy. 75 % of patients with oral cavity pathology required protection tracheostomy. A patient had as a complication a cervical hematoma in the immediate pop that was evacuated.

100 % of patients (7) were not vaccinated against SARS-COV-2 at the time of surgery. The HNF-PCR (nasopharyngeal swab-polymerase chain reaction) was negative in all cases 48 hours before the start of surgery.

73 % of patients, which correspond to the 5 patients with head and

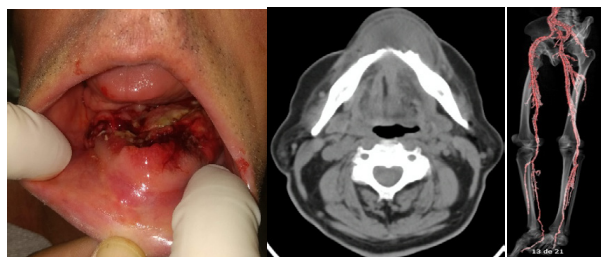
neck pathology, had negative HNF-PCR in pop control. The remaining 27%, corresponding to the 2 patients with the pathology of lower limbs, presented Covid symptoms in pop controls. HNF-PCR was carried out that was positive, 14 days after the surgical procedure in both cases.

These 2 patients developed a slight form of the disease and received standard treatment in the Covid tower of the hospital and did not present complications related to the surgical act and then were externalized.

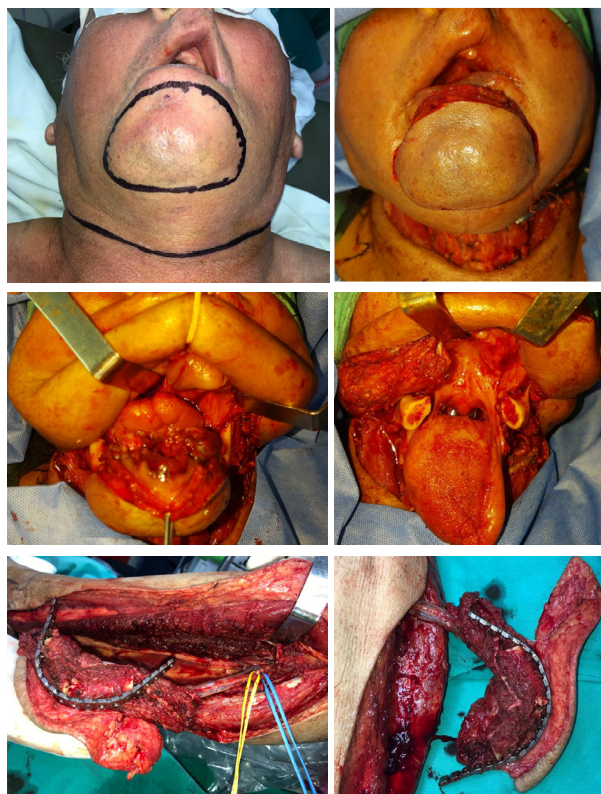
100 % of patients (7) present a vital flap in remote pop.

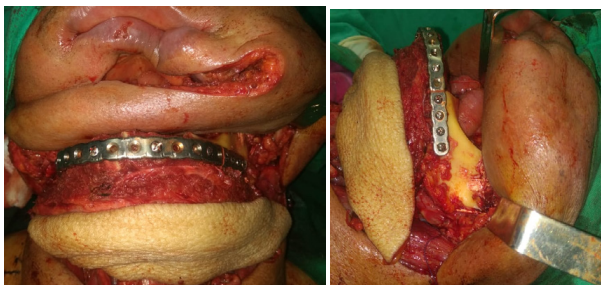
Of the 5 surgeons belonging to the service, with an age range between 51 and 38 years (average 43.8), none contracted the disease in relation to surgical activity in the hospital. 100 % of surgeons (5) were vaccinated with 2 doses of Sputnik V. In this period 3 surgeons were (+) for Covid-19 by narrow contact with a direct relative and developed a slight form of the disease.

Patient 1: ♂ 73 years. Ulcerated and necrosed tumor in the oral cavity with associated candidiasis halitosis. Weight loss of 10 kilos in the last 5 months.

