

Effect of Peritonsillar Infiltration in Intra Op Bleeding Control in Cold Steel Tonsillectomy

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Abstract

Tonsillectomy is important surgery performed in the field of ENT. as Cold steel tonsillectomy is a famous performed technique over a period of time . Lot of new methods of tonsillectomy have been introduced with perceived advantages in terms of to decrease the bleeding, to reduce the pain, more rapid healing in the post operative period and ease of surgical technique. Even though it is simple surgery the surgeon always have to be aware of bleeding as the oropharynx highly vascular , in this study peritonsillar infiltration with epinephrine (adrenaline) with dosage of 1: 100000 mixed with 1% lignocaine used and reduction in blood loss have been observed . sample size is 60 patients in age group of 10 to 30 years old . and they were divided into two groups as group A and group B respectively . in group A tonsillectomy peritonsillar infiltration given prior to surgery and in group B no infiltration given. Both group intra op bleeding calculated and tabulated . by this study there is significant reduction blood loss have been observed in group A(with p value of < 0.001) , as per this study peritonsillar infiltration with adrenaline 1: 100000 with 1% lignocaine helps in reduction of blood loss in tonsillectomy .

Key Words: tonsillectomy , peritonsillar infiltration , adrenaline , lignocaine , blood loss .

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I. Introduction

Tonsillectomy is one of the important surgery performed in the field of ENT. Cold steel tonsillectomy is a famous performed technique. Lot of new methods have been introduced with perceived advantages in terms of to decrease the bleeding, to reduce the pain, more rapid healing in the post operative period and ease of surgical technique.

Even though it is a common and simple surgery, the operating surgeon must always be aware of its intraoperative as well as post operative bleeding which may even lead to shock and death. This is because the tonsils are rich in its blood supply and the risk of bleeding in tonsillectomy is high.

Estimation of blood loss during tonsillectomy is difficult but important, especially in anemic patients, children and other patients who cannot tolerate blood loss.

In an attempt to reduce bleeding, both intra operative and post operatively, various hemostatic agents and modern surgical techniques have been used.

Applying 3% H₂O₂ soaked gauze or cotton ball in tonsillar fossa after dissection¹, Topical use of silver nitrate, tannic acid and IV administration of EACA (fibrinolytic agent) were used to achieve hemostasis by various surgeons in past era.¹

Other methods of controlling bleeding during surgery include ligation of bleeding vessel, cauterization of the bleeding vessel in the tonsillar fossa using bipolar cautery, cryosurgery, laser, radio frequency, and ionic coagulation.²

Despite these efforts, bleeding after tonsillectomy remains a potentially fatal complication and a major part of concern. Peritonsillar epinephrine infiltration is another effective technique for maintaining hemostasis during tonsillectomy. Because of the scarcity of prospective studies, the effects of most substances and techniques have been primarily on clinical impression.^{4,8}

Keeping those things in mind, this hospital based prospective study of peritonsillar infiltration of epinephrine in reduction of blood loss in tonsillectomy is undertaken.

Aim of the study

To study effect of epinephrine in control of bleeding during tonsillectomy.

Objective of the study :

To study the efficacy of peritonsillar infiltration of epinephrine in maintaining hemostasis in patients undergoing tonsillectomy surgery.

II. Methodology

The materials for the present study included all the patients , who attending the ENT OPD who had chronic tonsillitis not responding to the medical management at government general hospital, Guntur . between 2020 to 2022 . a total of 60 patients who had clinical features of chronic tonsillitis were evaluated using a standard proforma and underwent the following investigation process systematically as and when needed.

Sample size : 60

Study design : Hospital based prospective study.

Inclusion criteria :

- 1) Patient undergoing tonsillectomy under GA
- 2) Age between 10 to 30 years old.
- 3) Chronic tonsillitis more than 2 years duration.

Exclusion criteria :

- 1) Peritonsillar abscess
- 2) Acute tonsillitis
- 3) Patients having co morbidity conditions(HTN , DM , bleeding disorder).

Methods of Collection of Data :

1) Patients attending ENT OPD in GOVERNMENT GENERAL HOSPITAL GUNTUR clinically diagnosed as chronic tonsillitis are taken as the sample.

2) Details of patients regarding age, sex, presenting features, medical history, previous surgery and history of relevant comorbidities, which include diabetes mellitus, hypertension, renal disease, coronary artery disease, cerebrovascular disease, were recorded.

