

Original Research Article

A study to assess the outcomes following tonsillectomy in patients who were administered only prophylactic pre-operative antibiotics vis-à-vis patients who were administered both pre and post-operative antibiotics

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ABSTRACT

Background: Tonsillectomy is one of the common operative surgery performed by an ENT surgeon. With aim to reduce the hospital stay and post-operative complications, the use of antibiotics has become every common.

Methods: 40 patients undergoing tonsillectomy were recruited into the study subsequent to obtaining informed consent. The patients were divided in to two groups, group A and group B. Both the groups were given tablet amoxicillin with clavulanic acid orally for 3 days prior to surgery and subsequently were administered injection amoxicillin and clavulanic acid intravenously 1 hour prior to surgery pre operatively. Only group A patients were given injection amoxicillin and clavulanic acid intravenously 12 hourly for 5 days in the post-operative period. The patients from both the groups were assessed on the following criteria: pain, slough in the tonsillar fossa, fever, clot formation and return to normal daily activities.

Results: Both the groups were comparable with regard to demographics, post-operative infections, post-operative pain and time to return to normal daily activities. There was no cognisant difference for all the parameters assessed.

Conclusions: Administration of antibiotics in patients undergoing tonsillectomy can be restricted to pre-operative antibiotics only as giving antibiotics post-operatively does not affect the clinical outcome and also prevents indiscriminate use of antibiotics which can lead to mutant antibiotic resistant strains of bacteria which can also have an economic impact.

Keywords: Antibiotic prophylaxis, Clavulanic acid, Tonsillectomy

INTRODUCTION

Tonsillectomy with or without adenoidectomy is the commonest procedure performed by an otolaryngologist.¹ Guidelines for antibiotic use as prophylaxis are lacking and depends on discretion of the treating otolaryngologist. As such, appropriate antibiotic therapy is a matter of debate.² The use of antibiotics as prophylaxis is dependent upon the prevalence of the antibiotic strain in a specific region. And this might differ from a region to region and even a hospital to another.^{3,4} Commonly involved strains causing post-tonsillectomy infections include *Haemophilus influenza*, *Streptococcus viridans* and *Staphylococcus aureus*.⁵ Hence,

prophylactic antibiotics are used so as to inhibit these micro-organisms. Indiscriminate use of antibiotics should also be avoided as these can lead to emergence of resistant micro-organisms. In this study we evaluated the utility of using only pre-operative antibiotic prophylaxis compared to those with both pre and post-operative antibiotic coverage in patients undergoing tonsillectomy on post-operative outcomes.

METHODS

40 patients undergoing tonsillectomy, satisfying inclusion criteria were recruited into the study and divided in to 2 groups of 20 patients each (Group A and Group B).

Inclusion criteria

Age >5 years to <50 years; with or without adenoids; recurrent tonsillitis with last episode of tonsillitis occurring 6 weeks before the procedure; patients with no co-morbidities.

Exclusion criteria

Patients with acute attack of tonsillitis, quinsy, bleeding disorder and anaemia; patients below the age of 5 years and above the age of 50 years; patients with ASA physical status III; patients not willing for the surgery.

In group A and group B, tablet amoxicillin and clavulanic acid was given orally for 3 days prior to surgery. Both the groups were administered injection amoxicillin and clavulanic acid intravenously 1 hour prior to surgery pre operatively and Group A patients were given injection amoxicillin and clavulanic acid intravenously 12 hourly for 5 days in the post-operative period. Post-operative complications, post-operative pain and time to return to normal duty were evaluated. Pain estimation was done by the following pain scale:

Table 1: Pain (on a scale of 1-10).

Severity	
10	Unable to move
9	Severe
8	Intense
7	Unmanageable
6	Distressing
5	Distracting
4	Moderate
3	Uncomfortable
2	Mild
1	Minimal
0	No pain

RESULTS

The mean age of the patients was 16.55±8.86 years in group A compared to 16.4±9.58 years in group B. The difference was non-significant with p value of 0.96.

Table 2: Comparison of age and gender distribution.

	Group A	Group B	P value
Age	16.55±8.86	16.4±9.58	0.96 (student's unpaired t-test)
Male	13	11	0.51 (Chi-square)
Female	7	9	

There was similar gender distribution in both the groups with 13 and 11 males and 7 and 9 females in group A and group B respectively. The difference was non-significant at 0.51 (Table 2).

Post-operative estimation of pain was done on POD-1, 2, 3, and 7 using the pain scale. The mean scores in Group A were 4.8, 3.95, 2.9 and 1.05 on POD-1, 2, 3 and 7 compared to 5.15, 3.8, 2.6, 0.75 in group B. The difference was non-significant at all the time points (Table 3).

