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Research Article

**USE OF HONEY TO CONTROL THE INFECTIONS OF OPEN
WOUNDS OF ORTHOPEDIC INJURIES**¹Dr Muhammad Faisal Naeemi, ²Dr Muhammad Mughees Anjum,³Dr Zain Ul Abidin Khalid¹Allied Hospital Faisalabad.**Article Received:** March 2019**Accepted:** April 2019**Published:** May 2019**Abstract:**

Objective: Antibiotics failed to treat the open wounds which were the result of complex orthopedic wounds. The aim of this study is to observe the impacts of honey for the prevention of the infections in those open wounds.

Methodology: Total 100 patients who were suffering from the distressing open fractures with Grade-2 or Grade-3 on the scale of Castillo & regardless of treatment with the help of regular antibiotics, the healing process of wounds was not initiating, were the participants of this research work. Normal saline was in use for the cleaning and washing off the wounds and we applied a layer of honey on the wound and then we covered with the help of sterile gauze. The instruction was available for every patient to carry the similar dressing pressure on wound. We followed up all the patient weekly until all the patients got rid from the wound.

Results: In all the patients, the discharging material from wounds stopped within 14 days except 2 patients, with the formation of the healthy tissue of granulation in the beds of wound. The total period for the closure of the complete wound was from two to five months, which had relation with the early size of the wound. Re-debridement, suturing & grafting were the requirements in two patients who were available large wounds. Those two patients took eleven to thirteen months for the complete closure of the wound.

Conclusion: The outcome of this research work concluded that honey is very effective in the treatment of the wounds and the prevention of the infections on those wounds that are the result of orthopedic injuries.

Keywords: Prevention, Honey, Infection, Granulation, Saline, Antibiotic, Wounds, Healing, Grafting.

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INTRODUCTION:

From ancient time honey is in use for different medical purposes [1]. Honey was in use in the medicine of Ayurvedic since twenty-five hundred & some other ancient cultures [2]. Some current research works attributed the activity of honey against infection of bacteria to 4 properties: firstly, there is very low water content in honey so smoothing an osmotic effect which causes to leave no molecules of water for the growth of microbes. But the frequency of inhibition growth varies in accordance with the species of bacteria, the activity against bacteria [3] & honey source [4]. Secondly, there is very low pH of honey from 3.20 to 4.50 & acidity of the honey is very low to prevent the development of the microbes [5]. Thirdly, hydrogen peroxide's formation due to the glucose oxidase, has extremely potent activity against the bacteria, same to the macrophages production [6]. Fourthly, results of various research works showed the availability of the various phytochemicals which can hinder the bacterial growth which are available in honey [5]. This evidence is in favor of the thinking that honey has one or more such activities, it appears that blend of such qualities make it as a natural object with special features that can stand in from of tests of recent times. Phytochemicals agents do not leave their activity against the bacteria therefore they have the ability to act in the latter stages for the prevention of infections in wounds.

Honey is very effectual against 2 dangerous bacteria producing different anomalies named as *Staphylococcus aureus* [7] & *Pseudomonas aeruginosa* [4] resistant to methicillin. This quality enables the honey as an affective agent against the surgical wounds of acute or chronic nature. One interesting factor is that, the use of honey for long period of time does not cause of growth of resistance to honey as faced by the use of the antibiotic drugs [8]. Many past research works with the purpose of researching on the effectualness of honey in the treatment and prevention of infections of acute and chronic in animals as well as human beings but still there is no effective treatment

for the infected wounds in of orthopedic injuries. The main idea of this research work was to determine the honey role in the control and prevention of the infections in the patients having open wounds due to orthopedic injuries.

METHODOLOGY:

Total 102 patients were the participants of this research work in which eighty-seven were males and fifteen were female patients. All the patients suffering from the wound of open fracture following orthopedic damages with Grade-2 & Grade-3 gave consent to participate in the research work. The duration of this research work was from May 2016 to March 2019. In the initial stage, all the patients underwent the management of their fractures with the utilization of the debridement of necrotic tissues & fracture's fixation with the usage of internal as well as external fractures. The inclusion standard includes the availability of the wound discharging because of other antibiotics. The regular dressing of the wounds was also not improving the condition of the wounds but in some cases it was the reason for the enlargement of the wound size. The medical results showed infections in those wounds.