3) They will be evaluated clinically for tonsillar hypertrophy, anterior pillar congestion, and palpable jugulo-diaphragmatic lymph nodes.

4) Clinical examination of the patient, including a detailed general physical examination and systemic examination, should be done.

5) Then, for surgical fitness, all standard basic investigations such as CBC, BGT, BT, CT, Coagulation profile, urine routine, LFT, HIV, HCV, HbSAg, ECG, Chest X-Ray, and 2D ECHO are performed. Special tests, such as a renal function test (RFT) and a thyroid function test (TFT), were performed since renal impairment and abnormal thyroid results are contraindications to administering epinephrine (adrenaline).

6) After obtaining the patient's consent, the same surgeon will perform a tonsillectomy under general anaesthesia on both of them. Tonsillectomies in Group A (test) patients are done with peritonsillar infiltration with epinephrine (adrenaline) + lignocaine (1:100000), whereas Tonsillectomies in Group B (control) are done without infiltration. The patient's heart rate will be continuously monitored. To calculate intraoperative blood loss, how much mL blood is collected in suction device will be measured and soaked cotton used for pressure hemostasis will be weighed before and after surgery. Calculating the difference in weights of swabs, etc. before and after usage, and then adding the total (1 gm=1ml) to the volume of blood collected in the appropriate suction bottles.



FIGURE 1: Dissected tonsil tissue post tonsillectomy



FIGURE 2: Blood soaked cotton mops in tonsillectomy done with infiltration (left) and without infiltration (right)



FIGURE 3: Blood collected in suction apparatus without infiltration (left) and with infiltration (right)

III. Results And Observation

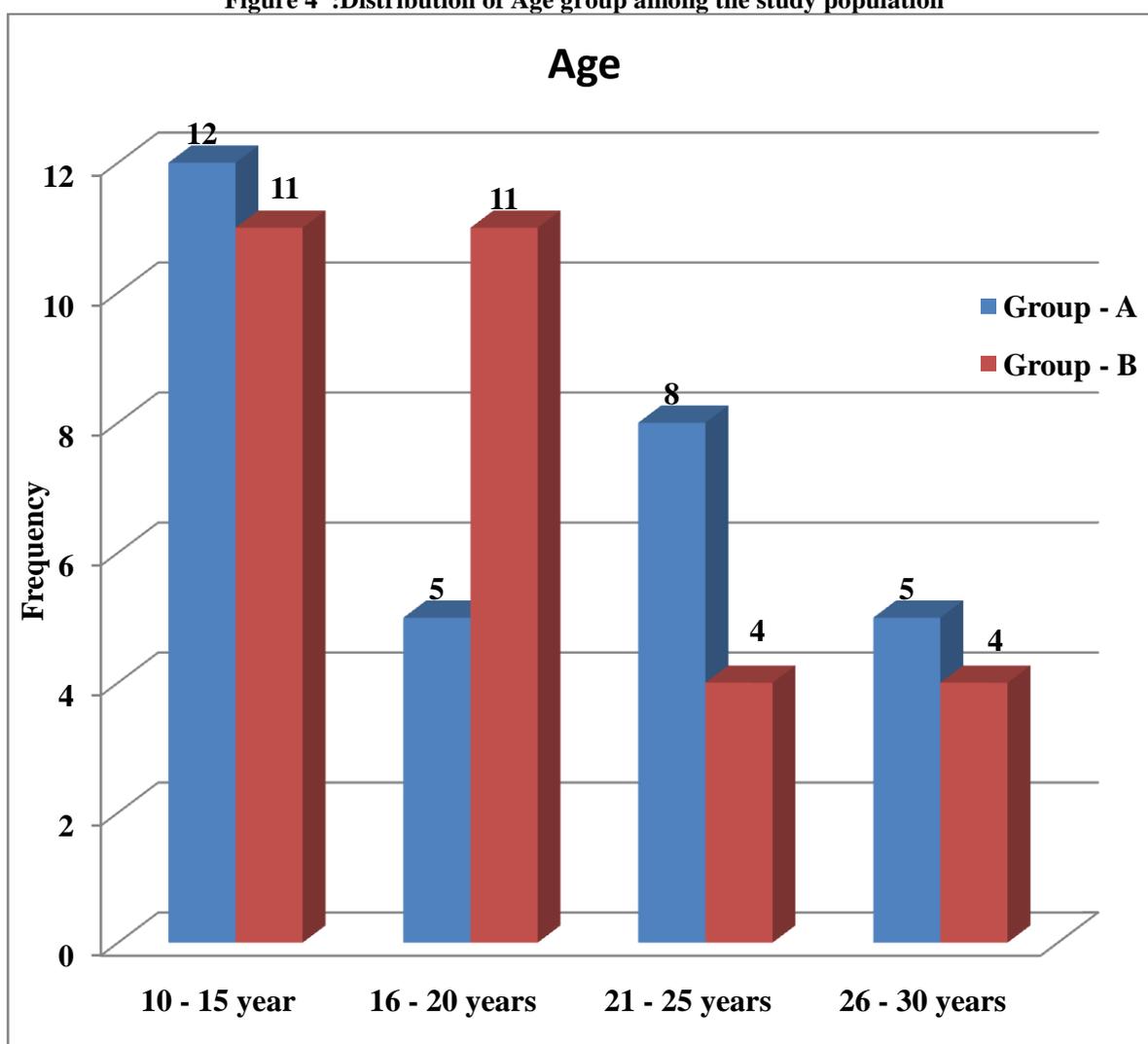
The present study had been conducted on 60 patients in two groups group A (tonsillectomy was done with peritonsillar infiltration of 1:100000 adrenaline + lignocaine solution was used) and group B (tonsillectomy was done without infiltration) in Department of ENT, Guntur medical College, and Government general hospital, Guntur.

