

A Prospective Study on Comparison of Wounds with Effect of Nutrition after Minor Surgery in South India

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Abstract

Background: A wound is a type of injury which happens relatively quickly in which skin is torn, cut, or punctured or where blunt force trauma causes a contusion (a closed wound). **Objective:** The objective of this study was to evaluate two groups of patient one group having extra defined supplements at recommended dose and another groups without extra supplements. **Subjects and Methods:** The present study was conducted on 100 patients out of which 50 were the group having extra supplement with certain amino acids such as arginine, glutathione, etc and also with some vitamins such as vitamin-E and vitamin-C. Patients with the age more than 20 years were included in this study. Patients providing consent were only included in this study. This study was only started after getting all the approval from the college and concern offices. **Results:** This study shows no case of wound infection and all wound were healed perfectly in patients supplied with extra supplementas compare to control group. In case of control groups (not having any supplement) four patients developed wound discharge. For these 4 patients immediately antibiotics were started. **Conclusion:** Despite the many years of study and substantial knowledge base of the specific processes and factors involved, wound healing remains enigmatic. There is still much to learn about the wound-specific nutritional interventions that are available to improve wound healing.

Keywords: Surgery, wound, amino acid, Vitamins.

INTRODUCTION

A wound is a type of injury which happens relatively quickly in which skin is torn, cut, or punctured or where blunt force trauma causes a contusion (a closed wound).^[1] In pathology, it specifically refers to a sharp injury which damages the dermis of the skin.^[2] Wound healing and nutrition have an intimate relationship that has been recognized by physicians for hundreds of years.^[3] Malnutrition or nutrient deficiencies can have a severe impact on the outcome of traumatic and surgical wounds.^[4] Malnutrition after injury/surgery results from multiple factors, including poor nutritional intake to a host's perturbed metabolic equilibrium. Studies over the past century have shown that changes in energy, carbohydrate, protein, fat, vitamin, and mineral metabolism affect the healing process.^[5] Loss of protein from protein-calorie malnutrition, the most common form of malnutrition in the world, leads to decreased wound tensile strength, decreased T-cell function, decreased phagocytic activity, and decreased complement and antibody levels, ultimately diminishing the body's ability to defend the wound against infection. These immune compromises correlate clinically with increased wound complication rates and increased wound failure after clean surgical procedures.^[6-8] In elderly nursing home patients, malnutrition is also associated

associated with increased mortality, an increased risk of developing pressure ulcers, and a lower quality of life.^[9-12] Wound failure, as reflected by wound infections or delayed healing, significantly contributes to the financial burden imposed on health care systems worldwide. Some author concluded that poor nutritional intake or lack of certain essential nutrients significantly altered the body's ability to heal wounds.^[13] Interest has since swung from understanding the basic physiologic mechanisms of wound healing to attempting to modulate or enhance the process. The dynamic and complex cascade of wound healing has proved responsive to the external manipulation of metabolic and nutritional factors, but concrete changes to clinical management have been more elusive. The custom of dressing surgical wounds is as old as the history of surgery. Wound dressing of the primarily sutured surgical wound immediately after its closure with a sterile dressing is considered a routine, essential to an aseptic operation and dressing left for a minimum of 3 to 5 days.^[14] The functions of a dressing are to protect wound from trauma, contamination by bacteria, foreign material, absorb exudates from the wound, provide mechanical compression to minimize edema, obliterate dead space, prevent fluid loss, no adherence and provision of a warm, moist environment which is desirable to maximize healing. Experimental studies have shown that a precisely sutured incision with good hemostasis gets sealed with fibrin within 6 to 24 hours, and wounds become adequately protected against outside moisture and bacterial contamination.^[15] Although doing the entire necessary step to cure wounds many time we face some people wound does not get cured as expected. It is thus obvious that a surgical dressing might, in fact, under certain

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circumstances, predispose to the development of a wound infection.^[16] Therefore, this is an attempt, keeping these factors in mind, to evaluate the postoperative care of clean minor surgical wounds clinically after providing different supplement. The aim of this study was to evaluate between two groups of patients one group was asked to take extra define supplements and another groups was without supplements.

