

# “ A STUDY TO ASSESS THE EFFECT OF LOCAL APPLICATION OF ADRENALINE GAUZE DURING INSERTION OF PICC LINE ON HEMOSTASIS IN NEONATES ADMITTED IN NICU'S OF SELECTED HOSPITAL IN PCMC”

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## Abstract :

The neonatal period is considered a stage of vulnerability to child health by biological, environmental, social and cultural risks. In this study used evaluative research approach. quasi-experimental two group post-test design was used. The selected sample was 60. A Non-Probability Purposive sampling technique was used for this study. The result was Corresponding p-values were large (greater than 0.05). the table shows that Vital parameters are not significantly affected by local application of adrenaline gauze on haemostasis during insertion of PICC line in neonates. conclusion was The neonates undergoing PICC line insertion was assessed for severity of bleeding by observational checklist was found that 63.3% of them had mild bleeding and 10% of them had moderate bleeding during insertion of PICC line insertion, the present study it was concluded that the local application of adrenaline gauze during PICC line insertion among neonates

decreases and control bleeding. And there was no significant association with selected demographic variables among neonates with neonates undergoing PICC line insertion.

**KEYWORDS:** assess, effect ,local application, insertion of PICC line , haemostasis, neonate

## Introduction :

The neonatal period is considered a stage of vulnerability to child health by biological, environmental, social and cultural risks. This requires proper care, greater vigilance and monitoring by health Professionals, in order to ensure a better growth and development of the child, this period is also responsible for 60% to 70% of infant deaths in recent decades, occurring mainly until the 6th day of life, being the key indicator of quality of care to newborn. So it is important to take care of all the risk factors which influence the health of newborn.

In other words, Neonatal period is defined as first 28 days after birth in which major physiological and metabolic changes takes place.

The haemostatic mechanism in the neonates differs from that in the older child. In neonates, there is decreased activity of several clotting factors, diminished platelet function, and suboptimal defense against clot formation.

Over the last two decades developments in the care of the newborn baby have made it possible for neonatal intensive care units (NICU) to treat newborn delivered as early as 22-23 week's gestation. Sicker neonates are relying on the use of central venous and arterial access. With 15% of all babies admitted to NICU and 50% of all those weighing  $\leq 1000$  g requires umbilical venous catheters or other venous or arterial access. Catheters- related thrombosis accounts for the majority of all thrombotic events in neonatal period. In the study involving nearly 4734 neonates, 34(0.7%) had clinical thrombosis (van Elteren et.al, 2011) equivalent to 6.8 per 1000 NICU admissions, which was almost three times the number found in the prospective Canadian study published 16 years earlier, of 2.4 per 1000 NICU admission (Schmidt Andrew, 1995) and more than the 5.1 per 100000 live birth found in a 2 years German survey in 1997 (Nowak-Gottl et.al, 1997) despite increasing incidence, neonatal thrombosis remains uncommon but can no longer be considered a rare phenomenon. In the absence of information from large controlled clinical trials. It is important to understand about how to use the available drugs more effectively and more safely.

**Research Approach:** In this study used evaluative research approach.

**Research designed:** In this study used quasi-experimental two group post-test design.

**Setting :** The setting for this study was selected hospital in Pimpri chinchwad Municipal Corporation which includes Dr. D.D.Y. Patil hospital and research center, Pimpri pune. And unique hospital chinchwad, for pilot study. The reason for selecting these areas is their geographical proximity, economy in term of time; easy

transportation facilities, administrative approval, cooperation, and fulfilled criteria of sampling technique which help in maintaining the homogeneity.

**Sample:** The sample selected for the present study are neonates undergoing PICC line insertion

**Sample size :** 60

**Sampling technique:** A Non-Probability Purposive sampling technique was used for this study.

**Inclusion Criteria:**

- Neonates from births to 28 days admitted NICU'S of selected hospital.
- Neonates admitted and available at the time of data collection.