Age group for this study 10 to 30 years patients were taken in both group. Maximum number of patients are present in the age group of 10 to 15 years old.

**Table: 1
AGE DISTRIBUTION TABLE**

Age	Group – A NO. OF PATENTS	Group –B NO. OF PATENTS
10 – 15	12 (40.0 %)	11 (36.7 %)
16 - 20	5 (16.7 %)	11 (36.7 %)
21 – 25	8 (26.7 %)	4 (12.3 %)
26 – 30	5 (16.7 %)	4 (12.3 %)
Total	30 (100 %)	30 (100 %)

Figure 4 :Distribution of Age group among the study population



Distribution of age among the study population

The study population had a mean Age of group (A) 18.83 (± 6.08) and group (B) 17.70 (± 5.90) years ranging from 10 to 30 years.

Table: 2 Distribution of age among the study population

Age	N	Mean	SD	Median	Minimum	Maximum
Group – A	30	18.83	6.08	18.50	10	30
Group – B	30	17.70	5.90	17.00	10	30

Table 3: PRE OP AND POST OP WEIGHT OF COTTON BALL IN GM

weight of cotton ball in gm	N	Mean	SD	Mean difference	t-value	P-value (<0.05)
Group – A						
Pre op weight of cotton ball	30	39.23	13.21	- 16.00	9.288	0.001*
Post op weight of cotton ball	30	55.23	19.20			

Group – B						
Pre op weight of cotton ball	30	44.10	14.39	- 41.47	17.467	0.001*
Post weight of cotton ball	30	85.57	23.00			

Soakage blood loss measurement

To maintain haemostasis in tonsillar fossa during tonsillectomy cotton balls were used. And weight of the cotton ball was measured before and after the soakage of the blood .and the difference between pre op and post op weight of cotton ball calculated and converted into gm to ml as 1 gm = 1ml.

