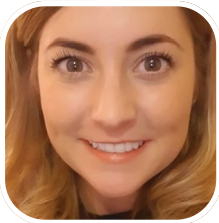




Does the use of plasma rich in growth factors (PRGF) produce benefits for patients with chronic periodontal disease in non-surgical treatment?



This article is adapted from a poster based on a literature review conducted by **Arlene Cumming**, a third year dental therapist student at the University of the Highlands and Islands.

Summary

- Plasma rich in growth factors (PRGF) is autologous, providing a biologic process that stimulates and accelerates tissue regeneration
- This process has the potential to help aid elements of chronic periodontal disease alongside mechanical removal of plaque, usually completed by the dental hygienist/therapist (DT).

What is periodontal disease?

Periodontal disease is inflammatory destruction, initiated by oral pathogens which affect the supporting tooth structure, if the plaque is not removed by oral hygiene techniques or by mechanical intervention.

The severity of this disease ranges from mild, reversible inflammation, to chronic destruction of connective tissues, destroying the junctional

epithelium, causing bone loss and the formation of a periodontal pocket, ultimately resulting in tooth loss.¹

Ten to fifteen percent of the population will suffer from chronic periodontal disease (CPD).²

What is PRGF?

PRGF, a form of platelet concentrate, is an autologous process which stimulates tissue

regeneration. It has been used increasingly in dentistry over the last decade, in areas such as implantology, oral surgery, and periodontics.

This process uses the patient's venous blood which, following a centrifugation process, separates the plasma from the red blood cells. Various growth factors are then derived from the platelets. PRGF provides stimulation and acceleration of tissue healing and regeneration,³ which is one of its many advantages. It utilises the body's natural organisms: PRGF promotes biologic processes like proliferation, migration, and differentiation.

Literature review

As PRGF is increasingly used in dental procedures, the aim is to establish if there are benefits in using PRGF in non-surgical periodontal treatment, to investigate if there is an improvement in the periodontal health, such as pocket depths (PD), clinical attachment levels (CAL) and wound healing.

The PRGF procedure is not currently in the remit of a DT⁴ nor in the protocols to treat CPD. Currently, DTs use guidelines from the Scottish Dental Clinical Effectiveness Programme⁵ and BSP;² as well as looking at evidence-based practice to treat CPD. However, this advanced technology is being used in dental procedures such as implant placement; therefore, a DT should be aware of it so they can inform and discuss the process with the patient.

PRGF could become part of the DT remit in the future if more evidence supports its use in periodontal treatment.

Method

A database search was carried out from September to December 2020, using search engines. PubMed, Web of Science and the use of Knowledge Network were utilised as primary literature search tools using a search strategy.

Results

While there has been much research on PRGF and its benefits in CPD, few studies have considered PRGF in non-surgical periodontal treatment.

Five papers, spanning multiple countries, were included in this review. Although all the papers were looking at different aspects of PRGF in the treatment of CPD, they all showed positive results favouring its use. PRGF technology showed significant statistical difference in PD, gaining CAL, its aid against *Porphyromonas gingivalis* (*P. gingivalis*), and the aid in the healing of the periodontal ligaments.

Panda *et al.*⁶ reported in their randomised control trial that in PD sites observed at six months: 90.9% reduced to <4 mm in patients that had had PRGF as well as scaling and root

planing (SRP) compared to 59.1% in the SRP alone group.

Recommendations

- Further studies into the benefits of the use of PRGF in non-surgical CPD treatment are required
- DTs cannot use PRGF at present, but the dental world is constantly changing, and, with new studies, it may be included in non-surgical treatment for future patients
- Even if the PRGF process is not added to the DT remit, DTs should know of it and feel confident to discuss it with patients. For example, PRGF may be part of the process when patients are going for implants or need to be referred for surgical CPD treatment
- Being knowledgeable about PRGF, including its advantages and disadvantages, will enable informed discussions with patients

'PRGF is increasingly used in dental procedures. Even if the PRGF process is not added to the DT remit, DTs should know of it and feel confident to discuss it with patients.'

- For this reason, there is justification for it to be further understood and taught to DT students
- Dentistry is constantly advancing, and DTs should keep up to date, even if it is not in the current remit
- The General Dental Council's Standard 7.3 states, 'You must update and develop your professional knowledge and skills throughout your working life.'⁷

Conclusion

The evidence so far suggests there is a potential use for PRGF in the treatment of CPD, alongside mechanical non-surgical treatment.

There was a range of benefits, from reduced PD, regaining CAL, benefits against *P. gingivalis*, and its use in healing the periodontal ligaments.

Limited research made it difficult to reach a definite answer to the question and most studies thus far have focussed on the surgical treatment of CPD.

Before this can become part of the daily DT remit, more comprehensive studies are required for PRGF intervention in non-surgical CPD treatment.

References

1. How K Y, Song K P, Chan K G. *Porphyromonas gingivalis*: An overview of periodontopathic pathogen below the gum line. *Front Microbiol* 2016; doi: 10.3389/fmicb.2016.00053.
2. British Society of Periodontology. *The good practitioner's guide to periodontology*. 2016. Available at: https://www.bsperio.org.uk/assets/downloads/good_practitioners_guide_2016.pdf (accessed 28 October 2020).
3. BTI Human technology. What is Endoret (prgf) technology? Available at: <http://bti-biotechnologyinstitute.com/gb/regenerative-medicine/prgf-endoret/> (accessed September 2021).
4. General Dental Council. *Scope of practice*. Effective from 30 September 2013. Available at: https://www.gdc-uk.org/docs/default-source/scope-of-practice/scope-of-practice.pdf?sfvrsn=8f417ca8_4 (accessed 28 October 2020).
5. Scottish Dental Clinical Effectiveness Programme. *Prevention and treatment of periodontal diseases in primary care. Dental clinical guidance*. 2014. Available at: <http://www.sdcep.org.uk/wp-content/uploads/2015/01/SDCEP+Periodontal+Disease+Full+Guidance.pdf> (accessed 28 October 2020).
6. Panda S, Purkayastha A, Mohanty R *et al.* Plasma rich in growth factors (PRGF) in non-surgical periodontal therapy: a randomized clinical trial. *Braz Oral Res* 2020; **34**: 1-10. Available at: <https://www.scielo.br/pdf/bor/v34/1807-3107-bor-34-e034.pdf> (accessed 28 October 2020).
7. General Dental Council. *Standards for the dental team*. Effective from 30 September 2013. Available at: <https://standards.gdc-uk.org/Assets/pdf/Standards%20for%20the%20Dental%20Team.pdf> (accessed 26 October 2020).

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