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## The rationality of prescribing antibiotics after tonsillectomy

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### Abstract

**Objective:** To compare the antibiotic therapy with the absence of antibiotic therapy in reducing post-tonsillectomy morbidities

**Methods:** The quasi-experimental study was conducted at the Aga Khan University Hospital, Karachi, from November 2006 to September 2007. It involved 60 patients fulfilling the criteria for recurrent tonsillitis who were divided in two groups based on the different practice of two sets of surgeons. In one group antibiotics were used, while in the other group, no antibiotic was given. Patients filled a questionnaire about pain, post-operative bleeding, day of normal diet intake, day of normal activity and any consultation received during the first post-operative week. The data collected was analyzed using SPSS version 16.

**Results:** There were 60 patients who were divided in two groups of 30 each on the basis of purposive sampling technique. Mean age was  $21.43 \pm 8.3$  years. Of the total, 55% were male and 45% were female. Post-operative pain was comparable between the two groups. Four patients had secondary haemorrhage - three in the antibiotic group, and one in the non-antibiotic group. Mean day of normal activities and normal diet intake was almost the same in both groups. Unscheduled hospital visits were 6.9% in the antibiotic group, and 3.3% in the non-antibiotic group.

**Conclusion:** The study showed that antibiotics did not have any significant impact in reducing the post-tonsillectomy morbidities.

**Keywords:** Tonsillectomy, Antibiotics, Tonsillitis, Pain (JPMA 62: 445; 2012).

### Introduction

Tonsillectomy is one of the commonest surgical procedures performed worldwide. Despite improvements in anaesthetic and surgical techniques, post-tonsillectomy morbidities continue to be a significant clinical concern.<sup>1</sup> The post-operative period is often protracted and characterised by throat pain, referred otalgia, temporary voice changes, intermittent fever, foul odour from oral cavity, poor oral intake and haemorrhage from the tonsillar bed.<sup>2</sup>

After the surgery, tonsillar fossa is left open to heal by secondary intention and is contaminated by oropharyngeal bacteria. Several authors argue that this predisposes to an inflammatory reaction and infections, and contribute to post-operative morbidities. They, therefore, recommend prophylactic antibiotics to reduce the morbidities.<sup>3</sup> But on the other hand there is evidence showing that antibiotics are not helpful in reducing post-operative morbidities and, therefore, should only be used in selected cases such as patients with valvular heart defects or prosthesis implant to prevent deep-seated infections.<sup>4</sup>

The objective of the study was to compare morbidities in post-tonsillectomy patients who were prescribed antibiotic therapy versus patients who received no antibiotic therapy.

### Patients and Methods

The quasi-experimental study, conducted at the Section of Otolaryngology, Head and Neck Surgery, Aga Khan University Hospital, Karachi, from November 2006 to September 2007, had a sample size of 60. The sample size was calculated with a one-sided 5 percent significance level and a statistical power of 80 percent. By purposive sampling technique, patients were placed in two equal groups. In our hospital, some surgeons routinely prescribe antibiotics after tonsillectomy. Their patients were grouped in the antibiotics group. On the other hand, some surgeons don't use antibiotics, and their patients constituted the non-antibiotic group. All the patients above 7 years of age regardless of gender meeting the diagnostic criteria of recurrent tonsillitis (history of more than three attacks of fever, difficulty in swallowing and sore throat per year for the preceding two consecutive years) were included. Patients with known bleeding disorders, operated by any technique other than electrocautery and patients undergoing adenoidectomy along with tonsillectomy were excluded. Ethical approval was obtained from the hospital's Ethical Review Committee, while written informed consent was obtained from the patients before the study.

All patients were treated as daycare cases. Patients in the antibiotic group (Group A) were discharged on Amoxicillin Clavulanate (according to weight) and Ibuprofen for 7 days, while the non-antibiotic group patients (Group B) were discharged only on Ibuprofen for 7 days. Post-operatively, tonsillectomy morbidities were assessed in terms of post-operative pain by using visual analogue scale (VAS), post-operative haemorrhage, day of normal oral intake, day of return to normal activities and the number of hospital visits, if needed. Proforma was provided to the patients and they were asked to fill it on a daily basis. All patients were seen in the follow-up clinic after one week.

Data was analysed by using SPSS version 16. Mean and standard deviation for age, pain score, day of return to normal activities and day of normal oral intake was calculated, while 't' test was used to compare mean difference for day of normal diet intake and day of return to normal activities. Chi square test was used to see the difference between treatment groups for haemorrhage, and  $p \leq 0.05$  was considered significant. Repeated measure Analysis of Variance (ANOVA) was applied to compare pain between the two groups.

## Results

The age of the 60 patients in the study ranged from 7 to 52 years, with a mean age of  $21.43 \pm 8.3$  years. Of the total, 55% were male and 45% were female.

Both the groups showed similar results with respect to the pain post-operatively. On the day of surgery, 6.7% in the antibiotic group and 3.3% in the non-antibiotic group complained of severe pain. Repeated measure ANOVA was applied and the comparison of pain between the groups was found to be statistically insignificant for all the post-operative days (Table-1).

Reactionary haemorrhage was seen in 4 (6.7%) patients; 3 (10%) were from the antibiotic group while 1 (3.3%) was from the other group ( $p=0.312$ ). In the antibiotic group, 27 (90%) patients had no secondary bleeding, 1

**Table-2: Day of resuming normal activities and oral intake.**

Group	Group A	Group B	p- value
Mean days of normal oral intake	6.77±0.62	6.73±0.58	0.920
Mean days of normal activities	7.13±0.62	7.20±0.40	0.848

SD: Standard deviation.