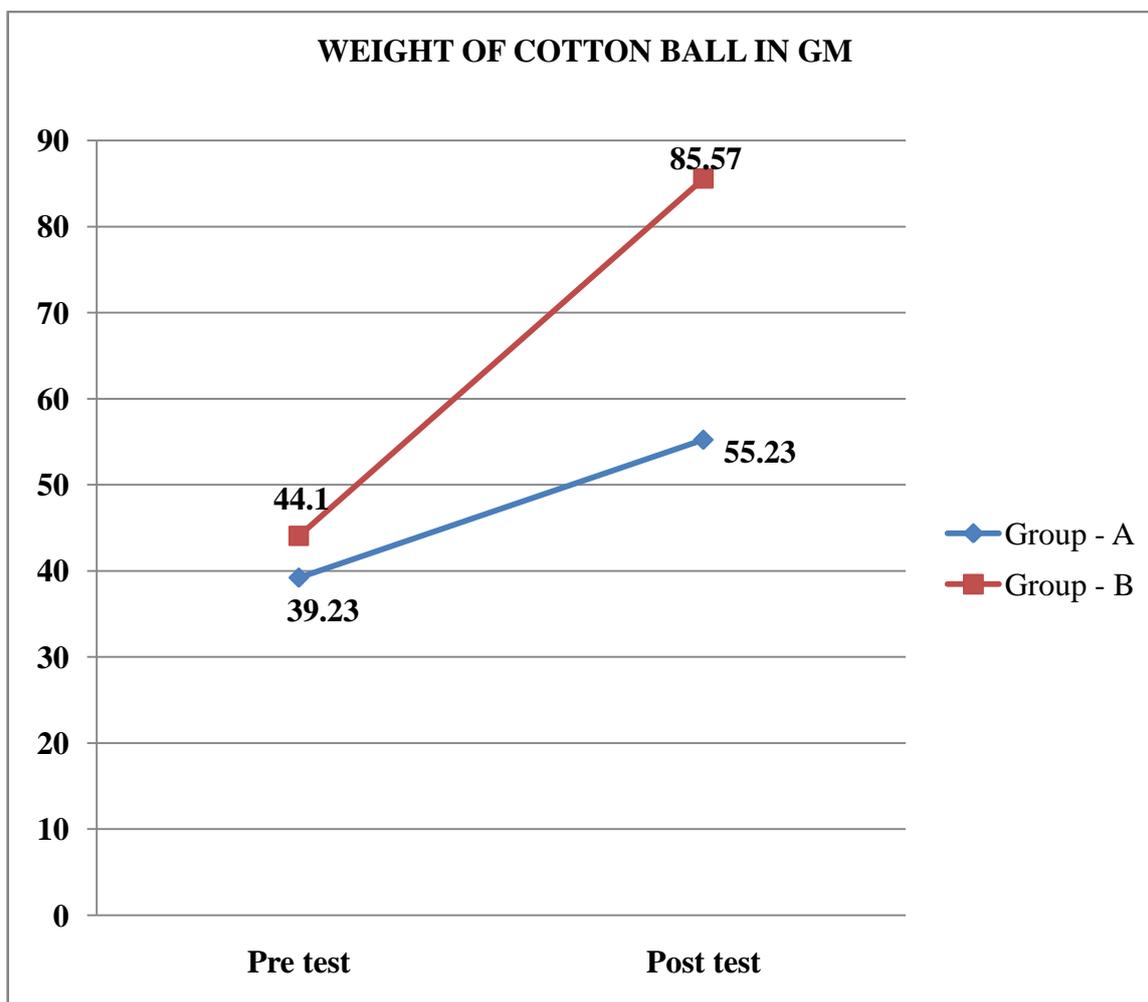


Figure 5 : comparison of pre op and post op weight of cotton ball in group A and group B

Table: 4
AMOUNT OF BLOOD SOAKED IN ML

Amount of blood soaked in ml	N	Mean	Standard Deviation	Mean difference	t-value	P-value (<0.05)
Group – A	30	16.00	9.44	-25.40	8.874	< 0.001*
Group – B	30	41.40	12.52			

