

Placenta Extract & Castor Oil (Next Generation Wound Healer)

Innovations in Wound Healing by Mother's & Nature's Touch
Another Era of Healing in Periodontal Surgery

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Abstract:-

Background

Herbs and animals are used either whole or in part have proved to be effective therapeutic remedies. It has been claimed, Placental extract plays a beneficial role as a topical agent in the management of chronic non-healing wounds & castor oil is anti-inflammatory when externally applied to injuries. Where as periodontal dressing reduces the risk of wound infection, bleeding and granulation tissue formation and improves tissue healing. This study evaluated efficacy of these extracts on wound healing.

Aim

Assess the role of placenta extract & castor oil along with periodontal dressing in surgical wound healing process .

Material & Methods

A randomized controlled clinical trial including thirty (30) patients. Patients were divided into 3 groups. Patients were selected on the basis of inclusion and exclusion criteria. Surgical procedure will be performed . Primary efficacy outcome assessed by Landry index and Pain Assessment Scales. The secondary efficacy outcome were changes in Plaque index (Sillness & Loe 1964) followed by histological evaluation at 7th day of surgery. The patients will be followed 1 week postoperative followed by 2nd week , 3rd week, and 1 month.

Result

Marked improvement was reported in wound healing considering time and treatment effect in all groups, faster wound healing observed in Coe pack & Placentrix group compared to Castor oil group ,however in intergroup comparison in 1st week there is faster healing in Coepack is reported but P value is not significant , P value is significant with castor oil in 1st week , in 2nd week healing is faster reported in Placentrix group then other two group but P value is not significant . In 3rd & 4th week no significant value is reported between three groups . Post-operative evaluation of the NIPC PAIN SCALE score revealed that the discomfort and pain level associated with Placentrix & castor oil was significantly lower than conventional Coe pack dressing postoperatively ,on comparison of all three groups P value found to be significant. While in cases of plaque index at 1st week of depigmentation procedure plaque value found to be significant & more plaque accumulation is found in that case of Coepack dressing alone ,while there is no significant difference found in between Placentrix & castor oil grouping.

Conclusion

It may be concluded that Placentrix & castor oil are a safe and low cost medicament and may feasibly apply to promote wound healing & topical analgesic for intra oral surgeries, especially in whom underlying systemic and local diseases that further disturb healing processes.

Keywords:- Placentrix &, Castor Oil.

I. INTRODUCTION

Dr. A.W Ward in 1923 first introduced periodontal dressings, who has proposed the use of periodontal dressing following periodontal surgery. Periodontal dressings are often used for accelerated wound healing following periodontal surgery by periodontist.

The Placenta, is a fetomaternal organ serves as a natural treasure of many biologically active components with significant healing properties. According to Wuet al., 2003 the placenta extract is very much efficient in curing in high degree burn injury & chronic non-healing wounds including post-surgical dressings.

At the first sign of illness, Many grandmothers and parents would immediately turn to giving their baby castor oil either topically or internally for increasing immunity & speedy recovery of injury since decades. Castor oil is the "Arnica of Ayurveda." and treats bruising & damaged connective tissue and epithelium.

Collectively, based on superb mentioned properties we aimed to investigate **Placentrix & Castor oil** role in accelerating wound healing after periodontal surgery with the help of Coepack also called as "Wondrpack", with the aim of protecting the surgical site, immobilization of the surgical site, enhancing patient comfort after depigmentation esthetic procedure.

II. MATERIALS AND METHODS

Gingival depigmentation is a periodontal esthetic procedure. Through depigmentation procedure aims in reducing this hyperpigmentation result in pink esthetics.

This study was approved by the Ethical Committees at Kanti Devi Dental College & Hospital Mathura. Thirty patients were selected from OPD of Dept of Periodontics & oral implantology age group 17-35 years in which 18 female and 12 male who had concern regarding black gums. They were classified on basis of the Dummett-Gupta Oral Pigmentation Index (DOPI).

The exclusion criteria were:

1. In the past six months history of antibiotic treatment
2. Pt is on or history of steroid therapy past 6 month
3. Pt is on hormonal therapy past 6 month
4. History of Diabetes mellitus
5. History of any systemic disease
6. History of smoking

After taking the patients consent, subjects assigned into three groups of A and B & C. In group A, after depigmentation procedure the first group A surgical site only Periodontal pack (COE-PAK TM G.C, America, Inc.) was applied. For group B, periodontal dressing mixing with commercially available preparation of placenta extract Placentrix topical application on the surgical site followed by at the ratio of 1:1 at the mixing stage in coepack applied over the surgical site, In group C, castor oil topical

application on surgical site followed by periodontal pack mixing with castor oil in the ratio of 1:1 applied over the surgical site.

