ISSN Print: 2394-7489
ISSN Online: 2394-7497
IJADS 2021; 7(2): 366-369

www.oraljournal.com
Received: 07-02-2021
Accepted: 09-03-2021

Dr. Aditya Sharma
Post Graduate Student, Department of Periodontology, Subharti Dental College, Swami Vivekanand Subharti University, NH-58, Meerut, Uttar Pradesh, India

Dr. Mayur Kaushik
Professor and Head, Department of Periodontology, Subharti Dental College, Swami Vivekanand Subharti University, NH-58, Meerut, Uttar Pradesh, India

Dr. Nazar Rana
Reader, Department of Periodontology, Subharti Dental College, Swami Vivekanand Subharti University, NH-58, Meerut, Uttar Pradesh, India

Dr. Soundarya Singh
Senior Lecturer, Department of Periodontology, Subharti Dental College, Swami Vivekanand Subharti University, NH-58, Meerut, Uttar Pradesh, India

Corresponding Author:
Dr. Aditya Sharma
Post Graduate Student, Department of Periodontology, Subharti Dental College, Swami Vivekanand Subharti University, NH-58, Meerut, Uttar Pradesh, India

Placentrex gel used as a surgical wound healing agent: A case report

Dr. Aditya Sharma, Dr. Mayur Kaushik, Dr. Nazar Rana and Dr. Soundarya Singh

DOI: https://doi.org/10.22271/oral.2021.v7.i2f.1232

Abstract
Gingival enlargement is an inflammatory response to plaque present on tooth surfaces or due to factors like drugs and several systemic conditions. In cases where the local factors are responsible and subgingival scaling and root planing do not help, gingivectomy/gingivoplasty is performed which creates a raw wound which heals slowly. Since surgical practice primarily depends upon the healing of these wounds without serious complication and infection occurring, to increase the rate of healing of a postoperative surgical wound, placental extract gel has been used as a therapeutic agent because it has unique pharmacological effects like enhancement of wound-healing, anti-inflammatory action, analgesic effect etc. A variety of substances with biological and therapeutic activity present in human placenta have been isolated and identified as hormones, proteins, glycosaminoglycans, nucleic acids, polydeoxyribonucleotides (PDRNs) etc. which therefore play a major role in the faster healing of a surgical wound.

Keywords: placenta, healing, gingivectomy, gingivoplasty

Introduction
Gingival enlargement (hyperplasia) is a condition often occurring due to plaque on the tooth surface, systemic intake of drugs and also due to some systemic conditions. If the enlargement is due to local factors, then removal of the same by subgingival scaling will cause the regression of the enlargement. But sometimes, the enlargement remains even after repeated scaling and root planing. In such instances, the gingiva has to be excised surgically and the wound produced by gingivectomy/gingivoplasty is a raw wound which heals by secondary intention with a slower rate. It takes six weeks for the epithelization to be completed. During this period, patients experience a lot of pain and discomfort [1].

The surgical practice primarily depends upon the healing of wounds without serious complication and infection occurring. It accounts for considerable patient morbidity, discomfort, and prolonged hospitalization [2]. so, the postoperative care plays a major role for a better healing and for that several methods have been employed over the years.

The placenta is now viewed by many as a substance which will revolutionise modern medicine. It increases the healing by stimulating the nervous regulation, hormonal regulation, & immune system regulation and gives resistance to the body which will help in increasing collagen synthesis and improving tensile strength of the healing tissue [3, 4].

Use of placenta as a therapeutic agent has been prevalent for a long time because it is an immunologically privileged organ and has unique pharmacological effects like enhancement of wound-healing, anti-inflammatory action, analgesic effect etc. A variety of substances with biological and therapeutic activity present in human placenta, have been isolated and identified as hormones, proteins, glycosaminoglycans, nucleic acids, polydeoxyribonucleotides (PDRNs) etc. [3].

The composition of placental extract thus depends on the method of its preparation. In many countries, intramuscular and topical use of the extract for burn injuries, chronic wounds and as postsurgical dressing is an age old practice [3].

Growth factors of the placenta include

1. Hepatocyte Growth Factor (HGF): Promotes growth of liver parenchymal cells and various tissues.
2. Nerve Growth Factor (NGF): Promotes growth of nerve cells (sensory and sympathetic ganglionic cells).
3. Epidermal Growth Factor (EGF): Promotes growth of skin, lungs, cornea, and tracheal epithelial cells.
4. Fibroblast Growth Factor (FGF): Promotes growth of human fibroblasts, glia cells, and vascular endothelial cells.
5. Insulin-like Growth Factor (IGF): Promotes growth of cartilage cells, and smooth muscle cells.
6. Colony-Stimulating Factor (CSF): Promotes growth of stem cells such as immunocompetent cell granulocytes, and macrophages.
7. Interleukin-1 (IL-1): Promotes production of immune-competent cells (T-cells, B-cells, and NK-cells),
8. Thymus cells and lymphokines.
9. Interleukin-2 (IL-2): Promotes growth of Tcells (helper T-cells, killer T-cells, and suppressor T-cells).
10. Interleukin-3 (IL-3): Promotes growth of hematopoietic cells, and mast cells.
11. Interleukin-4 (IL-4): Promotes growth of B cells, and promotes division of antibody producing cells.

