

# ANATOMOFUNCTIONAL PEEK RECONSTRUCTION

Arango Hernán<sup>1</sup>, Rodríguez Sáenz Álvaro<sup>2</sup>, Oral and Maxillofacial Surgeon, Clínica General Del Norte – Barranquilla <sup>1</sup>, Oral and Maxillofacial Surgery Resident<sup>2</sup>  
[aarodriguezs@unbosque.edu.co](mailto:aarodriguezs@unbosque.edu.co), Universidad El Bosque, Colombia.

## INTRODUCTION

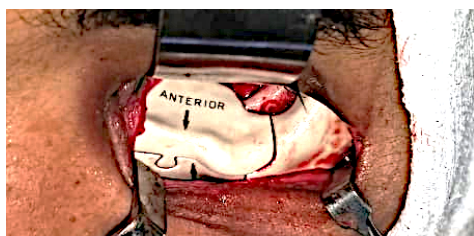
**Polyetheretherketone** (PEEK) is a thermoplastic polymer that can be classified into PEEK for cranial and maxillofacial bone replacement, orthopedic surgeries, and for the placement of dental implants. Among its advantages are: **visualization** of the growth of bone tissue in diagnostic images, avoids an allergic reaction to metal ions and has the same mechanical characteristics of bone. The reconstructive treatment of fractures of the floor of the orbit and maxillary zygomatic complex brings relevant aesthetic and **functional** repercussions, with residual facial deformity being the first cause of dissatisfaction. Due to this, the management of this type of deformity is reported with PEEK

## OBJECTIVE

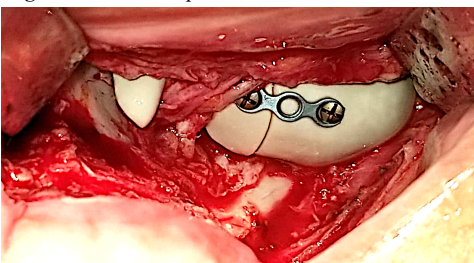
To present and report the anatomic-functional application of **PEEK** in a patient with sequelae of facial trauma.

## CASE REPORT

A 31-year-old male patient with sequelae of craniofacial trauma secondary to a traffic accident as a motorcycle driver. Surgical history: Malar ORIF and orbital floor 1 year ago. Physical examination revealed depression of the left malar region and associated enophthalmos (**Figure 3A, B**). A personalized prosthesis was made in PEEK and fixed with osteosynthesis screws in the infraorbital rim (**Figure 1-2**). The anatomical emergence of the infraorbital neurovascular bundle was respected. (**Figure 2**).



**Figure 1.** PEEK adaptation on the orbital floor



**Figure 2.** PEEK implant and infraorbital nerve



**Figure 3.** Preoperative photo



**Figure 4.** one year control

## DISCUSSION

Most of the craniofacial defects translate into aesthetic and functional sequelae that are difficult to manage, with a negative psychological impact on the patient. The ideal material should be **biocompatible**, strong, lightweight, malleable, temperature resistant, inert, radiolucent, and with low infection and fracture infections. PEEK is a linear, thermoplastic, semi-crystalline polymer, with great mechanical properties such as hardness, **durability**, resistance, high biocompatibility and with a thickness and elasticity comparable to that of cortical bone. The implementation of virtual surgery allows its use as a tailor-made implant, which leads to a decrease in intraoperative complexity, and as is the case presented, ease of modifying its contour so that it preserves anatomical structures of the surgical area and allows an insertion of a large volume, by smaller approaches. In addition, it reduces surgical time and allows **intraoperative** adjustments. All these characteristics make it an ideal material for reconstructions in the maxillofacial region.

## CONCLUSIONS

The use of **alloplastic** materials such as PEEK, is a effective and versatile alternative that can be designed taking into account important **anatomical** structure

## CONFLICTS OF INTERESTS

The authors declare no conflicts of interest

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