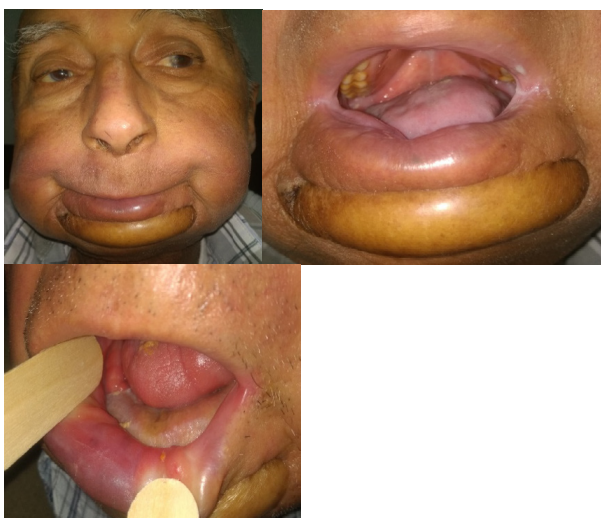


Surgery: Tumor resection: Boca floor, anterior jaw arcade and chin skin (in block) + bilateral soh emptying + tracheostomy + reconstruction with flag free of fibula with double skin pill.





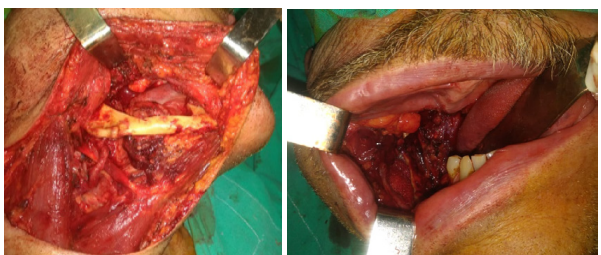
Postoperatively remote: Gastrostomy was maintained until QT/RT was completed and then continued with oral feeding with good swallowing, without tracheal aspiration episodes and good oral competition.



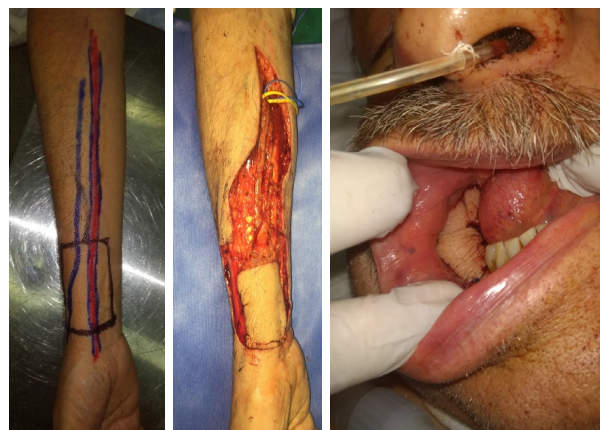
Patient No. 2: ♂ 72 years. Two lesions in oral cavity: right retromolar trigone, of 3 cm, friable with spontaneous bleeding, 4 months of evolution. Left retromolar trigone: 2 cm overversion lesion.



Surgery: TRD block resection with margin freezing + right marginal mandibulectomy + SOH emptying + radial free flap reconstruction. Tri injury resection and reconstruction with mucous advance flap.



SURGERY: TRD BLOCK RESECTION WITH MARGIN FREEZING + MARGINAL RIGHTOMY MANDIBULECTOMY + SOH EMPTYING + RADIAL FREE FLAP Reconstruction. Tri Injury Resection and Reconstruction With Mucous Advance Flap.



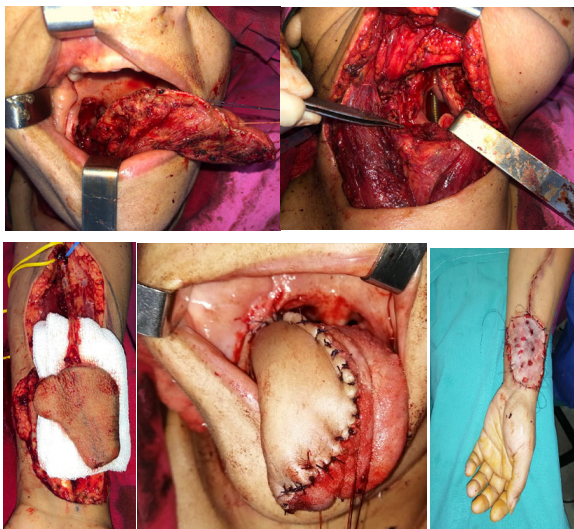
Evolution: It was re operated 2 times (immediate pop cervical hematoma and then chronic gold-cutaneous fistula closure). After the adjuvant rt/RT I present a second primary in another substio different from those of the reason for consultation, which was resected and resolved with mucous advance flap.