One surgeon performed surgeries for each patient & was performed with blade no. 15 under 2% lignocaine local anaesthesia in the anterior maxillary region from right premolar area to the left premolar area. Once the procedure was completed, The patients were instructed to, avoid eating spicy food and brushing the operated sites till the next visit.

III. CLINICAL PARAMETERS & EFFICACY OUTCOME

Gingival pigmentation:

gingival pigmentation observation were made according to Dummett-Gupta Oral Pigmentation Index.

- 0 - No clinical pigmentation (pink gingiva)
- 1 - Mild clinical pigmentation (mild light brown color)
- 2 - Moderate clinical pigmentation (medium brown or mixed pink and brown color)
- 3 - Heavy clinical pigmentation (deep brown or bluish black color).

Clinical picture were taken preoperatively, during the surgical procedure, after the depigmentation surgical procedures and at 1st, 2nd, 3rd and 4th week post operatively. they are asked to report any side effects result of & during active or passive treatment.

Primary efficacy outcome was landry healing index changes at 1st, 2nd, 3rd and 1 month follow-up, & NIPC assessment tool. The patients filled out a questionnaire about pain and discomfort on basis of **The National Initiative on Pain Control™ (NIPC™) including face rating scale, numeric pain scale & pt questionnaire** the secondary outcomes were Plaque indices (Sillness & Loe 1964) was recorded at baseline & all the two weeks of followed by histological evaluation at 7th day of surgery with the help of punch biopsy instrument, (5mm diameter) besides safety issues and disturbance in healing process. All surgeries and index recordings were done by an Periodontist in independent manner with a blinded manner in order to exclude biases, no information was given to patients periodontal dressing advantage & disadvantages in order to remove its psychological impact.

Histological examination

For all three dressing materials evaluation and tissue response observation at the microscopic level, 5mm standard punch biopsy was taken at the end of 7th day of depigmentation surgery from maxillary & mandibular attached gingiva at the canine & 1st premolar region using a disposable 5 mm diameter punch biopsy instrument. By Hematoxylin and Eosin (H and E) staining method epithelium & connective tissue properties is observed in selected sites in each group. The interpretation was done at ×100 magnification by an independent examiner.

Punch biopsy 5 mm diameter at 7th day of surgery

Statistical analysis

Statistical Package for Social Sciences (SPSS Inc., Chicago, IL, version 11.0 for windows) software helps in Statistical analysis. For qualitative variables, mean and standard deviation were calculated. Means were compared for three groups using chi square test. and for intergroup comparisons, Kruskal wallis test applied. For Plaque indices

one way ANOVA is applied. , $P < 0.05$ considered as the level of significance in the present study.

IV. RESULTS

Marked improvement was reported in wound healing considering time and treatment effect in all groups, however faster wound healing observed in Coe pack & Placentrix group compared to Castor oil group, however in 1st week there is faster healing in Coepack 3.40 then placentrix 3.30 but P value is not significant however is significant with castor oil 2.80, in 2nd week healing is faster reported in Placentrix group, which is not significant. In 3rd & 4th week no significant value is reported between three groups as shown in Table 1

Table 1

| landry healing index | GROUP A (coe pack) | | GROUP B (placentrix) | | GROUP C (castor oil) | | Chi-Square | P-value | Inferences |
|----------------------|--------------------|------|----------------------|------|----------------------|------|------------|---------|------------|
| | Mean | S.D. | Mean | S.D. | Mean | S.D. | | | |
| WEEK I | 3.40 | 0.70 | 3.30 | 0.48 | 2.80 | 0.42 | 6.110 | 0.047 | S |
| WEEK II | 3.80 | 0.42 | 4.10 | 0.32 | 3.70 | 0.48 | 4.505 | 0.105 | NS |
| WEEK III | 4.20 | 0.63 | 4.20 | 0.42 | 4.10 | 0.57 | 0.223 | 0.894 | NS |
| WEEK IV | 4.90 | 0.32 | 4.90 | 0.32 | 4.80 | 0.42 | 0.558 | 0.757 | NS |

Post-operative evaluation of the **NIPC PAIN SCALE** score revealed that the discomfort and pain level associated with Placentrix was significantly lower than conventional Coe pack dressing postoperatively, on comparison of all three groups P value found to be significant, as shown in table 2 and table 3.

