

# TRANSCOMM

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## KEYWORDS

Dental pulp derived stem cells  
Regenerative/reparative medicine  
Allogenic stem cell transplant  
Mesenchymal stem cells  
Adipocytes  
Chondrocytes  
Neurons

## Medically Approved Regenerative Treatments Using Dental Stem Cells



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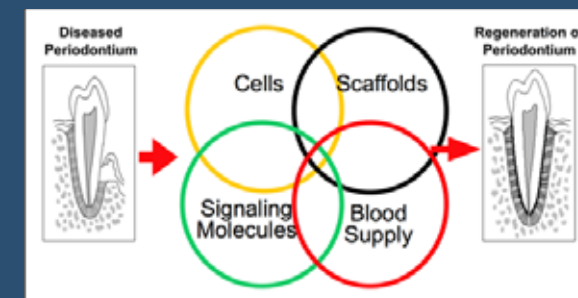
Teeth, which happen to be the most natural and noninvasive source of stem cells owing to their convenience and affordability to collect hold promise for a range of difficult to treat medical indications. The regenerative capacity of dental pulp derived stem cells has been a topic of utmost interest to clinicians and researchers alike in the field of regenerative medicine. The story of dental stem cells dates back to 2003, when

Dr. Songtao Shi, a pedodontist discovered baby tooth stem cells in the deciduous teeth of his six year old daughter and named the cells as stem cells from the human exfoliated deciduous teeth (SHED). Dental Pulp Stem Cells or DPSCs as they are commonly referred to, are found within the "cell rich zone" of the dental pulp. Their multipotent nature can be attributed to their origin from the neural crest. Owing to their multipotent nature, these DPSCs can effectively differentiate into many cell types which include adipocytes, neurons, chondrocytes and mesenchymal stem cells under specific stimuli. Since they can be found in both adults and children alike, their use in regenerative and patient specific treatment of certain ailments has been gaining rapid momentum. One of the major advantages of DPSCs over umbilical cord/blood stem cells is that the dental stem cells are derived from the deciduous and permanent teeth (wisdom/corrective) and can be collected later after birth unlike their umbilical cord counterparts. Collection of teeth for dental pulp and isolation of stem cells from the pulp can be carried out without raising any ethical red flags as the procedure is very simple/non-invasive without any associated mortality or morbidity. Recent advances in the field of dental stem cell clinical research have made it possible to employ them in reparative and regenerative roles. This newsletter is an effort to bring to the reader's attention some of major advancements in the "close to reality of DPSCs in clinics". We hope the reader while appreciating the significance of DPSCs would strongly consider storing their loved ones' about to fall milk teeth derived stem cells even if the loved ones Cord/blood were banked as the medically approved applications are different for different sources.

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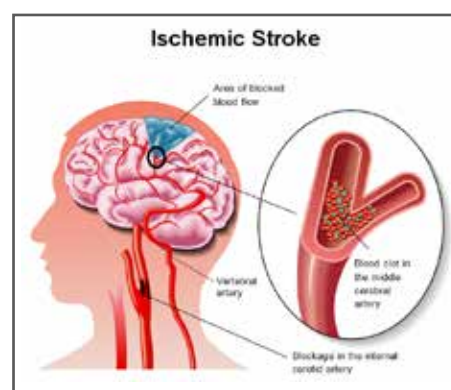


It is caused by the build-up of bacteria in the mouth which, over time, combines with saliva and small food particles to form a sticky film over the teeth, called plaque. The bacteria in the plaque can result in gum disease, leading to swollen, painful gums. If not treated, this gum disease will get worse and will develop into periodontitis. Up to 90% of people over the age of 75 have PD and it carries with it a high risk of other health complications. Current treatments are not very effective. Experimental and clinical data suggest that human dental pulp stem cells (hDPSCs) are capable of regenerating periodontal structures (soft tissues and bone supporting the teeth) regardless of their autologous (coming from the person themselves) or allogeneic origin (coming from a donor). This study is looking at the effect of in situ treatment with hDPSCs on periodontal disease, markers of oxidative stress and inflammation in aging adults.



**TOOTH (The Open study Of dental pulp stem cell Therapy in Humans): Study protocol for evaluating safety and feasibility of autologous human adult dental pulp stem cell therapy in patients with chronic disability after stroke**

Stroke represents a significant global disease burden. As of 2015, there is no chemical or biological therapy proven to actively enhance neurological recovery during the chronic phase post-stroke. Human adult dental pulp stem cells present an exciting potential therapeutic option for improving post-stroke disability. TOOTH (The Open study Of dental pulp stem cell Therapy in Humans) will investigate the use of autologous stem cell therapy for stroke survivors with chronic disability, with the following objectives: (a) determine the maximum tolerable dose of autologous dental pulp stem cell therapy; (b) define that dental pulp stem cell therapy at the maximum tolerable dose is safe and feasible in chronic stroke; and (c) estimate the parameters of efficacy required to design a future Phase 2/3 clinical trial. The primary outcomes to be measured are safety and feasibility of intracranial administration of autologous human adult DPSC in patients with chronic stroke and determination of the maximum tolerable dose in human subjects. Secondary outcomes include estimation of the measures of effectiveness required to design a future Phase 2/3 clinical trial.



**Feasibility of the Preparation of an Advanced Therapy Medicinal Product for Dental Pulp Regeneration (Pulp'R)**  
**ClinicalTrials.gov Identifier: NCT02842515**

Current endodontic treatments are based essentially on the ouster of parenchyma in case of trauma or irreversible pulp inflammation. These situations typically affect immature teeth in subjects aged from 8 to 15 years. Consequently, loss of a functional pulp leads to discontinuation of root development and apical closure. The challenge for the clinician in the management of such situations is then preserving a pulp vitality. But current practices consist in a filling of the endo-canal system with an inert or semi-inert material. In this case, no pulp vitality is present. New treatment methods are needed. The objective Pulp'R is the study the feasibility of preparing an autologous combined advanced therapy medicinal product (ATMP) for dental pulp regeneration in the patient with irreversible pulp inflammation or dental trauma.

**Periodontal Regeneration of Chronic Periodontal Disease Patients Receiving Stem Cells Injection Therapy**  
**ClinicalTrials.gov Identifier: NCT02523651**

The purpose of this study is to evaluate the safety of clinical injection of allogeneic human dental pulp stem cell (DPSC) in local infected periodontal tissue and determine whether injection of allogeneic DPSC is an effective way in the treatment of chronic periodontal disease.

**Human dental pulp stem cells (hDPSCs) as treatment for periodontal disease**  
**ISRCTN12831118 DOI 10.1186/ISRCTN12831118**

Periodontitis, or periodontal disease (PD) is a very common chronic gum infection that damages the soft tissue and destroys the bone supporting the teeth. It can lead to tooth loss, difficulties chewing, poor appearance of teeth and gums and it can even increase the risk of a heart attack or stroke.

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