Table 3: Evaluation of post-operative pain.

	POD-1	POD-2	POD-3	POD-7
Group A-mean	4.80	3.95	2.90	1.05
Group A- SD	1.06	0.94	1.07	0.69
Group B-mean	5.15	3.80	2.60	0.75
Group B- SD	0.93	1.15	1.10	0.72
P value	0.27	0.66	0.39	0.18
Inference	Non-significant difference			

The mean grading of slough formation was evaluated. The results were comparable in both the groups with non-significant P values on all days of evaluation (POD 1, 2, 3 and 7) (Table 4).

Table 4: Mean grade of slough formation.

	POD-1	POD-2	POD-3	POD-7
Group A-mean	0.80	2.75	2.50	0.65
Group A- SD	0.41	0.44	0.521	0.49
Group B-mean	0.85	2.50	2.20	0.45
Group B- SD	0.37	0.51	0.70	0.51
P value	0.69	0.11	0.13	0.21
Inference	Non-significant difference			

Clots in tonsillar fossa were observed in group A and B in one patient on POD2. Post-operative fever evaluation was done. The incidences of fever were similar between the two groups on all the post op days until post-operative day 7. In group A 8, 4, 1 and 0; Group B 6, 2, 1, 0 had fever at some point of time (Table 5).

Table 5: Post-operative fever and clot formation.

		Fever (n)	Clots (n)
POD-1	Group A	8	0
	Group B	6	0
POD-2	Group A	4	1
	Group B	2	1
POD-3	Group A	1	0
	Group B	1	0
POD-7	Group A	0	0
	Group B	0	0

Table 6: Return to normal.

Return to normal (days)	Group A	Group B
Mean	9	10
SD	2.08	2.83
P value	0.21 (Student's t-test)	
Inference	Non-significant difference	

The difference was non-significant (p value- 0.21) with a mean duration of return to normal work of 9 days in group A and 10 days in group B (Table 6).

DISCUSSION

As observed from above mentioned results both the groups were comparable with regard to age, gender distribution, post-operative fever, slough formation, clot formation, post-operative pain and time to return to normal function. The difference for all the parameters was not significant.

In a study by Erickson et al for incidences of tonsillectomy from 1970 to 2005; 3280 patients who underwent tonsillectomy, 65 percent (n=2141) were female.⁶ Our study showed non-specific trends probably due to a total sample size of 40 patients.

Dhiwakar et al conducted a systematic review of trials in which antibiotic was administered as a study medication intraoperatively and/or postoperatively, in children or adults undergoing tonsillectomy or adenotonsillectomy and observed that use of antibiotics is not associated with reduction in pain scores or use of analgesia.⁷ On contrary Colreavy et al noted that use of antibiotics is associated with reduction in pain scores and requirement of analgesia.⁵

The degree of slough formation and re-epithelialization would depend on patient's factors, surgeon factors and operative theatre environment. Less healed area have more amount of slough.⁸ This was comparable in our study between the two groups.

A common complication of tonsillectomy is bleeding during or after the surgery. In published reports, the rate of primary haemorrhage (within 24 hours of surgery) has ranged from 0.2% to 2.2% and the rate of secondary haemorrhage (more than 24 hours after surgery) from 0.1% to 3%.⁹ As such, no significant haemorrhagic complications were observed in our study subsequent to tonsillectomy in either of the group.

Grandis et al similarly reported earlier return to work or school with antibiotics (p=0.045) but in our study these were comparable between the groups.¹⁰

Studies have shown that with antibiotic administration, no significant reduction in otalgia, trismus, eschar formation in the tonsillar fossa, or weight loss was achieved.¹⁰⁻¹³

Grandis et al reported reduction in the mean number of days with fever (99.9°F), although it did not reach statistical significance (0.35 versus 0.51; p>0.05).¹⁰ Telian et al also reported a significant reduction in the mean number of oral temperature recordings more than 100°F (1.5 versus 2.9; p<0.05) and more than 101.5°F

(0.02 versus 0.23; p<0.05), with use of antibiotics.¹² Our study was similar to Grandis et al in this context.¹⁰

CONCLUSION

Administration of post-operative antibiotics following tonsillectomy does not have any additional benefit as compared to only pre-operative antibiotic prophylaxis. Giving only the latter will prevent indiscriminate use of antibiotics, thereby preventing the scope of development of resistant strains. This will eventually also have an economic impact.

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