Table 2

| | GROUP A (coe pack) | | GROUP B (placentrix) | | GROUP C (castor oil) | | Chi-Square | P-value | Inferences |
|------------------|--------------------|------|----------------------|------|----------------------|------|------------|---------|------------|
| | Mean | S.D. | Mean | S.D. | Mean | S.D. | | | |
| INTENSE SCALE | 2.70 | 0.82 | 2.40 | 0.52 | 4.50 | 1.08 | 15.984 | 0.000 | S |
| SHARP SCALE | 3.70 | 0.95 | 2.10 | 0.74 | 3.80 | 1.14 | 13.166 | 0.001 | S |
| HOT SCALE | 3.70 | 0.95 | 2.20 | 0.63 | 2.70 | 0.67 | 11.856 | 0.003 | S |
| COLD SCALE | 4.40 | 0.97 | 2.70 | 0.95 | 5.30 | 0.95 | 17.405 | 0.000 | S |
| SENSITIVE SCALE | 4.70 | 0.95 | 2.00 | 0.47 | 5.00 | 0.94 | 20.386 | 0.000 | S |
| TENDER SCALE | 3.90 | 0.88 | 2.00 | 0.47 | 5.20 | 1.23 | 21.653 | 0.000 | S |
| ITCHY SCALE | 3.80 | 0.79 | 2.10 | 0.57 | 5.50 | 0.85 | 23.654 | 0.000 | S |
| SHOOTING PAIN | 3.70 | 0.67 | 1.80 | 0.63 | 4.20 | 0.63 | 20.869 | 0.000 | S |
| NUMB SCALE | 3.50 | 0.71 | 1.80 | 0.42 | 3.90 | 0.99 | 18.297 | 0.000 | S |
| ELECTRICAL SCALE | 3.70 | 0.67 | 1.90 | 0.74 | 3.50 | 0.97 | 15.909 | 0.000 | S |
| TINGLING SCALE | 3.60 | 0.97 | 2.10 | 0.88 | 5.00 | 0.94 | 18.952 | 0.000 | S |
| CRAMPING SCALE | 4.00 | 0.67 | 1.80 | 0.42 | 3.60 | 1.07 | 18.318 | 0.000 | S |
| RADIATING SCALE | 2.90 | 0.88 | 2.30 | 0.67 | 3.60 | 0.52 | 11.284 | 0.004 | S |
| THROBBING SCALE | 3.10 | 0.57 | 2.00 | 0.67 | 4.50 | 1.43 | 18.656 | 0.000 | S |
| ACHING SCALE | 3.33 | 0.71 | 2.10 | 0.57 | 5.20 | 0.92 | 22.522 | 0.000 | S |

Table 3

| | Group A Coe pack | | Group B Placentrix | | Group C Castor oil | | Chi-Square | P-value | Inferences |
|-------------------------------------|---------------------|------|-----------------------|------|-----------------------|------|------------|---------|------------|
| | Mean | S.D. | Mean | S.D. | | | | | |
| WONG BAKER FACES PAIN RAITING SCALE | 2.60 | 0.70 | 1.70 | 0.48 | 3.30 | 0.67 | 16.692 | 0.000 | S |
| NUMERIC PAIN RATING SCALE | 3.30 | 0.67 | 2.00 | 0.47 | 2.90 | 0.57 | 15.088 | 0.001 | S |

While in cases of plaque index at 1st week of depigmentation procedure plaque value found to be significant & more plaque accumulation is found in that case of Coepack dressing alone ,while there is no significant difference found in between Placentrix & castor oil grouping.

Table 4 Plaque index (ONE WAY ANOVA)

| | GROUP A (coe pack) | | GROUP B(placentrix) | | GROUP C(castor oil) | | F | P-value | Inferences |
|-----------|--------------------|------|---------------------|------|---------------------|------|-------|---------|------------|
| | Mean | S.D. | Mean | S.D. | Mean | S.D. | | | |
| Base Line | 0.92 | 0.26 | 0.92 | 0.23 | 0.90 | 0.26 | 0.021 | 0.979 | NS |
| I | 1.68 | 0.44 | 1.30 | 0.32 | 1.28 | 0.38 | 3.471 | 0.046 | S |
| II | 0.89 | 0.21 | 0.86 | 0.19 | 0.85 | 0.17 | 0.12 | 0.888 | NS |

