

# Role of Honey in Post tonsillectomy Pain: A Randomized Double Blind Study

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## ABSTRACT

Tonsillectomy is one of the most commonly performed surgical procedures among pediatric age group. Administration of honey in post-operative cases of tonsillectomy can reduce the need of painkillers by significantly relieving of pain in children. A randomized double blind control study design conducted among 110 patients, randomly divided in two equal groups, with the aim to evaluate the effect of using honey on post tonsillectomy pain along with paracetamol among children. First group was given paracetamol and honey, whereas second group was treated with paracetamol and placebo. Standardized general anesthesia, post surgery analgesics and antibiotics were administered to all the patients. Data were gathered by using visual analogue scale (VAS) and entered in SPSS then analyzed. A significant difference between paracetamol plus honey and paracetamol plus placebo for both visual analogue scale (VAS). Number of painkillers taken with in 5 days post-operatively were significantly different ( $p < 0.01$ ). The results also reveal that the consumption of paracetamol who received honey was lower than control group. After tonsillectomy, oral administration of honey has effective role in pain management and can reduce the dose of painkillers post-operative surgery among children.

**KEY WORDS:** analgesics; honey; pain; post-operative; tonsillectomy; visual analogue scan (vas)

## INTRODUCTION:

Most common surgical procedure performed in childhood is tonsillectomy. The main post surgery complication of tonsillectomy is pain, which can lead to poor intake and delay recovery may require analgesics to ease pain<sup>[1]</sup>. Post-operative management to control pain with minimum side effect is challenging and ensures the children to resume eating as soon as possible after surgery<sup>[2]</sup>. Post- tonsillectomy analgesics can effectively minimize the complication and adverse effect<sup>[3]</sup>. There may be delayed healing of the wound and sometimes infection and bleeding after tonsillectomy. To overcome this problem, doctors prescribe pain killer but sometimes these are not enough to control the pain<sup>[4]</sup>.

A study among 52 children revealed that 90% of the children receiving pain killer such as paracetamol or non-steroidal anti-inflammatory drugs experienced pain at home up to 7 days post-tonsillectomy. Honey is used since long time for treatment of inflammatory diseases such as pharyngitis since about 500 years ago<sup>[6,7]</sup>. It is still used these days in treatment of burns, gingivitis, pharyngitis, infective wounds, diabetic foot, gangrene and some eye diseases<sup>[6, 8-11]</sup>. Honey enable wound healing fast due to its anti-inflammatory action through cytokines<sup>[12]</sup> and keratinocytes<sup>[13]</sup>. Oral intake of honey after tonsillectomy in children decreases the post surgery pain thus reducing the need of medicine<sup>[9]</sup>. No side effect or complications of honey used in post tonsillectomy patients has been reported<sup>[14]</sup>. The present study aimed to evaluate the effect of using honey on post tonsillectomy pain along with paracetamol.

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## MATERIALS AND METHODS:

A randomized double blind control study was conducted among 110 patients, 5 to 12 years of age,

**Table 1:** Pain score of placebo and honey groups at 1st day, 2nd day and 3rd day of post tonsillectomy.

	Paracetamol plus Placebo (Mean ±SD)	Paracetamol plus Honey (Mean ±SD)	p-value*
1st day	4.3±0.47	3.2±0.58	<0.001
2nd day	3.7±0.38	2.7±0.45	<0.003
3rd day	2.9±0.39	2.1±0.36	<0.005

\*p&lt;0.05

**Table 2:** Number of painkillers taken by the patients post tonsillectomy.

Painkillers	Paracetamol plus Placebo (Mean ±SD)	Paracetamol plus Honey (Mean ±SD)	p-value*
1st day	4.31±1.3	2.1±1.49	<0.02
2nd day	4.1±1.23	1.7±1.15	<0.01
3rd day	3.6±1.21	1.2±0.62	<0.01
4th day	2.5±1.13	0.80±0.53	<0.06
5th day	1.7±0.87	0.42±0.49	<0.03

\*p&lt;0.05 The need of painkillers was significantly lower in case group compared to control group (Table 2 ).

reporting after referral to Ear, Nose and Throat (ENT) clinic at Aseer Hospital, Abha, Kingdom of Saudi Arabia. Sixty male and 50 female patients undergone tonsillectomy in this hospital were included in the study. Cases allergic to paracetamol and honey or known case of diabetes mellitus were excluded from the study. Ethical approval was taken before initiation of the study. Informed consent from the parents of the children was taken. The dose of paracetamol was 15 mg/kg/ 4 times a day and in the honey group 5ml honey was started on the same day of surgery. Parents were asked to give paracetamol to their children according to severity. Administration of placebo and honey was started when the patient was able to have oral intake and continued for 7 days.