FIGURE 6 AMOUNT OF BLOOD SOAKED IN ML

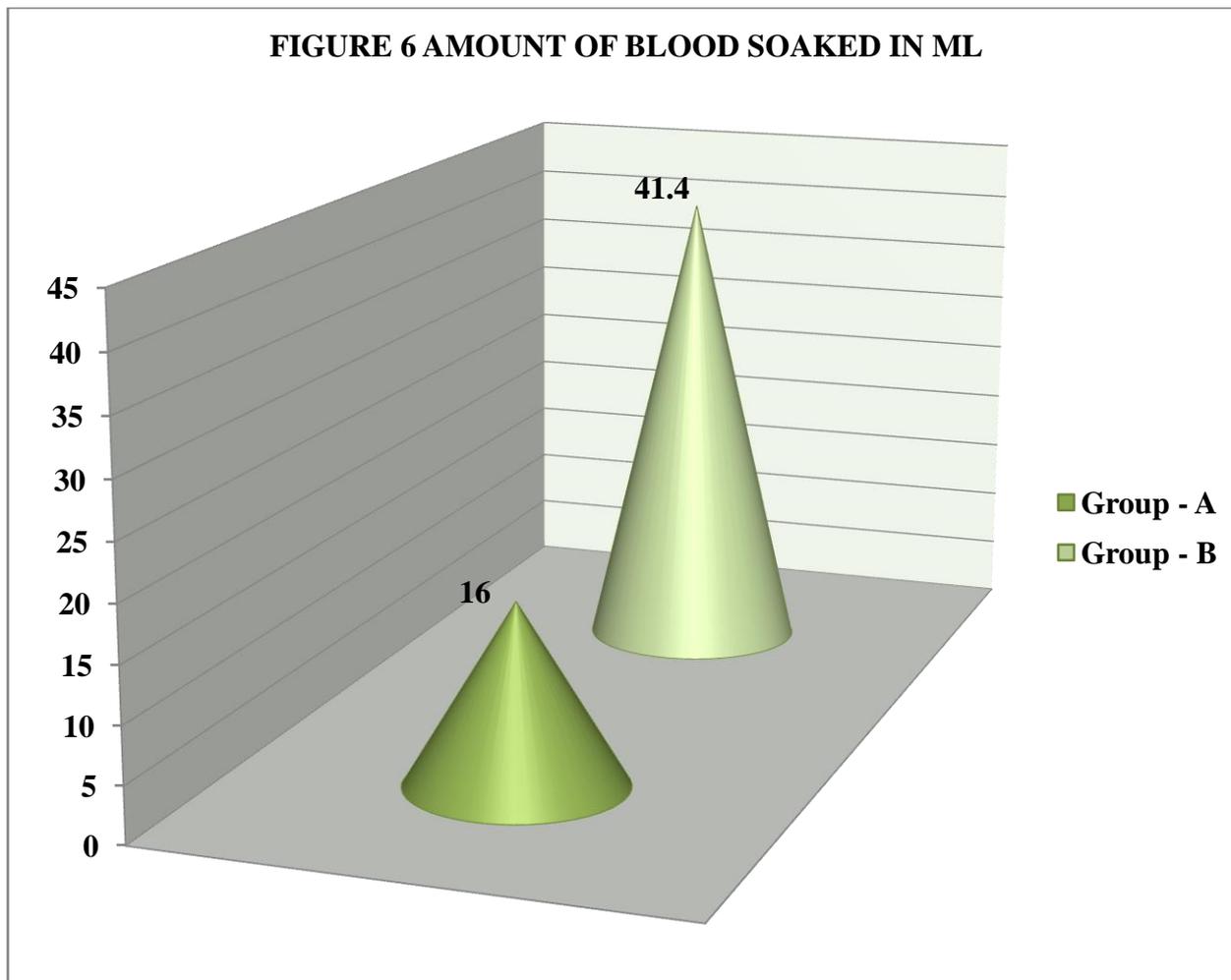


Table: 5
AMOUNT OF BLOOD COLLECTED IN SUCTION APPARATUS IN ML

Amount of blood collected in suction apparatus in ml	N	Mean	Standard Deviation	Mean difference	t-value	P-value (<0.05)
Group – A	30	35.47	20.23	-21.40	3.90	< 0.001*
Group – B	30	56.87	22.26			