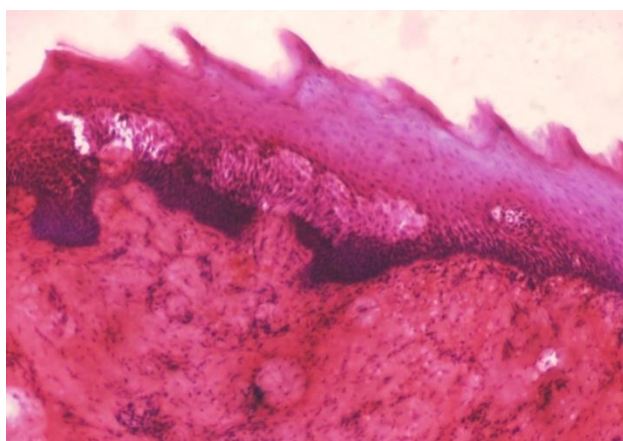
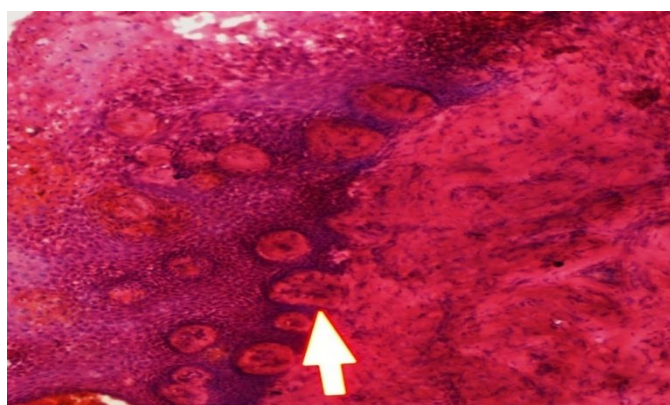
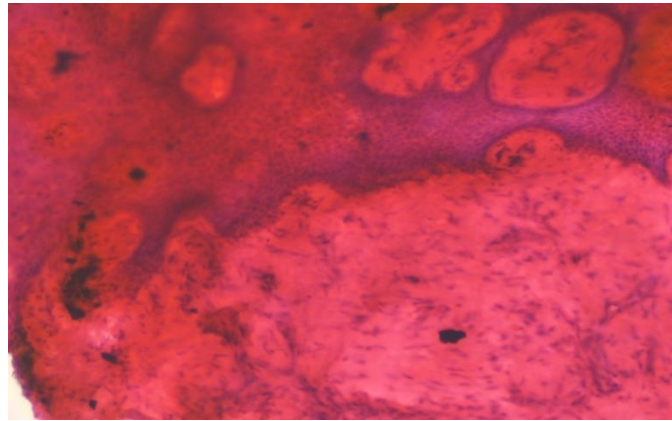


Figure 1 Group A

At day 7th in histological examination, in the control group (Group A), lamina propria shows severe chronic inflammatory cell infiltration below the epithelium followed by moderate tissue disruption & marked oedema also reported., (Figure 1), In the group B, we observed poor signs of inflammatory response in the connective tissue ,dense accumulation of relatively well-aligned new collagen fibers and relatively complete integrity between the epithelial cells . In the group C moderate chronic inflammatory cell infiltration in the connective tissue with mild tissue disruption. Our result suggested that wounds treated with this novel periodontal dressing (Placentrix) has all the gold standard of complete healing one week postoperatively. A histological picture of H&E stained sections of surgical wound one week post-operatively of Group C shows Mild persisting inflammatory response with moderate repair parameters,new blood vessels observed ,showing better result than Group A but lesser healing than Group B



Group B



Group C

V. DISCUSSION

Wound Healing can be described as body reaction to any injury or surgical procedure for restoration of normal function and structural integrity of tissue. Periodontal dressings is one of the factors that play an important role for the healing to take place properly . A periodontal dressing may be used therapeutically with or without surgery. However Coepak is the most commonly used noneugenol dressing. Across the various researches it has been claimed that placenta has the rich regenerative power that it can regenerate any part of any organ of the body. In 1912 Filatov started the principle of transplantation by using the concept of grafting human corneas by using of preserved tissue. He reported that when tissue originated either from human or animal are kept to the environmental factors that hinder or stop their vital activity they accommodate biochemical changes resulting by doing this tissue develop some substances that regulate their vital activity named as Biogenic stimulator according to Filatov (1951). He implemented this principle to general medicine for other human tissues.

Human placenta has the following actions in the body:

- Accelerates cellular metabolism providing the energy for the inflammatory response to occur.
- According to Hong et al., 2010 it helps in management of bacterial load that are healthy for wound healing
- It activates tissue regenerative capacity.
- Placenta extract also contain nucleotides like PDRNs and NADPH that are known for their regeneration
- It also activates growth factors and small peptides that help in matrix formation and cell adhesion, thereby promoting wound healing .
- Extracellular matrixes such as collagen, laminin, and fibronectin are also present which help in later phase of healing process
- Placental extract plays a beneficial role as a topical agent because it has anti-inflammatory and antiplatelet aggregation activity, by inhibition/inactivation of chemical mediators or by directly modulating prostaglandin (PG) Kinins,
- Through study it has been seen that in cotton pellet induced subacute inflammation model it act as inhibitor

of the B1-receptor thereby exerting its anti-inflammatory effect .