METHODS

The present study was conducted on 100 patients in a tertiary Care Hospital of SRMC and Research Centre in Thiruvananthapuram, India. 100 out of which 50 were the group having extra supplement with certain amino acids such as arginine, glutathione, etc and also with some vitamins such as vitamin-E and vitamin-C. Whereas, other 50 were patients not take extra supplements. Before the procedure, local anesthesia 0.5% Xylocaine with epinephrine 1:20000 used unless there was a contraindication in which minimum safe dose was used. The area cleaned with povidone iodine and draped. The lesion excised, and proper hemostasis obtained. All wounds were closed using monofilament nylon (3-0 reverse cutting). A 3 layer dressing was used. Prior to surgery, a detailed history, especially in the regard to any drugs that might increase bleeding risk was obtained and physical examinations were performed. Patients with the age more than 20 years were included in this study. Some examples of minor surgery followed in the surgery department for this study were for sebaceous cyst, Lipoma, Dermoid cyst, Mole, Ganglion cyst, Wart, Papilloma neurofibroma, ganglion, etc. Patients providing consent were only including in this study. This study was only started after getting all the approval from the college.

Inclusion Criteria

All groups of patient above 20 years.
Not having any history of viral disease.

Exclusion criteria:

1. Patients who were known case of diabetes mellitus.
2. Clinical evidence of preoperative infection, i.e., redness, tenderness, raised the temperature.
3. Patient who were on immunosuppressive drugs.

The operated patients were advised to restrict their activities for at least the first day and remove the dressing next day. If the dressing was adhering to the stitches, they were informed to wet it with lukewarm water and to dry the wound with a clean, soft towel. Every day patient who were included and having extra supplement were monitored via telephonic conversation. On the day of follow-up for suture removal (5th-7th day), injuries were assessed for infection and disruption if any.

RESULTS

One hundred consecutive patients included in this study who presented in the outdoor clinic with minor lesions which were

operated on an outpatient basis where above the age of 20 years. Different type of minor surgery done in our department for this study were Sebaceous cyst, Lipoma, Dermoid cyst, Mole, Ganglion cyst, Wart, Papilloma.[Table 1, Figure 1]. All the patients were advised to come for strict follow on the next day of surgery to check whether the dressing is proper or not. Subsequently, they were followed up for one week to assess for wound healing, wound infection and suture removal. However, they were also told to come if there was any evidence of wound discharge or wound disruption during the follow-up period. [Table 2 & Figure 2] representing the observation of patients. There was no one case of wound infection and all wound were healing perfectly as compare to control groups. In case of control groups (not having any supplement) 4 patients developed wound discharge and among 4 patients, immediately antibiotics were started.

Table 1: Representing number of patients in different surgical cases

Different Cases	Total number of patient per case	Mean Age per group	% per Case
Sebaceous cyst	22	42 years	22%
Lipoma	14	55 years	14%
Dermoid cyst	12	39 years	12%
Mole	20	27 years	20%
Ganglion cyst	08	49 years	08%
Wart	20	36 years	20%
Papilloma	04	26 years	04%
Total patients	100		100%

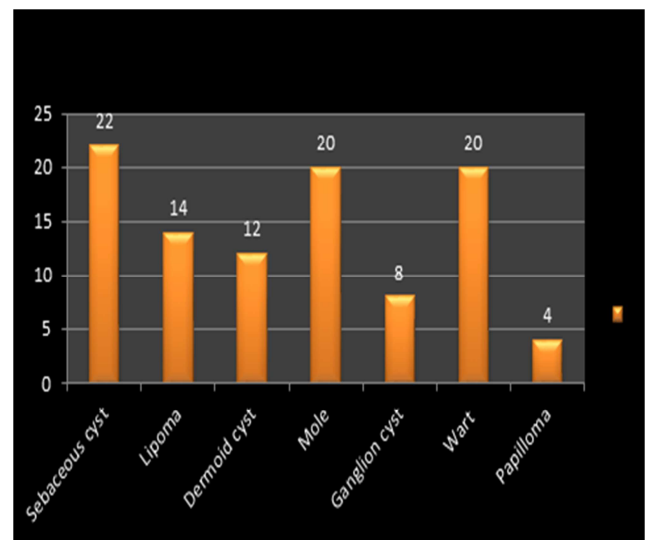


Figure 1: Representing the total population of participant in different surgical cases.

Table 2: Representing the observation of patients.