**Exclusion Criteria:**

- Parents those who were not willing.
- Local infection at potential site of insertion.
- Neonates with Major chromosomal abnormality.

**Procedure Of Data Collection:**

The formal permission was obtained from medical superintendent of D.D.Y. Patil hospital and research center, pune and final study was conducted from 1<sup>ST</sup> DEC – 31<sup>ST</sup> DEC 2019, the total sample was 60. The schedule for data collection was as follows.

Objectives of study were discussed and informed consent was taken from the subject in the study. The researcher assured confidentiality of the data to the subject. The researcher herself applied the local application of adrenaline gauze during PICC line insertion procedure performed in NICU, and noted the readings regarding severity of bleeding by giving score; with vital parameters like pulse rate, respiration rate, and blood pressure monitoring the duration of data collection for each sample was 5 minutes. With three intervals at 1min, 3min, 5min respectively. After the procedure dressing was done on insertion site.

**ANALYSIS AND INTERPRETATION OF DATA**

The data was analysed according to the objectives of the study, which were:

1. To assess the effect of local application of adrenaline gauze on hemostasis during insertion of PICC line in neonates.
2. To find an association of haemostasis' after local application of adrenaline gauze during insertion of PICC line with selected demographic variables.

Organization of study findings:

Section- I- description of samples (neonates based on their personal characteristics in terms of frequency and percentage.

Section- II- Analysis of data related to the effect of local application of adrenaline gauze on haemostasis during insertion of PICC line in neonates.

Section- III- Analysis of data related to association of haemostasis during insertion of PICC line with selected demographic variables

### Section I

#### Description of samples based on their demographic characteristics

**Table 1: Description of samples based on their demographic characteristics in terms of frequency and percentages**

N=30, 30

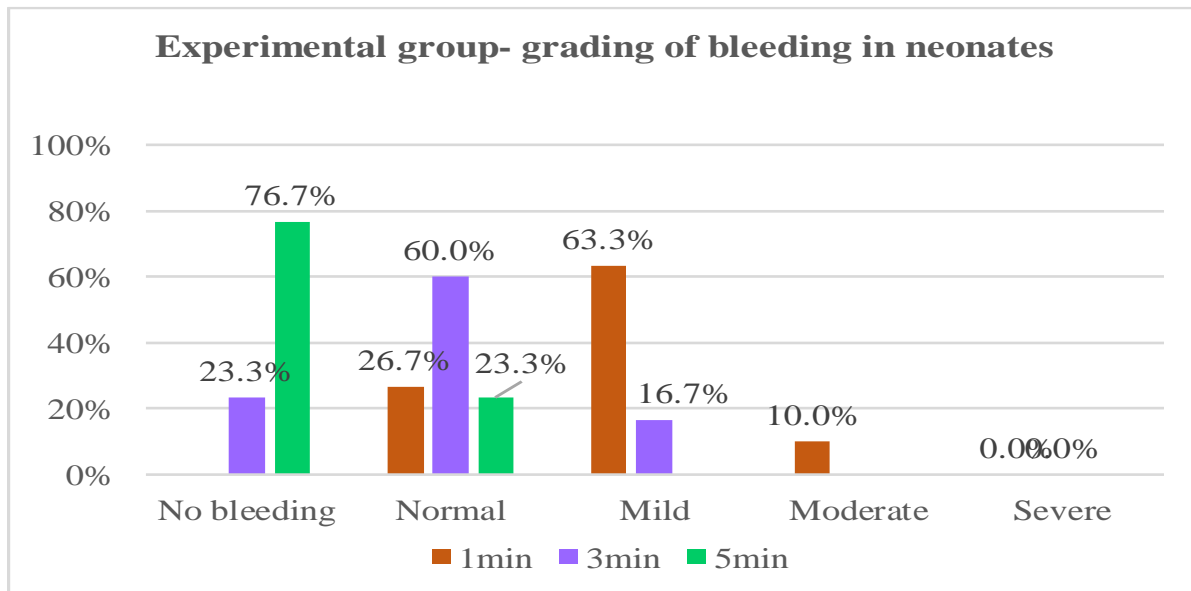
Demographic variable	Experimental		Control	
	Frequency (f)	Percentage %	Frequency (f)	Percentage %
<b>Day of life</b>				
Birth – 7 <sup>th</sup> day	17	56.7%	21	70.0%
8 <sup>th</sup> day – 14 <sup>th</sup> day	11	36.7%	6	20.0%
15 <sup>th</sup> day – 21 <sup>st</sup> day	2	6.6%	3	10.0%
<b>Gender</b>				
Male	17	56.7%	16	53.3%
Female	13	43.3%	14	46.7%
<b>Gestational age of neonates</b>				
32- 34 weeks	12	40.0%	12	40.0%
35 – 37weeks	13	43.3%	13	43.3%
38 – 40 weeks	5	16.7%	5	16.7%
<b>Birth weight</b>				
1.5kg- 2kg	13	43.3%	7	23.3%
2kg-2.5kg	9	30.0%	16	53.3%
2.5kg- 3kg	8	26.7%	6	20.0%
3kg- above	0	0.0%	1	3.4%
<b>Type of delivery</b>				
Normal	15	50.0%	15	50.0%
LSCS	15	50.0%	15	50.0%
<b>Is Vit K given to the newborn</b>				
Yes	21	70.0%	26	86.7%
No	9	30.0%	4	13.3%