- Extract also helps in activation of the clotting cascade by trauma which results in platelet activation, followed by aggregation
- an extract of human placenta has also shown to stimulate collagen synthesis *in vivo* in rats.
- By evidence it has been seen that placentrax promotes fibrogenesis, neoangiogenesis and epithelialisation.
- According to Chakraborty et al., 2009 Globally, the extract is now recommended as an effective healer in burn injuries, chronic non-healing wounds, post surgical dressing.
- Human and animal models show that placental extract has an immune -stimulating action both at cellular and humoral levels.
- It activates IgG and IgM at the humoral level and total lymphokines at the cellular level.

Ricinus communis has a following magical effects on the wound healing process-

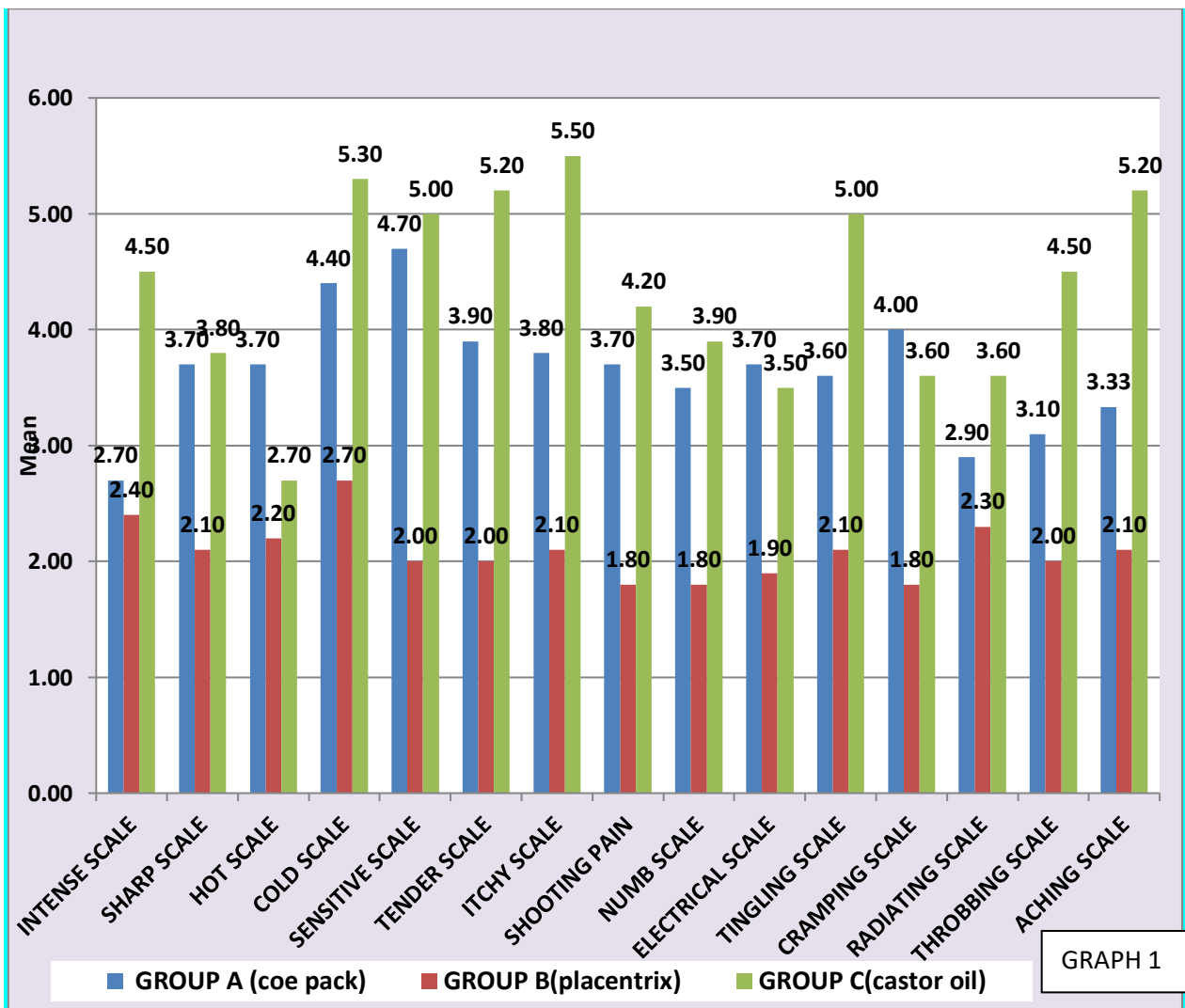
- castor oil's most important applications for supporting the immune system.
- Castor oil has properties of increasing type of special white blood cells that act like antibodies (the count of T-11 cells) produced within the body's lymphocytes that help kill viruses, fungi, bacteria and cancer cells.
- 90 percent of its fatty acid content is a specific and rare compound called ricinoleic acid. Castor oil is considered unique because ricinoleic acid is not found in many other substances, and it's such a dense, concentrated source.
- Apart from its primary ingredient, ricinoleic acid, castor oil also contains certain beneficial salts and esters that function primarily as skin-conditioning agents
- It also improves blood flow & circulation of the body , which helps the body better fight infections and heal wounds.
- Castor oil also works like a natural antibacterial, antifungal and antimicrobial agent
- Lymph flow also improves with castor oil use, which can help speed up the removal of cellular-related toxins and therefore lowers levels of swelling, redness and **inflammation at the root of most diseases.**

Applying this concept first time castor oil & Placentrix used with COE PACK to evaluate the healing effect in depigmentation procedure .