(3.3%) patient had blood-stained saliva and the remaining 2 (6.7%) patients had frank bleeding from the mouth. In the non-antibiotic group, only 1 (3.3%) patient had severe secondary haemorrhage on the fifth post-operative day, while the remaining 29 (96.7%) had no bleeding at all ( $p=0.215$ ).

The mean days of normal oral intake in the antibiotic group was  $6.77 \pm 0.62$ , whereas it was  $6.73 \pm 0.58$  in the non-antibiotic group ( $P = 0.920$ ). The mean days for resuming normal activities in the antibiotic group was  $7.13 \pm 0.62$  and in the non-antibiotic group it was  $7.20 \pm 0.40$  ( $p=0.848$ ), (Table-2).

Only 2 (6.6%) patients of the antibiotic group and 1 (3.3%) of the non-antibiotic group required extra hospital visits due to secondary haemorrhage.

## Discussion

Clinical results demonstrated from this study are comparable with those available previously. Krishna et al. revealed that 79% of the doctors routinely prescribe antibiotics in the post-operative period, with decreased pain, decreased inflammation and faster healing being cited as the most common reasons.<sup>4</sup> Other studies, however, report no benefit due to antibiotics<sup>5</sup> and the subject remains controversial. Morbidity in the post-operative period is mostly due to pain, secondary haemorrhage, delay in resuming normal activities and delay in normal oral intake.

A meta-analysis conducted by Afman et al. identified that pain associated with tonsillectomy was a top concern for more than 90% patients surveyed.<sup>6</sup> In 2005, Burkart et al<sup>7</sup>

**Table-1: Pain according to visual analog scale (VAS) on different post-operative days.**

VAS	No Pain 0		Mild 1-3		Moderate 4-6		Severe 7-10		P-Value
	Group A	Group B	Group A	Group B	Group A	Group B	Group A	Group B	
DOS	0%	0%	23.3%	36.7%	70.0%	60.0%	6.7%	3.3%	0.236
POD									
1st	0%	0%	0%	3.3%	56.7%	43.3%	43.3%	53.3%	0.634
2nd	0%	0%	0%	3.3%	33.3%	50.0%	66.7%	46.7%	0.091
3rd	0%	0%	16.7%	27.6%	56.7%	48.3%	26.7%	24.1%	0.462
4th	0%	3.3%	36.7%	40.0%	53.3%	56.7%	10.0%	0%	0.207
5th	10.0%	10.0%	73.3%	80.0%	16.7%	10.0%	0%	0%	0.599
6th	26.7%	23.3%	70.0%	76.7%	3.3%	0%	0%	0%	>0.999
7th	70.0%	66.7%	30.0%	33.3%	0%	0%	0%	0%	0.786

DOS, day of Surgery; POD, post-operative day; Group A, antibiotic group; Group B, non-antibiotic group.

carried out a meta-analysis looking at randomised control trials published in the literature and could not find statistically significant differences in post-operative pain levels of adenotonsillectomy patients treated with or without antibiotics. But some studies showed that the antibiotic therapy after tonsillectomy helped in pain reduction and thus improving overall recovery.<sup>8,9</sup> In our study, antibiotics did not show any significant benefit in reducing post-tonsillectomy pain.

Secondary haemorrhage is also another major concern in post-tonsillectomy patients. However, there is very little clinical evidence to support the role of antibiotics in preventing secondary haemorrhage. Ranjit et al<sup>10</sup> found that routine use of post-operative antibiotics did not reduce the incidence of haemorrhage. But still, despite major controversy, the standard of care for the management of patients presenting with secondary haemorrhage are antibiotics.<sup>11</sup> The rate of post-tonsillectomy secondary bleed varies between 1% to 7%.<sup>12</sup> In this study, overall secondary haemorrhage was observed in 5% of the patients. The results showed that antibiotics failed to have a measurable impact in preventing secondary haemorrhage.

We also observed that antibiotics did not improve the day of resuming normal diet intake and normal activities. Meta-analysis of the data from trials by Telian et al<sup>13</sup> and Cannon et al<sup>14</sup> revealed that antibiotics did not significantly reduce the number of days required to resume soft or normal diet. However, Grandis et al<sup>15</sup> reported that antibiotics facilitated earlier return to normal diet, which just reached statistical significance ( $p=0.05$ ). Burkart et al<sup>7</sup> conducted a systemic overview of published randomised control trials and found that on average, the antibiotic-treated group returned to normal diet intake approximately 3.5 days, whereas the control group returned to normal diet in approximately 4.5 days. They also showed that on average, the antibiotic group returned to normal activity in approximately 6 days, whereas the non-treated group returned to normal activity in approximately 7 days. But Guerra et al<sup>16</sup> showed that the day of return to normal activity was the same between the groups.

Tonsillectomy morbidity includes extra visits to the general physician or to the hospital. Most of the studies did not emphasise on this aspect, but Palme et al<sup>17</sup> showed that inappropriate management of post-tonsillectomy patients leads to increased use of health services with up to 40% of patients making unscheduled visits to their doctors. Similarly, O'Reilly et al<sup>18</sup> reported that over half of the patients consulted their general physician because of post-operative pain despite being on analgesics. In this study, the only reason

in both groups for unscheduled visits was the secondary haemorrhage, and antibiotic did not make any difference in reducing the number of such visits.

## Conclusion

Antibiotics in post-tonsillectomy patients had no measurable impact in reducing different morbidities. Healthcare professionals will be better off re-evaluating current practice, taking informed decisions regarding adjuvant therapy for tonsillectomy and calculating cost-benefit ratios. Any benefit of antibiotic needs to be carefully weighed against the possible emergence of resistant bacteria, fungal colonisation, risk of other adverse events and cost.

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