Other therapeutic effects of placenta are

- **Gynaecology:** Menopausal disorders, menstrual pain, irregular menstruation, failure of lactation, and high prolactin levels, etc.
- **Internal Medicine:** Hepatitis, cirrhosis of the liver, chronic pancreatitis, diabetes, chronic gastritis, dyspepsia, gastric ulcers, duodenal ulcer, ulcerative colitis, bronchial asthma, chronic bronchitis, high blood pressure, low blood pressure, habitual constipation, and collagen disease,
- **Surgery**: Chronic rheumatoid arthritis, osteoarthritis, arthritis, neuralgia, lumbago, and stiff shoulders, etc.
- **Dermatology:** Atopic skin complaints, psoriasis, body odour, eczema, chapped skin, spots, and freckles, etc.
- **Psychiatry:** Autonomic ataxia, and sleeplessness, etc.
- **Urology:** Enlarged prostate, cystitis, and haemorrhoids, etc.
- **Ophthalmology:** Cataracts, allergic conjunctivitis, and vision loss, etc.
- **Ear, Nose and Throat:** Allergic rhinitis, Meniere's disease, and hay fever, etc.
- **Dentistry:** Periodontitis, and gingival disease, etc.

Case report

A 19-year-old female patient reported to the OPD of Department of Periodontology, Subharti Dental College, Meerut with the chief complaint of enlarged gums in the lower front teeth region since 6 months. History of the present enlargement revealed that initially the growth was small, which increased gradually over 6 months, attaining the present size. Enlargement was often associated with bleeding while brushing. No past dental history and medical history was present.

Clinically, the gingival enlargement was present as a deep red or bluish-red colour with slight ballooning of the interdental papilla and marginal gingiva, and a shiny surface that bled easily on provocation. The oral hygiene status of the patient was poor with the presence of abundant local factors such as calculus and plaque.

Two weeks after the completion of Phase I therapy, electrosurgery-assisted surgical excision of the gingival enlargement was planned, and the treatment was explained comprehensively to the patient. After patient's consent and required hematologic investigations, gingivoplasty was performed using electrosurgery from the distal aspect of the mandibular right canine to distal aspect of mandibular left canine [Figures 1-7].

Fig 1: Pre-operative view

Fig 2: 1 Week before surgery localized SRP done WRT 33 to 43

Fig 3: Immediate post-operative

Fig 4: Placentrex gel

Fig 5: 1 Week post-operative

Fig 6: 1 Month post-operative

Fig 7: 3 Months post-operative

The patient had been prophylactically prescribed antibiotic, Saginox CV 625mg (Amoxicillin 500mg + clavulanic acid 125mg), from the day before surgery along with Gutcade (Streptococcus faecalis + Clostridium butyricum + Bacillus mesentericus + Lactic acid bacillus) and Penroc DSR (Pantoprazole sodium sesquihydrate + Domperidone). From the day of surgery for next 5 days, anti-inflammatory Flozen Plus (Serratiopeptidase + Diclofenac potassium + Paracetamol) was also added and Placentrex gel 20g (Human Placenta extract 0.1g in each gram of Placentrex gel) was prescribed for gentle application over the surgical wound area twice daily. Placentrex gel is a topical medication used to treat wounds that are not healing or healing very slowly. It promotes wound healing with minimal scars and it has antimicrobial properties against a large number of pathological microorganisms. Therefore, it helps in prevention of infection and promotes rate of healing. Additionally, the patient was also prescribed 0.2% chlorhexidine mouthwash.

Patient was followed-up at 1-week, 1-month and 3-month intervals. No evidence of recurrence was reported until the last follow-up. One week after the treatment, a superficial thin layer of denatured collagen was present, and at 1-month follow-up, the wound was uneventfully completely healed.

Discussion

Human placenta has been described as an immunologically privileged organ and its therapeutic effect was investigated first by Russian ophthalmologist, Filatov, who described the placental extract as a biogenic stimulator which could promote recovery of diseased tissues [5, 6]. Placental extract possess analgesic, wound healing, and anti-inflammatory properties. Various biological products such as glycosaminoglycans, nucleic acids, polydeoxyribonucleotides, hormones, and proteins have been isolated from the placenta, suggesting its therapeutic potential as a wound healing agent [5].

Placental extracts can be classified into two different types: aqueous extract and hydroalcoholic extract. The components present in the extract depend on the method of its preparation and are based on solubility of the components in respective solvent of extraction. Thus, an aqueous extract is likely to contain more polar molecules such as peptides/proteins, small organic components like amino acids, nucleotides, polydeoxyribonucleotides (PDRNs), carbohydrates and trace amount of lipids mostly bound to proteins which are comparatively soluble in aqueous medium. Likewise, various types of lipids may be present in hydroalcoholic extract (less polar and hydrophobic). Chemical analysis of the hydroalcoholic extract revealed the presence of glycosphingolipids, cholesterol, triglycerides, high density lipoproteins, carbohydrates, sialic acids and others, including amino acids, nucleotides, carotenes, vitamins, including small amount of low-molecular-weight proteins/peptides containing hydrophobic amino acid residues which are soluble in a less polar solvent [7].

Placentrex gel promotes healing faster than Povidone Iodine and saline dressing without causing interference to granulation tissue. It is found to be effective even in presence of pus serum, blood and slough [2]. Subramanium [8] observed that in indolent ulcers Placentrex Gel dressing seems to free the lesion from infection and then produces adequate granulation tissue formation and facilitate healing.

Pote [9] compared povidone iodine ointment and Placentrex Gel as topical Agents in superficial burns. It was found that patients treated with Placentrex Gel, wounds healed significantly earlier than those with povidone-iodine ointment. Placentrex Gel was found to be more acceptable than povidone iodine ointment.

Shukla [10] found that 52% patients had 75-100% epithelization of wound in 4-8 weeks dressed with Placentrex Gel, without any adverse reaction. He found that it is extremely effective in healing wounds as it increases the blood supply in tissues and enhances regeneration and recovery of the tissue.

Conclusion

Placenta is a valuable drug clinically applicable in the field of dentistry and due to identification of biologically active components in placental extracts, its role in wound healing has significantly increased. However, more clinical data is required for its extensive use in the field of periodontology.

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