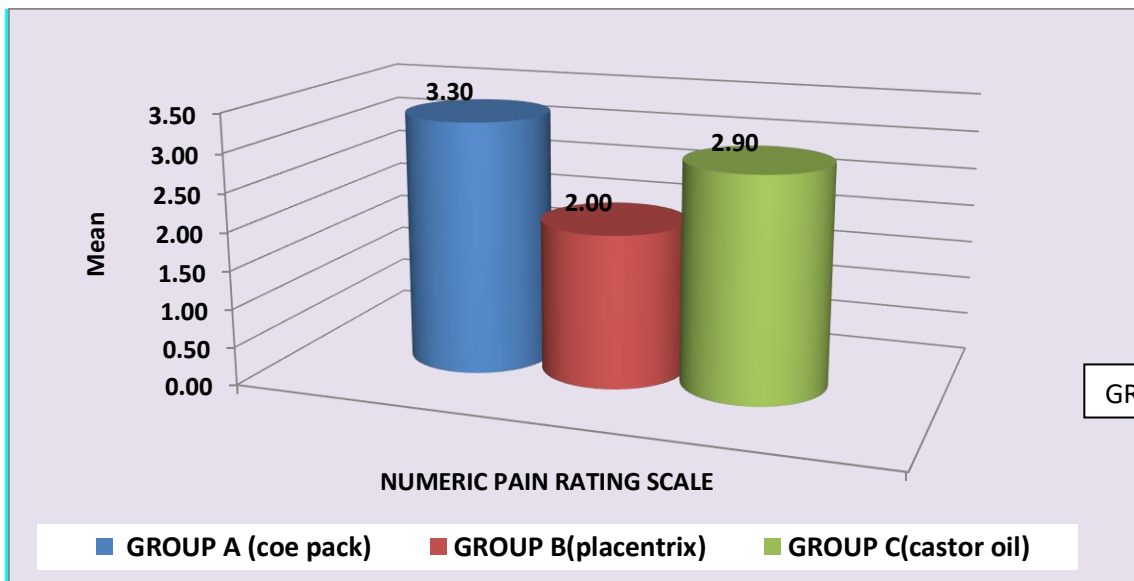
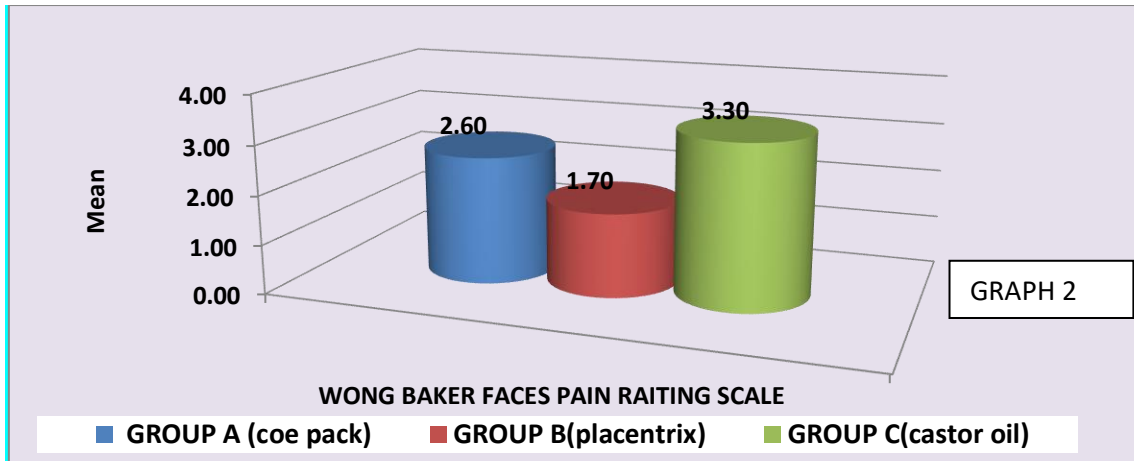
In this study, patients demonstrated more pain and discomfort in the Coepack alone treated sites than Coepack with Placentrix treated sites during the first 7th day postoperatively. TheNIPC pain assessment scale (which includes WONG BAKER FACES PAIN RATING SCALE , NUMERIC PAIN RATING SCALE & PAIN QUESTIONARE) is an established method for assessing pain or discomfort responses of patients , Patient feel almost no pain and discomfort site treated with Placentrix added in Coepack ratio of 1:1 during mixing procedure (as seen in graph 1 & graph 2 , 3),although setting time is decreased after mixing with Placentrix, while in cases of Castor oil