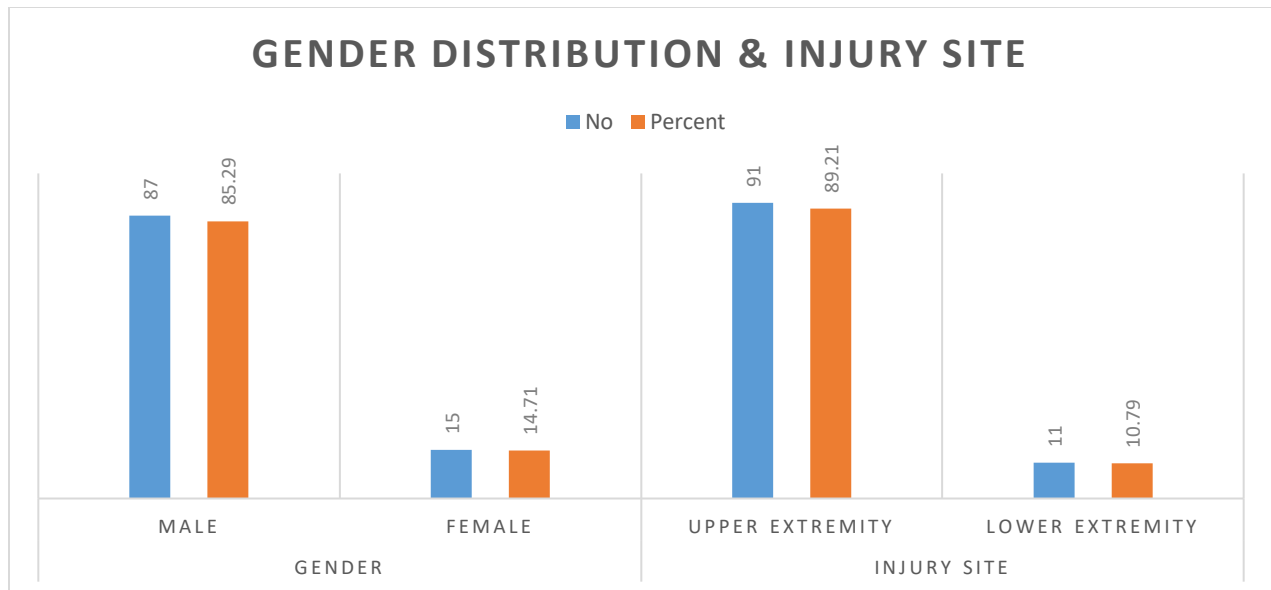
The protocol of the treatment entailed wound cleaning with the help of normal saline and we applied a layer of honey obtained commercially from the rural regions of the city. The start of the treatment carried out when the patients got admission in the hospital. Patients or their close relations carried out the follow up treatment. We followed up the patients on weekly basis. The stop of the discharge from the wound & complete closure of the wound were showing the wound healing.

RESULTS:

There were total one hundred and two patients in which 87 were male patients and 15 were female patients, ninety-one patients suffered from the injuries of the lower extremity and 11 patients found with the upper extremity injuries (Table-1).

Table-1: Patients Gender Distribution and Injury Site (N=102)

Features		No	Percent
Gender	Male	87	85.29
	Female	15	14.71
Injury Site	Upper Extremity	91	89.21
	Lower Extremity	11	10.79



The average age of the patients was 37 years. All the patients were following the schedule of the treatment exactly and all patients showed their satisfaction with the results. Cessation of the discharge from wound discharge formation of the granulation tissue were under observation in fourteen days after the treatment except in 2 patients which leads to the reduction in edema & wound pain. Small wounds obtained the favorable closure within two months but in the wounds of larger size, there was requirement of honey dressing for complete five months.

A girl with twenty-three year of age was suffering from the type-2 fracture of tibia fibular, close nailing with the help of proximal locking under the C-arm X-ray carried out for proper management. We found two patients with complications, re-debrided, sutured & grafting of those patients carried out. One patient recovered after eleven months & other patient got treatment after thirteen months of treatment.

DISCUSSION:

Honey is in use form long time ago as a medicine but the professionals of the current time feel hesitate to use honey for the treatment of the wounds, the important causes are that its utilization is messy or there is unavailability of standards in a large amount of countries particularly in the countries which are under development [9, 10]. There are many advantages of his procedure as it is not very costly, it is easily available and effectual treatment in various states medical abnormalities from fire burns to severe wounds of surgery.

For various gastro intestine condition, honey was in use for their treatment [11].

The research work based on science with the purpose that the activity of honey against bacteria is not new there are a lot of research works since 1919 to describe the same subject [1]. Majority of the current works have concluded on the preparations of standards that human has made many toxins which are the production of man or environment [12, 13]. In recent research work, we used the honey available commercially which was effective on all the wounds. The utilization of honey for the treatment of the burns with thickness in human & animals is very common [14, 15]. This is describing the impacts of the honey on the burn without any infection. Different research works on different types of wound have describe its effectivity on the repair of those wounds with increasing the factors of growth [16].

Some research works have described the decrease in the pain & edema [17]. & the decrease of the necrosis tempted because of free radicals [18]. In accordance with our awareness, no past research work on the effectualness of honey in the treatment of wound having infection due to open fractures was available.

CONCLUSION:

The findings of this research work concluded that there is very advantageous impact of honey in the recovery of the wounds having infection and the conventional antibiotics were not able to cure those wounds.

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