Pop remote: good oral competition and swallowing, without tracheal aspiration episodes.



Surgery: right heiglostomy extended to Boca floor to supra-hyodea region. The intraoperative freezing of margins indicated to perform in a largest hiodes bone and an adenopathy at level III that resulted (+) so that a modified radical emptying type III was performed.

The extension of the tumor made necessary a flake -based advance flap to pharynx and the oral defect (mouth tongue) was rebuilt with a free radial flap.

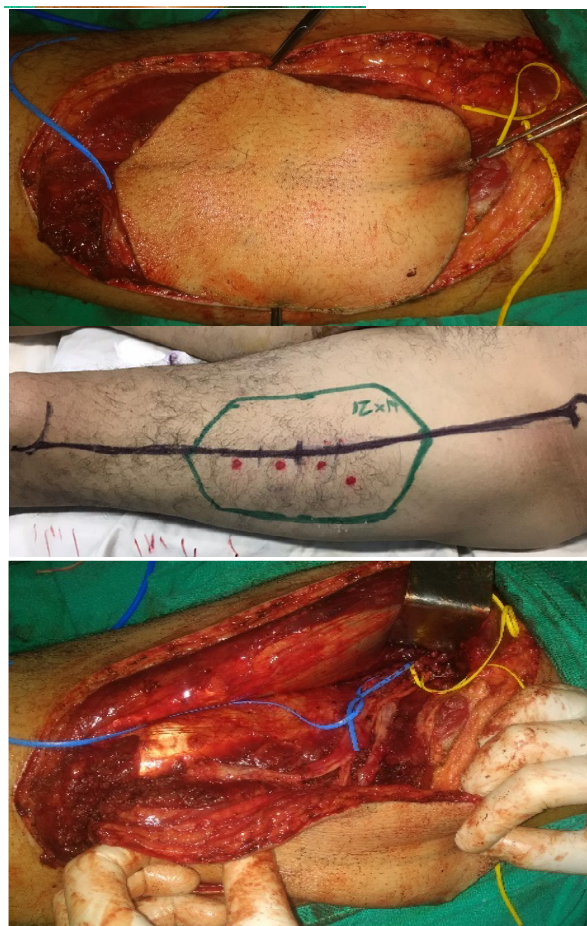


EVOLUTION: I present a gold-colossal fistula, which was managed conservatively and required food gastrostomy. After rehabilitation, I present good swallowing and phonation without tracheal aspiration episodes. Complete adjuvante RT.



Surgery: Tumor block resection + cygomatic arc resection + Total plottectomy without facial nerve conservation by infiltration + post-lateral emptying (levels II - III - IV - V and occipital ganglia).

Reconstruction of the defect with anterolateral thigh free flap (ALT).



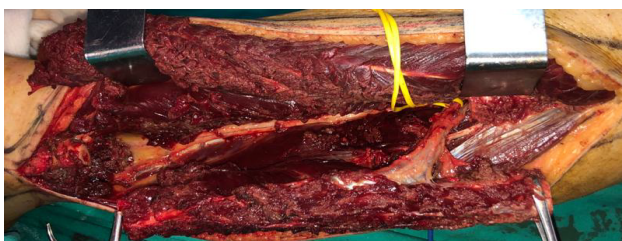
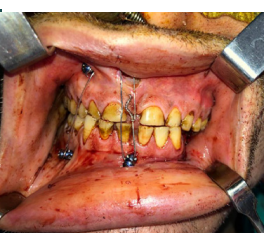
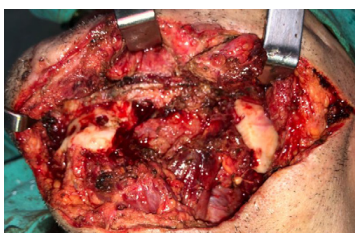
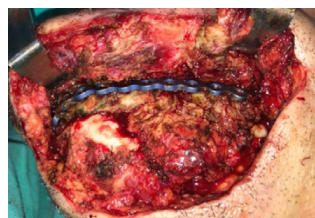
Evolution: Good pop evolution, without complications with acceptable aesthetic result. Tumor Committee Indico Adjuvante. The patient does not attend control so monitoring was lost. Nor do I accept another surgical procedure to permeabilize external auditory duct.