	Remarks
Case (Patient having Supplements)	a) All patients were cured. b) Wound healing was observed quicker within 3-4 days)
Control (Patient not having Supplements)	a) Wound healing was quite slow as compare to cases. b) 4 patient shows wound discharge.

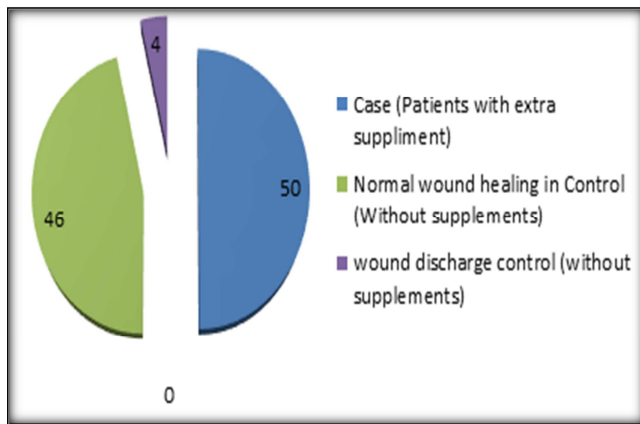


Figure 2: Representing the outcomes of this study.

DISCUSSION

The clinical significance of nutrition and wound healing involves individual patients with unique needs. The goal of the physician then, is to determine whether, when, and how nutritional supplementation is needed. Although the benefits of perioperative nutritional support are apparent, the risk complications and increased cost need to be considered as well. Preoperative nutritional support is generally recommended for different surgical patients. If intestinal function is maintained in a patient, enteral nutritional support is generally preferred, as it is associated with the maintenance of gut mucosal barrier function, the decreased activation of gut-associated lymphoid tissue, and lower costs of administration than parenteral nutrition.^[17,18] While the only absolute contraindication to enteral feeding is complete intestinal obstruction, a variety of relative contraindications (e.g., high-output intestinal fistulas, acute pancreatitis, acute inflammatory bowel disease, severe diarrhea) must be considered. Enteral nutritional support may be achieved via nasogastric, nasoenteric, gastrostomy, jejunostomy, or gastrojejunum tubes, and a variety of commercial nutrition products are available for use in specialized patient populations.^[19] Parenteral nutritional support is often used as the sole source of caloric intake in hospitalized patients, but there are some instances in which its use is best as a supplement to enteral feeding. Although peripheral parenteral nutrition may be easier to implement because it does not require central venous access, its nutritive value is substantially less than that of central preparations and its use is generally only indicated for less than 7 days.^[20] Serum protein markers are the best way to assess the adequacy of nutritional supplementation, as conventional methods, such as daily weight, may not be accurate in critically ill patients.^[21] While albumin is commonly used as a preoperative marker of nutritional.^[22] Beyond the basic understanding that general nutritional support is critical for optimal wound healing, many questions remain about the specific type of supplementation that should be used. Therefore, in our study supplement with certain amino acids such as arginine, glutathione and some vitamins such as vitamin-E and vitamin-C were given to see the beneficial effect in the wound healing of surgical patients.

These supplements have shown to have beneficial effects on wound healing. Out of 100 patients in our study 50 patients were given supplements and all these 50 patients showed quick wound healing without any clinical complication. Whereas, patients without supplement showed slow wound healing as compare to supplemented groups. In control groups wound discharge in four patients, i.e around 8% among control groups was observed. Similarly, we can expect more wound infection, wound discharge and many other complications due to long duration of wound exposed to the environment. So, we feel after surgery extra supplement such as amino acid and vitamin should play a vital role in wound healing and can be provided in appropriate dose. But their clinical significance has yet to be proven. We cannot therefore, recommend their general use in severely injured or postsurgical patients.

CONCLUSION

The relationship between host nutrition and wound healing has been the subject of study and experimentation for centuries. Despite the many years of study and substantial knowledge base of the specific processes and factors involved, wound healing remains enigmatic. There is still much to learn about the wound-specific nutritional interventions that are available to improve wound healing. Nutrition profoundly influences the process of wound healing, such that depletion exerts an inhibitory effect and nutritional supplementation has a positive effect. Within this paradigm, the physician should be able to recognize patients who may be expected to have wound-healing difficulties and offer early intervention to avoid wound failure. On the basis of this study, after surgery extra supplement such as amino acid and vitamin may provide the better result. The all the supplement should be used in appropriate dose only.

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