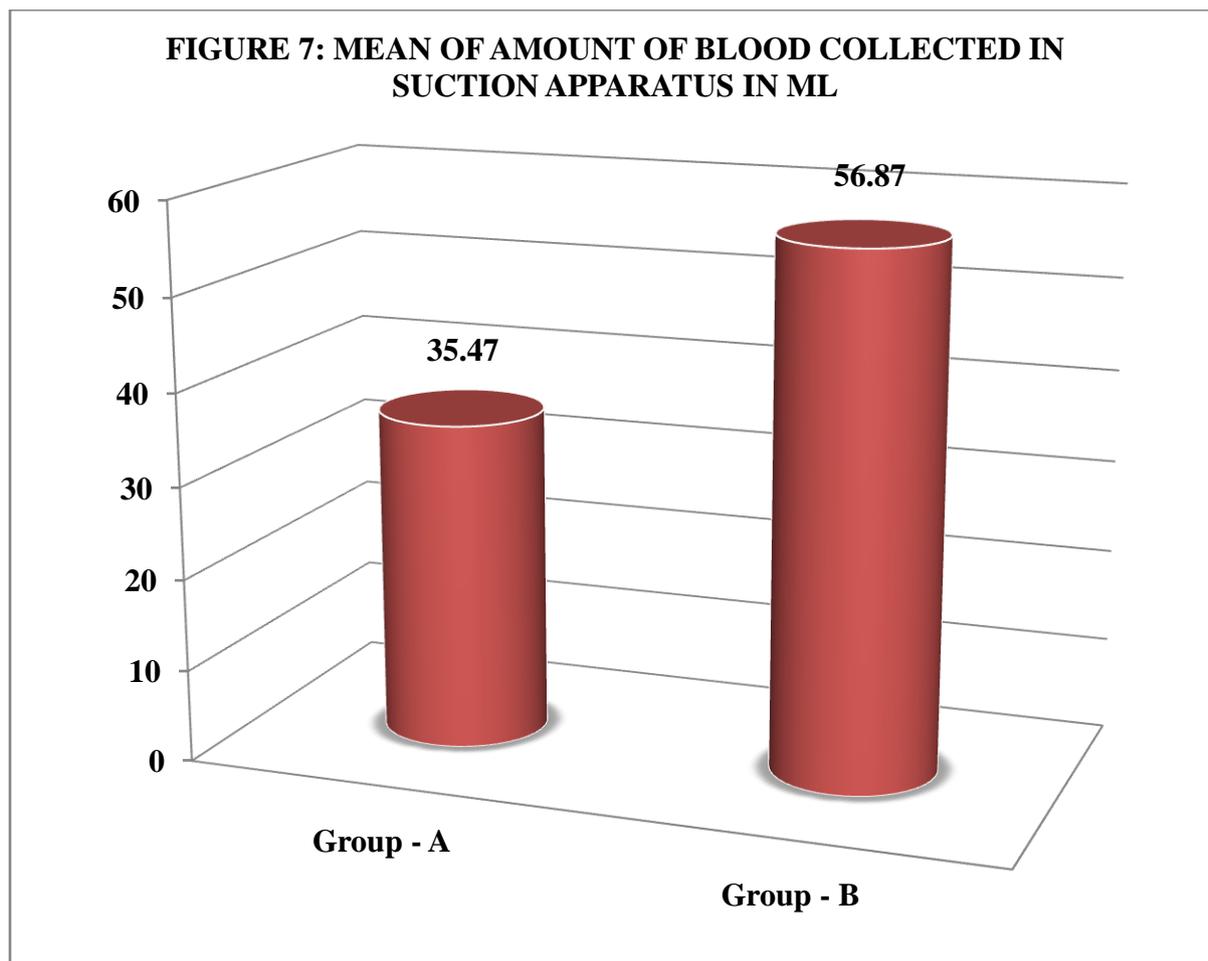
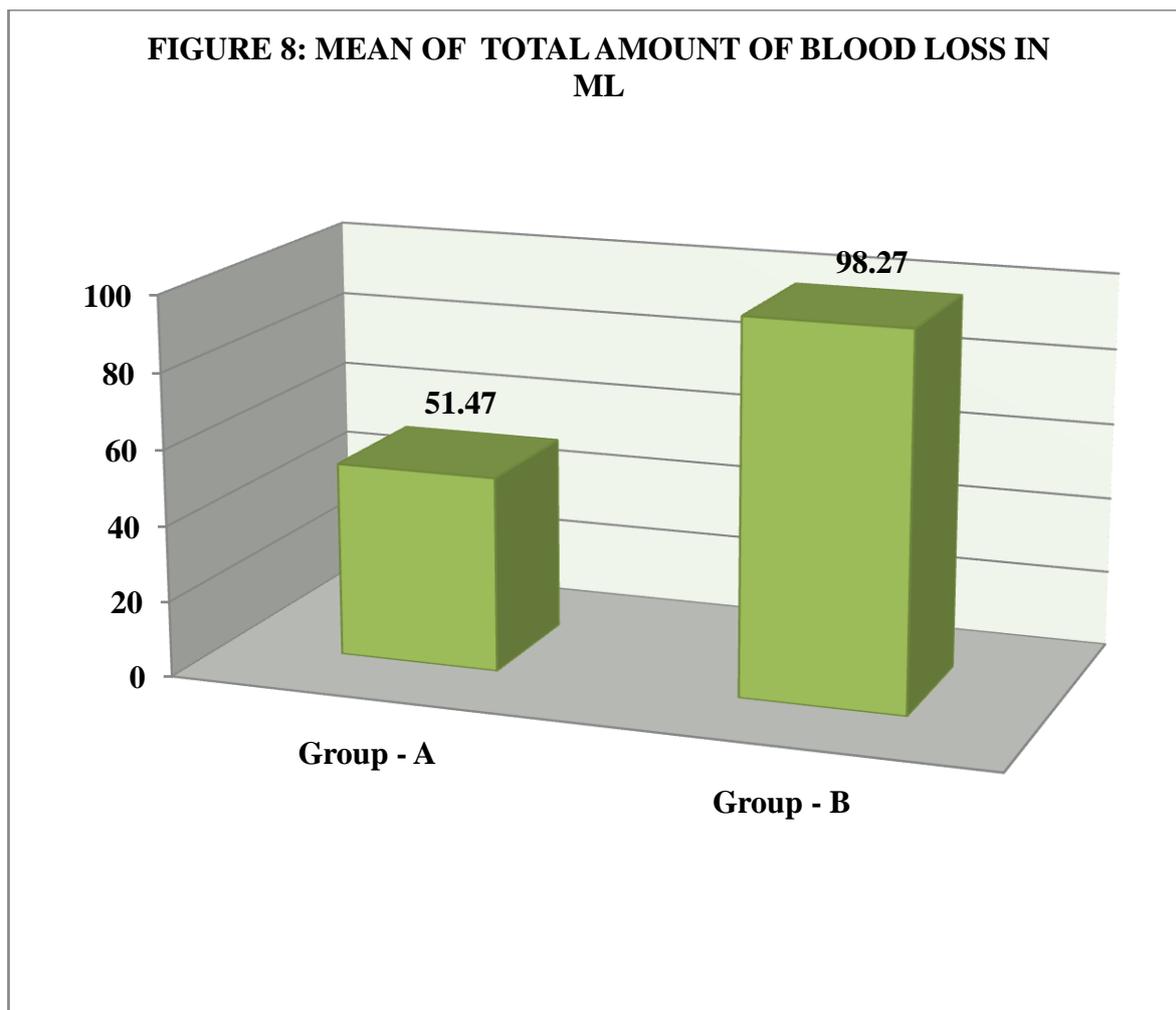