Patient 5: ♂ 35 years. Serious lower maxillar processing due to a firearm wound with a fracture. Enter by guard. Toilete, removal of devitalized tissues and remnants of protectile is performed.

EVOLUTION: Costilla + osteosintesis graft, which had poor evolution with graft necrosis, chronic orocutaneous fistula and material exposure was performed. Bad dental occlusion, impossibility of food and weight loss. I mean resorption > 5 cm + fracture of the osteosintesis material by mechanical fatigue.



Patient 6: ♂ 34 years. Background of fracture exposed with soft tissue coverage defect. An anterolateral thigh flap was made (ALT)



Patient 7: ♂ 57 years. Antecedent of chronic arterial ulcer by thrombosis of the posterior tibial artery. An anterolateral thigh flap was made (ALT)





Discussion

The pathology of head and neck surgical has high risk of exposure to COVID - 19. However, that risk can be controlled and minimized by a strict protocol to protect the health team. In our case the protocol had a disparate result. On the one hand, it was effective in the protection of the health team, since surgeons that were infected with Covid-19 were not related to the surgical act.

On the other hand, our surgical team is composed of young and comorbidities. The literature consulted refers to the fact that the younger, capable and experienced surgeons, of ≤ 50 years and without basic comorbidities (IRC - chronic hepatopathies - asthma - DBT - TBQ) are the most indicated to perform this type of surgeries, since the rate of complications related to COVID-19 is lower in young adults, while surgeons over 50 and with comorbidities should be excluded [1]. In ideal situations, at least 2 surgical equipment should be had with rotation every 14 days to further minimize exposure, as established by CDC standards [3].

In mind treated patients, the protocol had some failures. The head and neck patients were admitted to the rooms of the surgery service, where strict control is. All patients who enter, regardless of the pathology, are tested with HNF-PCR and are treated exclusively by the sick personnel and residents with EPP and the visit of family members are restricted. No patient with head and neck pathology contracted COVID-19 in the hospital until the registration.

Patients with lower limb pathology were admitted to the traumatology room, where the controls failed. The patients were treated by the sick personnel and residents with EPP, but the visit of relatives was not restricted. On the other hand, the traumatology hall had no protocolized that all patients who enter are tested with HNF-PCR, so the 2 patients in this series were probably infected by narrow contact with another patient from the room or by the visit of COVID (+) relatives.

Hospital's medical and non -medical staff received training for the correct use of PPE, making special emphasis when removing the "polluted" EPP. A study in Singapore showed that doctors' shoes and surfaces of their clothing could detect COVID-19, although its viability was not demonstrated [4].

In experimental environments, the virus can remain viable and infectious in aerosols for 3 hours and on the surfaces up to 7 days, depending on the inoculum and there is also a strong suspicion that in the surgical smoke covid can be isolated-19, 19, 19, Like the hepatitis B virus [5,6], which has to consider the operating room an "contaminated" environment and therefore the correct use and the correct discard of the EPP is essential to avoid getting infected.

In all surgeries a sequential approach was performed. At the time

of intubation, no surgeon remains inside the operating room, only the anesthetist and 1 resident who assists it. Then enter the team that will perform the resection, generally 2 or 3 surgeons with EPP level III. Then the air-digestive road with Tegaderm is covered and 20 minutes are expected, depending on the number of the air changes per hour, as described by the CDC [7]. Finally, the reconstructive equipment enters to perform the lifting, micro-surgical anastomosis and the flap insert.

Conclusion

Micro-surgical reconstructive surgery can be performed with good safety levels for health personnel and patients affected by advanced head and neck pathologies and other pathologies that require free flaps.

It is essential to strictly respect the protocols to avoid infections in the intrahospitalary environment, understanding that every patient who enters the hospital as Covid (+) should be considered until the opposite is demonstrated.

To avoid failures, it is important to involve all hospital services to adopt these protocols and, in this way, preventable infections will be avoided.

Declarations

The authors declare that they have no conflicts of interest, that the work has been approved by the ethics committee responsible in the workplace, and do not declare means of financing of the work carried out.

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