

# Study protocol

Revascularization of autotransplanted adult teeth –  
retrospective analysis of a novel technique

Revaskularisation von erwachsenen transplantierten Zähnen –  
Retrospektive Analyse einer neuen Technik

## ResectTx

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## Synopsis

<b>Sponsor</b>	Univ. Prof. DDr. Norbert Jakse Department of Dental Medicine and Oral Health, Division of Oral Medicine and Orthodontics Medical University of Graz
<b>Title</b>	Revascularization of autotransplanted adult teeth – retrospective analysis of a novel technique
<b>Population</b>	Patients who experienced autotransplantation of adult teeth
<b>Study design</b>	Retrospective data analysis
<b>Objectives</b>	Evaluation of the success rate of reperfusion of autotransplanted adult teeth
<b>Outcome variables</b>	Primary outcome variable: Reperfusion of the transplanted tooth Secondary outcome variable: Periodontal healing
<b>Participants</b>	17 -20 patients
<b>Timetable</b>	Retrospective analysis and data evaluation over 1 month
<b>Inclusion criteria</b>	<ul style="list-style-type: none"> <li>• Patients who experienced one or multiple autotransplantations of teeth</li> <li>• At least one year of follow-up</li> </ul>
<b>Exclusion criteria</b>	<ul style="list-style-type: none"> <li>• Immature teeth with open apices</li> <li>• Different surgical technique</li> </ul>

## 1. Introduction

Autotransplantation of immature teeth is a routine procedure. It has a high success rate regarding periodontal and pulpal healing. Disruption of blood supply in teeth removed from their socket leads to pulp tissue infarct and coagulation necrosis. (Adreasen and Kahler JOE 2015) After transplantation, there is a good chance of revascularization of necrotic pulp tissue in immature teeth with open apices. However, this outcome is not only threatened by the possibility of infection-related inflammatory root resorption, but the apical pulp canal diameter also seems to play an essential role. The chance of revascularization is significantly diminished in mature teeth with an apical constriction.

Consequently, it is recommended to start root canal treatment of adult transplanted teeth within 7 to 10 days.

Jakse et al. (2018) already reported on a unique case, where combining transplantation with a resection of the root tip lead to successful revascularization in a mature tooth

## 2. Methods:

By a retrospective study design, clinical and radiological data regarding patients who experienced tooth transplantation with concomitant root tip resection between July 2017 and June 2020 will be obtained and analyzed. Clinical and radiological findings will be evaluated regarding periodontal and pulpal healing.

## 3. Risk and benefits

It is a retrospective data analysis. There is no risk to patients.

## 4. Objectives and hypotheses of the study

### a) Objectives

To investigate the rate of successful reperfusion of autotransplanted adult teeth.

**b) Hypothesis**

Simultaneous resection of the root tip leads to a higher rate of reperfusion.

**c) Outcome Variables:**

**Primary Outcome:** Reperfusion of transplanted teeth

**Secondary Outcome:** Periodontal Healing, Tooth loss

**5. Synopsis****5.1 Design**

Retrospective data analysis

**5.2 Participants****Inclusion criteria**

- Patients who experienced one or multiple autotransplantations of teeth
- At least one year of follow-up

**Exclusion criteria**

- Immature teeth with open apices
- Different surgical technique

**5.3 Methods**

- *Evaluation of medical history*
- *Interpretation of existing x-rays*

**Any known or foreseeable factors that may affect the results of the study or its interpretation:**

- Missing data

## 6. Statistical considerations

Andreasen et al. determined in their long-term study over 370 transplanted premolars that with completed root growth (and consequently closed foramen apical) only in 60% of cases does periodontal healing occur, while this is to be expected in immature teeth in 90% of cases.

If one compares the pulpal healing in teeth with completed and non-completed root growth, one even comes to a difference of 15 to 96%.

Since this is a retrospective data analysis, the statistical evaluation is carried out by means of descriptive statistics. The result is then compared with published success rates in the subject-specific literature. (Chi square test) It should be shown that the success rate of transplantation of teeth with completed root growth according to the presented method

does not differ from the success rate of transplanted immature teeth with open foramen apical.

## 7. Data management

Data will be anonymized and recorded in an excel document.

The statistical analysis of the data is carried out by DI Irene Mischak.

The collection, transfer, storage and evaluation of personal data within this study is carried out in accordance with legal provisions (Datenschutz-Grundverordnung, DSGVO).

## 8. Legal basis

### 8.1 General

Guidelines of the Declaration of Helsinki apply.

### 8.2. Vote of the Ethics Committee

Since this is sensitive patient data, it can only be started if the approval opinion of the responsible ethics committee is available.

## 9. Literature

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