Table: 6
TOTAL AMOUNT OF BLOOD LOSS IN ML (GROUP - A & B)

Total amount of blood loss in ml	N	Mean	Standard Deviation	Mean difference	t-value	P-value (<0.05)
Group - A	30	51.47	28.88	-46.80	6.11	< 0.001*
Group - B	30	98.27	30.41			

*Significant finding (p<0.05).



IV. Results

Results on continuous measurements are presented on mean standard deviation (Minimum to maximum) and results on categorical measurements are presented in numbers (percentage).

Student 't' test (2 tails, independent) has been used to find the significance of study parameters between two groups. P value is <0.001 which is significance

This shows there is a significant difference between group A and group B. so This indicates blood loss in group B is remarkably less in comparison to the group B.

V. Discussion

This study titled as “EFFECT OF PERITONSILLAR INFILTRATION IN INTRA OP BLEEDING CONTROL IN COLD STEEL TONSILLECTOMY” was conducted in department of ENT, Guntur medical college and government general hospital, Guntur from 2020 to 2022 on 60 patients who attended ENT OPD during the said time period with chronic tonsillitis without any comorbidities.

The patients were divided into two groups, Group A and Group B, consisting of 30 patients each.

In Group A patients, tonsillectomy was done with peritonsillar infiltration (solution- 1:100000 adrenaline + 1% lignocaine) by dissection and snare method.

In Group B patients, tonsillectomy was done without any infiltration by dissection and snare method.

TYPE OF SOLUTION FOR INFILTRATION

In the present study, peritonsillar infiltration was given using a mixture of 1:100000 adrenaline and 1% lignocaine.

In a study conducted by E. Tas et al. mixture of 1:200000 adrenaline and 0.25% levobupivacaine solution was used for peritonsillar infiltration.⁵

J Ergil, et al. conducted the study using solution containing a mixture of 1:200000 adrenaline + Lignocaine, 0.25% levobupivacaine or saline for peritonsillar infiltration.⁶

In the study conducted by Braodman et al. 1:200000 adrenaline + 0.25% bupivacaine or normal saline solution was used for peritonsillar infiltration.³

In a study conducted by Costas, et al. patients were divided into 5 groups⁷

Group I--bupivacaine (0.5%) with adrenaline (1:200,000)

Group II--bupivacaine (0.5%)

Group III--normal saline with adrenaline (1:200,000)

Group IV--normal saline

Group V--no infiltration (control group).