mixed in ratio of 1:1 during mixing increases the setting time and improves adaptability of pack at surgical sites. NIPC pain assessment diagnostics tool revealed that WONG BAKER FACES PAIN rating scale is higher where castor oil used(graph 2) then Coe pack dressing alone ,but NUMERIC PAIN rating scale is lower than Coepack dressing using alone(graph 3)

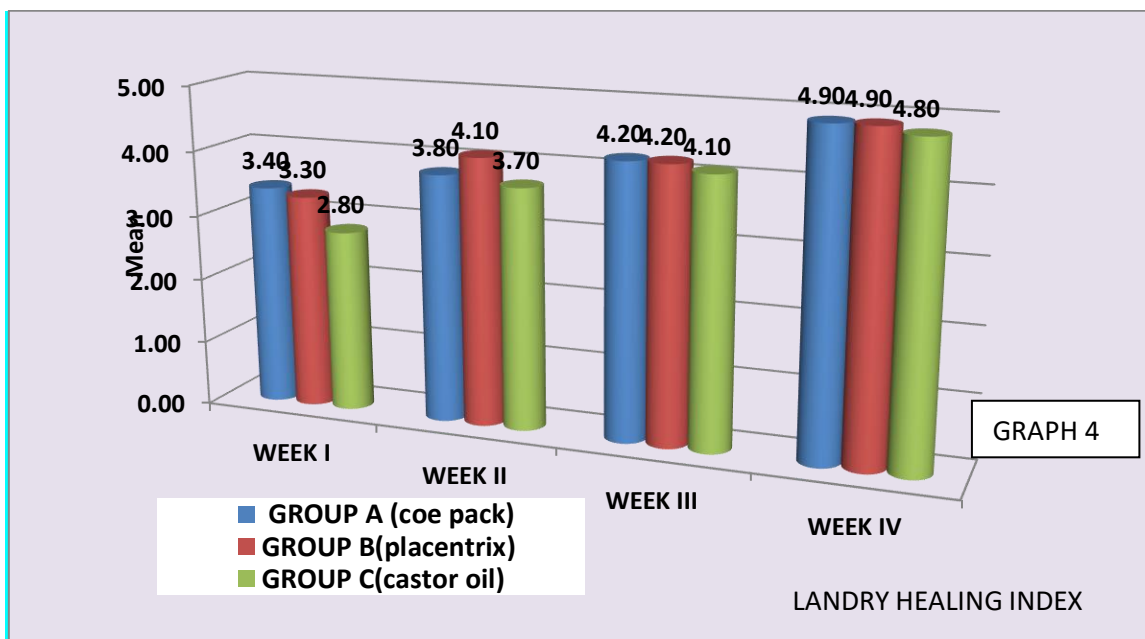
While in cases of PAIN ASSESSMENT QUESTIONARE which is a part of NIPC pain assessment scale found to be lower in cases Coepack & Placentrix site however Castor oil does not show any beneficiary effect over conventional Coepack dressing,although patient uses more pain after using at surgical site of castor oil used (graph 1)