To prevent bias, the study was designed double blinded, and none of the patients and their parents knew what their group is, as well as the surgeon. From the first day of surgery to 7th day after the operation, visual analogue scale (VAS) was applied for subjective assessment of postoperative pain by the parents every day, and also 4 hours after paracetamol given while the numbers of doses given daily were used for objective assessment. The Statistical Package of Social Science version 15.0 (SPSS, Chicago, Illinois, USA) was used for data analysis. Statistical significance was noted for p value

of  $\leq 0.05$ . Chi-square test was used to compare frequencies and distributions, and t-test was used to compare quantitative data and means between groups. Data were expressed as mean  $\pm$  SD.

## RESULTS:

The study included 55 patients in the case group (honey group: Paracetamol plus Honey) and 55 patients in the control group (placebo group: Paracetamol plus Placebo). The gender distribution of patients included in the study comprised of 60 male (54.54%) and 50 female (45.45%) with age range of 5 years to 12 years. The average age in the case group was  $9 \pm 2$ SD years, and in the control group was  $8 \pm 3$ SD years. There was no significant difference in age ( $p < 0.08$ ) between the 2 groups. From the first day to the 3rd day post surgery, the mean pain score in case group (honey) was significantly less than control group (placebo) (Table 1), but there was no significant difference observed on 4th day as case group mean was  $2.1 \pm 0.18$  and control group mean was  $2.2 \pm 0.6$ . Same results were showing no difference in case and control group on 5th day.

## DISCUSSION:

It is important to give adequate pain killer in post tonsillectomy patients to decrease number of complex outpatients<sup>[15]</sup>. Nowadays, the use of honey is widespread in the treatment of different inflammatory diseases. Microscopic studies under in vivo assessment have suggested that the topical application of honey influences the various phases of burn and wound healing by anti-inflammatory agents, and growth factors from monocytes, and the mechanisms are unclear yet<sup>[12]</sup>.

The data shows that the wound healing properties of honey include stimulation of tissue growth, enhanced epithelialization, and minimized scar formation. These effects are ascribed to honey's acidity, hydrogen peroxide content, osmotic effect, nutritional and antioxidant contents, stimulation of immunity, and to unidentified compounds. Prostaglandins and nitric oxide play a major role in inflammation, microbial killing, and the healing process. Honey was found to lower prostaglandin levels and elevate nitric oxide end products. These properties might help to explain some biological and therapeutic properties of honey, particularly as an antibacterial agent or wound healing<sup>[16]</sup>. The most common complications after tonsillectomy are bleeding, edema, poor oral intake, and pain<sup>[17]</sup>. Despite advances in anesthetic and surgical techniques, post

tonsillectomy morbidity remains a major clinical problem. Many studies are done to find treatments of post tonsillectomy pain with less side effects. Therein, relief of early postoperative pain in first hours of operation were investigated<sup>[18,19]</sup>.

On the other hand, many studies look into postoperative pain after recovery room. A Finland based study has shown that codeine seems to provide sufficient analgesia during 10 days after surgery<sup>[20]</sup>. Study done in Turkey 2006, reported that pain scores in first two days after the operation were significantly less in honey group and thus number of doses of pain killer were less<sup>[7]</sup>.

The present study also infers that the pain and number of doses were significantly less during 1st to 5th day, when honey was used. Another study has shown that the Acetaminophen consumption in patients who received honey is lower compared to control group<sup>[21]</sup>. Hence, oral administration of honey post tonsillectomy reduces postoperative pain and the number of analgesic doses.

## CONCLUSION:

Post tonsillectomy use of honey is helpful in reducing requirements of painkillers in children who underwent surgery as is depicted from the results of this study. Honey is sweet in taste and easily orally accepted by the children in comparison to painkillers tablets. It is also proved that it has negligible side effects. However, there is scope for further researches for use of honey and its post operative implications are also needed to be explored.

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