

# Fully Guided Autotransplantation Using the Digital Workflow as an Alternative to Implant Placement: a Step-by-step Case Report.

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## 1) Introducción & Objetivos

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Autotransplantation has recently gained momentum as a viable alternative to implant placement. Not only has it been correlated with high survival rates when dealing with immature permanent teeth, but also with mature teeth exhibiting complete root formation. More so, once considered a difficult and technique sensitive surgery exclusive for experienced practitioners, it has now become very accessible with the introduction of the digital armamentarium.

## 2) Metodología & material

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A 25-years-old female patient, with no relevant medical history, presented with a furcal lesion on the lower left second molar (37) previously restored with a crown and cast post. Distal to the 37 is a fully erupted sound third molar (38) with complete root formation. The patient was well-motivated, medically fit, had good oral hygiene and an otherwise well-maintained dentition. It was decided that the 38 will be autotransplanted in the position of the 37.

The digital scan (STL file) and CBCT (DICOM file) were superimposed and introduced into the digital planification software BlueSky to simulate the autotransplantation. The 38 was digitally positioned in the site of the 37. The drilling-positioning guide was then designed following the anatomy of the teeth adjacent to the 37. The long axis of the 38 was digitally replaced with an implant to correctly position the chimney axis for the drill. This allows an adequately guided osteotomy of the receiving socket to eliminate the furcal bone and perfectly fit the root of the 38. The replica of the 38, an essential tool in a guided autotransplantation, was printed using a biocompatible resin to make try-ins possible before the extraction of the donor tooth.

First, the 37 was carefully extracted. The 38 was provisionally left *in situ* while the receiving socket was prepared using the drilling guide and the replica of the 38. This mostly involved the removal of remaining inter-radicular bone which might hinder the positioning of the autotransplant. Second, the 38 was atraumatically extracted and autotransplanted in the socket of the 37. Because the socket was adequately prepared, the 15 minutes maximum extraoral time was easily respected. Finally, the 38 was put out of occlusion and splinted to the adjacent teeth using a semi-rigid metal wire and flowable composite placed on the buccal aspect of the 35-36-38. Additionally, an over-the-crown suture in X was done to act as a stabilising anchor and fix the 38 in its new position.

Two days later, the X sutures broke, and the buccal splint was not enough to stabilise the 38. It acted like a cantilever given the absence of a distal tooth. To eliminate the subsequent traumatic movements of the autotransplant, the splint was extended distally till the lingual aspect of the 36. The endodontic treatment was consequently rushed and completed a week after the surgery to eliminate the risk of an external inflammatory resorption. The root canals were sealed with flowable composite and Cavit was placed. Given the detrimental loss of primary stability of the autotransplant, the splint was kept in place for three months after the surgery to obtain healing by secondary intention.

Once that period had elapsed, and when osseous stability was reached and bone formation could be appreciated on the X-Ray, the splint was removed, and the restorative phase was initiated. The tooth was prepared for a full cuspal coverage and scanned. A pressed lithium disilicate overlay was cemented under the rubber dam one week later. The follow-up at 6 months showed physiological clinical and radiologic results compatible with healing periradicular tissues.

### **3) Resultados**

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### **4) Conclusiones**

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Thanks to technological advances, the increased success rate using the digital armamentarium makes autotransplantation in mature teeth a safe and successful alternative to osseointegrated implants.