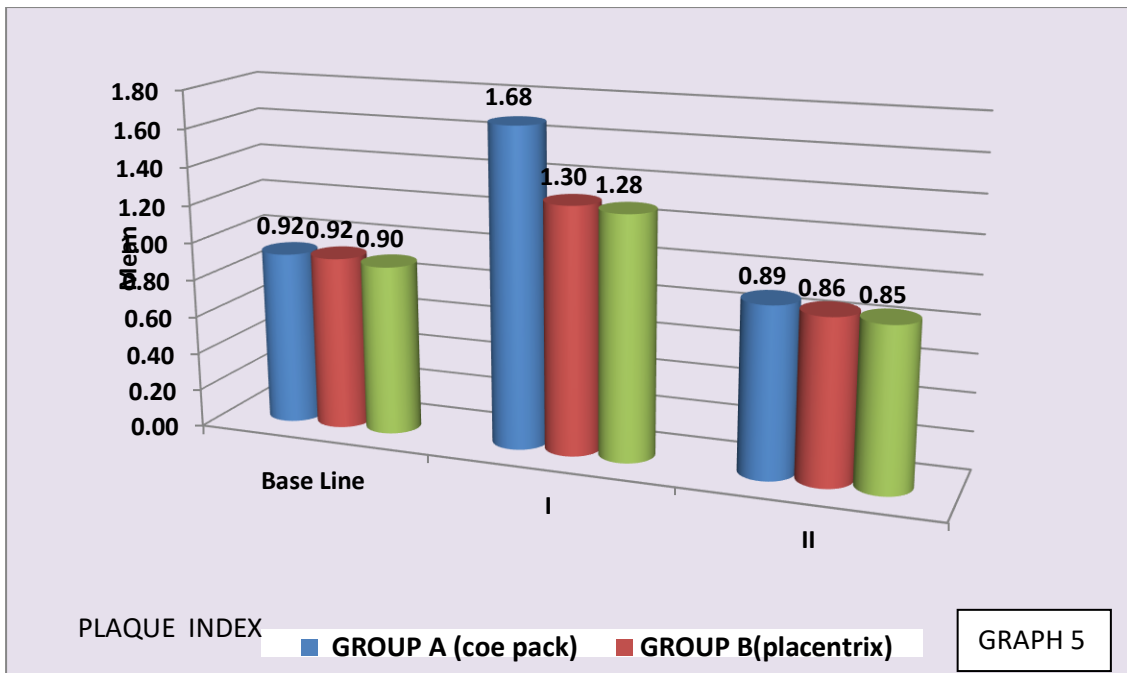


GRAPH 1



As shown in graph 4, group A & group B shows faster healing then group C ,while plaque accumulation is more in cases of group A then Group B & Group C. (Graph 5)





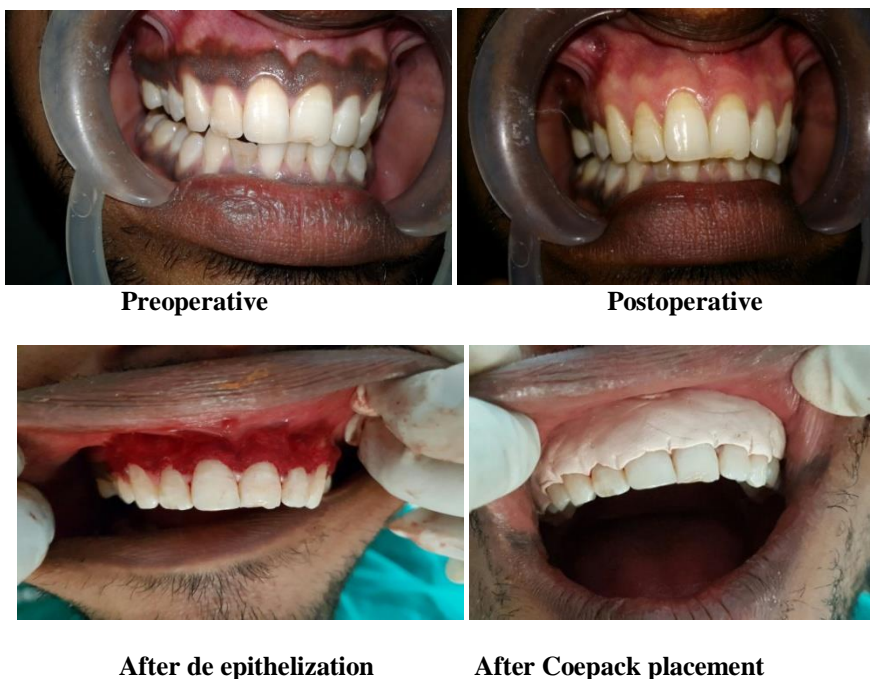
The histological picture of surgical site of the control group shows greater inflammatory cells and less collagen fibers arrangement then (B, C) Test group shows greater connective tissue formation with more mature collagen ,result in more firm gingiva .However Placentrix shows mature healing then castor oil group.

VI. CONCLUSION

Now it may concluded that Placentrix is a topical wound healer , safe & cost effective, and may readily applied to promote wound healing and has superadditive effect as topical analgesic for intra oral surgeries, especially in whom underlying systemic and local diseases that further delayed healing . Putatively, this relative newly approached remedy with traditional background is recommended. however further randomized control trial required for observing Magical touch of Mother’s fluid Placentrix & Palm Christ castor oil.

VII. CLINICAL PICTURES

CASE 1 (COE PACK)





after 7 day postoperatively

After 2 week postoperatively



After 3 week postoperatively

after 4th week postoperatively

CLINICAL CASE NO-2



Preoperatively

Postoperatively



After immediately deepithelization



After Coepack placement (mixed with Placentrix in the ratio of (1:1))



Healing after 7th day of depigmentation procedure



After 2 week postoperatively

After 3 week postoperatively



After 4 week postoperatively

CLINICAL CASENO .3

Castor oil placement



Preoperative

Postoperative



After deepithelization



After Coepack placement

After 7th day

After 2 week postoperatively



After 3 week postoperatively

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