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Original Research

Assessment of role of vitamin C in healing extraction sockets- A clinical study

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ABSTRACT:
Background: Consuming a diet rich in fruits and green vegetables provides most of us with the recommended levels of vitamin C. The present study was conducted to assess the role of vitamin C in healing sockets. **Materials & Methods**: 120 patients who underwent dental extraction were divided into 2 groups of 60 each. Group I patients were prescribed vitamin C 500 mg for 3 weeks and group II was healthy subjects. Healing of the extraction socket was assessed as type I as slow healing, type II as rapid healing. Incidence of dry socket was recorded. **Results:** Group I had 35 males and 25 females and group II had 28 males and 32 females. Slow healing was observed in 14.5% in group I and 61.5% in group II, rapid healing in 85.5% in group I and 38.5% in group II and incidence of dry socket was seen in 1.5% in group I and 12.4% in group II. Pain was mild in 25% and 30% in group I and II respectively, severe in 24% and 16% in group II respectively and no pain in 51% and 54% in group I and II respectively. The difference was non- significant (P> 0.05). **Conclusion:** Vitamin C supplementation found to be effective in promote healing as compared to those who were not prescribed vitamin C.
Key words: Dry socket, Healing, Vitamin C.

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INTRODUCTION

Consuming a diet rich in fruits and green vegetables provides most of us with the recommended levels of vitamin C. Unlike fat-soluble vitamins such as vitamins A, D, E and K that are stored in fat tissue, vitamin C is water-soluble and not stored in the body.[1] Excess vitamin C is excreted in the urine. Therefore, a continuous supply of vitamin C is required to ensure sufficient levels are available for metabolic processes and target tissues.[2] Most Canadians do not consume fruits and vegetables at the recommended seven to eight servings for women or eight to 10 servings for men. This does not mean that most Canadians are vitamin C deficient, but that consuming fruits and vegetables provides us with a variety of vitamins, minerals and fiber that may help reduce the risk of heart disease and some types of cancer.[3]

Due to the potential antioxidant effects of vitamin C there is considerable interest in whether higher than recommended levels of vitamin C are associated with better periodontal health or may support healing of periodontal tissues after specific procedures such as deep scaling and root planning, also called "sanative therapy". Before discussing the findings from those studies, it is important to consider the vitamin C needs of smokers – a group that is particularly at risk for periodontal disease.[4]

The present study was conducted to assess the role of vitamin C in healing sockets.

MATERIALS & METHODS

The present study was conducted among 120 patients who underwent dental extraction of both genders. All patients were informed regarding the study and their consent was obtained.

Data such as name, age, gender etc. was recorded. Patients were divided into 2 groups of 60 each. Group I patients were prescribed vitamin C 500 mg for 3

weeks and group II was control subjects. After extraction patients were recalled after 3 weeks for suture removal. Intraoral periapical radiographs were taken in follow ups. Healing of the extraction socket was assessed as type I as slow healing, type II as rapid healing. Incidence of dry socket was recorded. Results thus obtained were subjected to statistical analysis. P value less than 0.05 was considered significant.

RESULTS

Table I Distribution of subjects

Groups	Group I	Group II
Drug	Vitamin C	Control
M:F	35:25	28:32

Table I shows that group I had 35 males and 25 females and group II had 28 males and 32 females.

Table II Assessment of healing in both groups

Healing	Group I (%)	Group II (%)	P value
Slow healing	14.5	61.5	0.01
Rapid healing	85.5	38.5	0.01
Dry socket	1.5	12.4	0.05

Table I, graph I shows that slow healing was observed in 14.5% in group I and 61.5% in group II, rapid healing in 85.5% in group I and 38.5% in group II and incidence of dry socket was seen in 1.5% in group I and 12.4% in group II. The difference was significant (P< 0.05).