TABLE 7: TYPE OF SOLUTIONS USED FOR INFILTRATION IN VARIOUS STUDY

STUDY	TYPE OF SOLUTION
E Tas, et al. ⁵	1:200000 adrenaline + 0.25% levobupivacaine
J. Ergil, et al. ⁶	a. 0.25% levobupivacaine (LB) b. 1:200000 adrenaline + 1% lignocaine (LA) c. Saline
Broadman et al. ³	1:200000 adrenaline + 0.25% bupivacaine or normal saline
Costas et al. ⁷	Group I--bupivacaine (0.5%) with adrenaline (1:200,000) Group II--bupivacaine (0.5%) Group III--normal saline with adrenaline (1:200,000) Group IV--normal saline Group V--no infiltration (control group).
Present study	1:100000 adrenaline + 1%lignocaine

AMOUNT OF BLOOD LOSS

In this study, blood loss was compared between two groups of patients: Group A in which peritonsillar infiltration was given and group B in which surgery was done without peritonsillar infiltration. Intra operative blood loss was found to be less in Group A (mean 51.47 ml) as compared to group B (mean of 98.27 ml).

In a study conducted by E Tas, et al. the amount of blood loss was compared between the two tonsils in the same patient. On one side (LE side) tonsil, Levobupivacaine and epinephrine was used while on the other tonsil (S side) saline was used for peritonsillar infiltration. Blood loss was found to be more on S side (33.75 ml) as compared to LE side (27.55 ml).⁵

In a study conducted by Costas, et al. patients were divided into 5 groups.⁷

Group I--bupivacaine (0.5%) with adrenaline (1:200,000)

Group II--bupivacaine (0.5%)

Group III--normal saline with adrenaline (1:200,000)

Group IV--normal saline

Group V--no infiltration (control group).

J. Ergil, et al. made a comparison between 3 groups.⁶

a. 0.25% levobupivacaine (LB)

b. 1:200000 adrenaline + 1% lignocaine (LA)

c. Saline (S)

Blood loss of 39 ml was seen in group LB while 21 ml and 55 ml blood loss was seen in group LA and S respectively.

OUTCOME OF VARIOUS STUDIES

In this study, blood loss was significantly lesser in group A (test) as compared to group B (control) with p value < 0.001.

In a study conducted by E Tas, et al. side in which peritonsillar levobupivacaine-epinephrine infiltration was given had lesser bleeding as compared to side with saline with p value < 0.05.⁵

In the study conducted by J. Ergil, et al. least amount of bleeding was observed in group in which levobupivacaine-adrenaline injection was given followed by group in which plain levobupivacaine was given. Maximum bleed was noticed in patients in whom peritonsillar saline infiltration was given. Result was significant with a p value of less than 0.001.⁶

In the study conducted by Broadman, et al. the group that received peritonsillar epinephrine with levobupivacaine infiltration had less bleeding as compared to those with plain levobupivacaine infiltration, while maximum bleed was seen in group where peritonsillar saline infiltration was given (p value < 0.001).³

TABLE 8: OUTCOME IN VARIOUS STUDIES

STUDY	OUTCOME (P VALUE)
E Tas, et al. ⁵	LE side < S side ($p < 0.05$)
J. Ergil, et al. ⁶	LA<LB<S ($p < 0.001$)
Broadman et al. ³	Group I & II< Group III < Group IV ($p < 0.001$)
Present study	Group A < Group b ($p < 0.001$)

VI. Conclusion:

1. In this study it was observed that giving peritonsillar infiltration with the solution of 1:100000 adrenaline + lignocaine in tonsillectomy under GA helps in significant reduction in blood loss.
2. Using epinephrine (adrenaline) is safer to use in general anaesthesia, however, in some cases it may produce tachycardia and mild rise in blood pressure.
3. Due to the vasoconstrictor effect of epinephrine, identification of capsule and further dissection becomes much easier.
4. As most of the patients in need for tonsillectomy are children and adolescent, epinephrine can be used without contraindication.

Advantage:

Absence of bias and instrumentation error as same suction apparatus is used to calculate the blood loss in all patients while in the previous studies, different suction apparatuses were used for each side.

Limitations:

1. Small sample size
2. Possible presence of confounding factor as the study was conducted on different patients as compared to other studies where the two sides were compared.

Conflict of interest: none

Source of funding: none

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