Graph I Assessment of healing in both groups

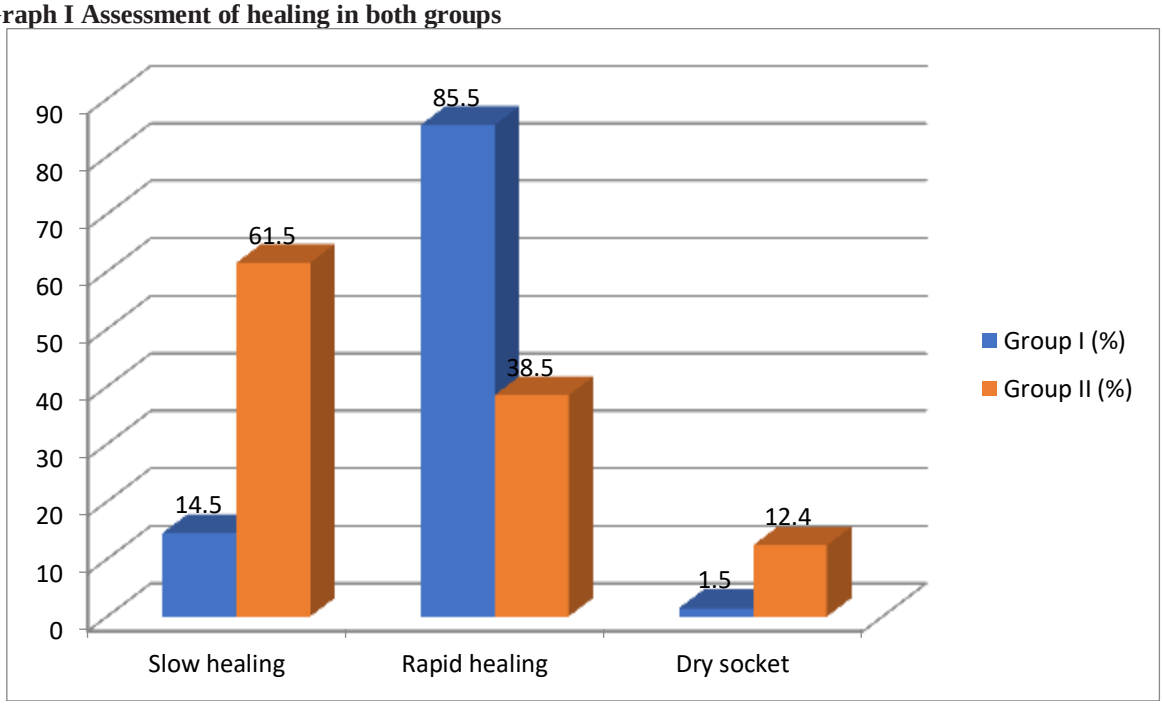

Table III Comparison of pain in both groups

Pain	Group I (%)	Group II (%)	P value
Mild	25	30	0.12
Severe	24	16	0.15
No pain	51	54	0.91

Table III, graph II shows that pain was mild in 25% and 30% in group I and II respectively, severe in 24% and 16% in group II respectively and no pain in 51% and 54% in group I and II respectively. The difference was non- significant (P> 0.05).

DISCUSSION

Although many nutrients play vital roles in the immune system, numerous studies highlight the importance of vitamin C, vitamin D, and zinc. Vitamin C is important for neutrophil phagocytosis, motility, reactive oxygen species (ROS) generation, antimicrobial activity and monocyte locomotion. Zinc sufficiency alters numbers and function of neutrophils, monocytes, natural killer T cells and B cells and is an important mineral for neutrophil and monocyte chemotaxis.[5] Vitamin D is critical for both innate and adaptive immune function and it is required for induction of the cathelicidin antimicrobial peptide gene in activated monocytes/macrophages. Inadequate vitamin C intake is associated with an increased risk of pneumonia and severe respiratory infection. Regular supplementation with vitamin C, when taken prior to onset, reduces the risk of contracting the common cold. Low intake of zinc, prevalent among older adults, correlates with impaired immune function.[6] Although only some randomized controlled trials have found that zinc supplementation reduces the number of infections in older adults, zinc lozenges significantly lowered the mean duration of cold symptoms. Low serum 25-hydroxyvitamin D [25(OH) vitamin D] is linked to a higher risk of acute respiratory tract infections. Overall, meta-analysis of randomized controlled trials indicate daily supplementation with vitamin D may reduce the risk of upper respiratory tract infections. Supplementation studies with combinations of these micronutrients have also suggested efficacy in immune function.[7]

In present study group I had 35 males and 25 females and group II had 28 males and 32 females. Abrahmsohn[8] study augments a growing body of evidence that indicates supplemental vitamin C may be beneficial in speeding healing following tooth extraction and in reducing the likelihood of alveolalgia and other complications. No adverse side effects were encountered from administration of vitamin C in our studies or in a recent investigation involving intake of 10 g/day; thus, carefully tested higher dosages ("megadose therapy") might be applied successfully to patients with alveolalgia or orthognathic conditions. Hanck comments on the relative safety of ascorbic acid in medicine: "The few literature references suggesting adverse effects of ascorbic acid are outnumbered by a large number of clinical studies in which no adverse effects have been observed. Up to 5 g of ascorbic acid daily may be administered safely even over a long-term". Further research is recommended to determine whether vitamin C is of similar value in hastening proper recovery from other oral surgical procedures. Vitamin C is a relatively safe, inexpensive, over-the-counter product that may be more effective in dental healing than previously known.[9]

We found that slow healing was observed in 14.5% in group I and 61.5% in group II, rapid healing in 85.5% in group I and 38.5% in group II and incidence of dry socket was seen in 1.5% in group I and 12.4% in group II. We found that pain was mild in 25% and 30% in group I and II respectively, severe in 24% and 16% in group II respectively and no pain in 51% and 54% in group I and II respectively.

Inadequate vitamin C intake is associated with an increased risk of pneumonia and severe respiratory infection. Regular supplementation with vitamin C, when taken prior to onset, reduces the risk of contracting the common cold. Low intake of zinc, prevalent among older adults, correlates with impaired immune function.[10] Although only some randomized controlled trials have found that zinc supplementation reduces the number of infections in older adults, zinc lozenges significantly lowered the mean duration of cold symptoms. Low serum 25-hydroxyvitamin D [25(OH) vitamin D] is linked to a higher risk of acute respiratory tract infection. Overall, meta-analysis of randomized controlled trials indicate daily supplementation with vitamin D may reduce the risk of upper respiratory tract infections.[11] Supplementation studies with combinations of these micronutrients have also suggested efficacy in immune function. Since multiple nutrients support immune function, older adults may benefit from multivitamin and mineral (MVM) supplements. It is generally regarded as safe and readily available over-the-counter, dietary supplements have been used with few significant side effects in clinical studies. Although conflicting and contradictory studies exist, there is evidence suggesting that dietary supplementation with a combination of immunity-related micronutrients supports immune function and reduces risk or severity of infection. Indeed, targeted supplementation with these vitamins and minerals may provide additional protection at doses higher than the U.S. recommended dietary allowance (RDA).[12]

CONCLUSION

Authors found that vitamin C supplementation found to be effective in promote healing as compared to those who were not prescribed vitamin C.

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