**Table no-1** shows that demographic data with regards to demographic characteristics in experimental group, 56.7% neonates are from birth to 7<sup>th</sup> day of life. 56.7% of neonates were male. 40% of neonates were in 32-34 weeks of gestational age. 43.3% of them was having birth weight of 1.5-2 kg. 50% neonates was having normal delivery. And Vit K was given to the 70% neonates. In control group, 70% of neonates was from birth to 7<sup>th</sup> day of life. 53.3% of them was male. 43.3% neonates was from 35-37 weeks of gestation. 53.3% neonates was having birth weight of 2-2.5kg. 50% of them were having normal delivery. Vit K was given to 86.7% neonate.

## Section II

**Analysis of data related to the effect of local application of adrenaline gauze on haemostasis during insertion of PICC line in neonates.**

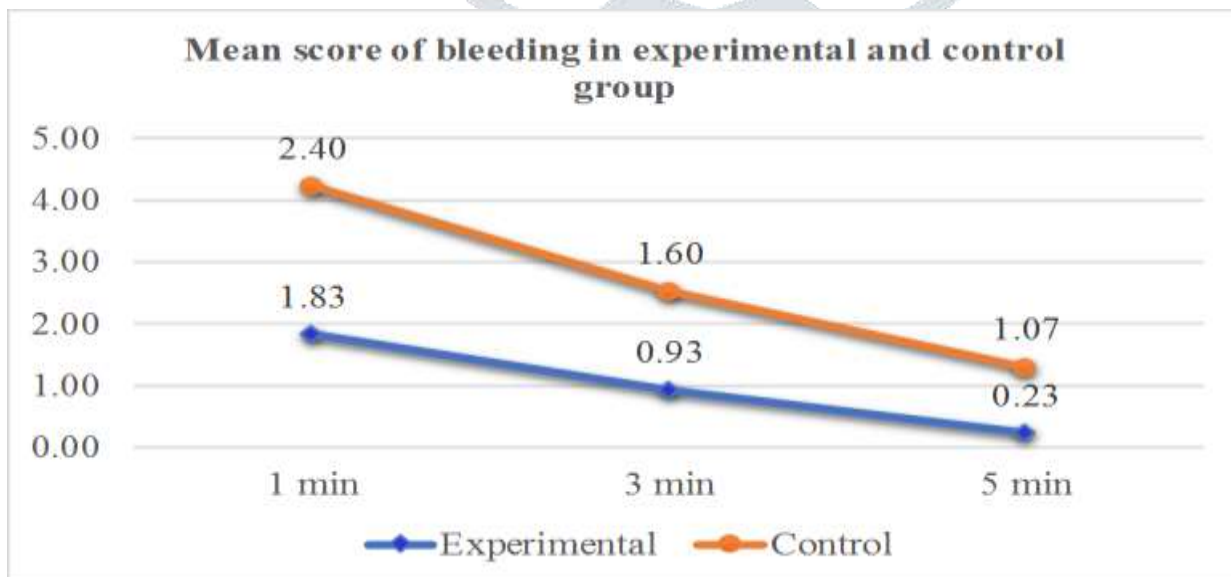
N=30, 30



**Figure no 2: Bar diagram showing Effect of local application of adrenaline gauze on haemostasis during insertion of PICC line in neonates**

Figure no- 2 shows that at minute 1, in experimental group, 63.3% of neonates were having mild bleeding. 60% of them were normal bleeding at 3 minutes. And 76.7% of neonates were having no bleeding at 5 min. hence the bar diagram shows that the adrenaline reduces the bleeding during PICC line insertion.

N=30, 30

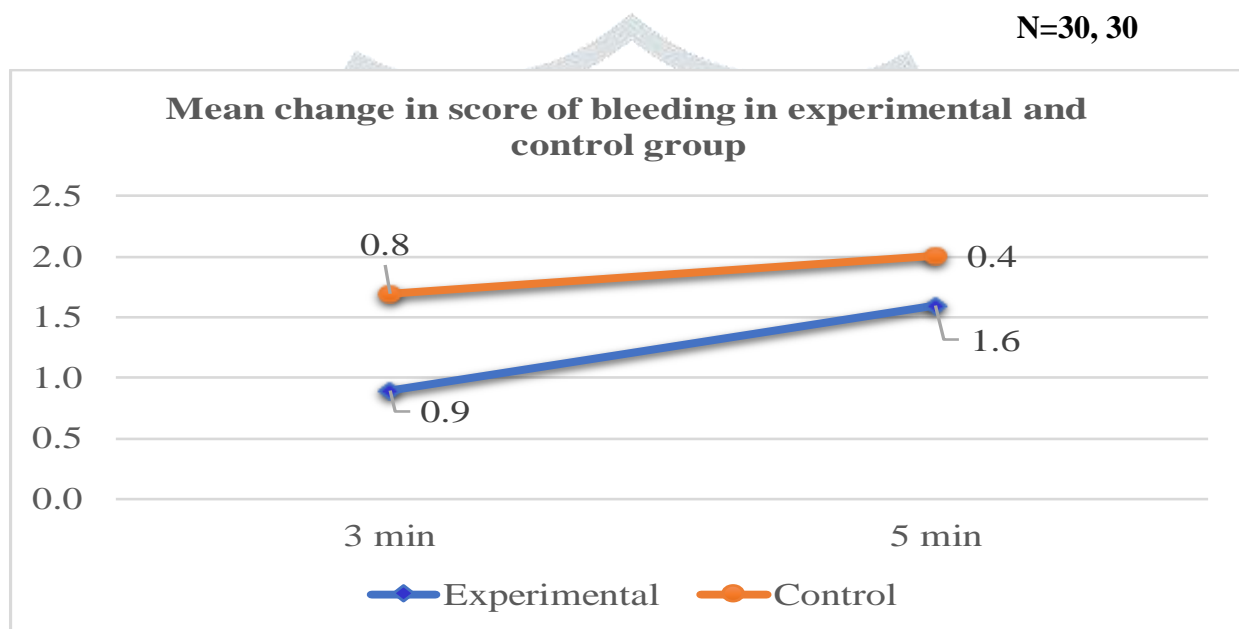


**Figure no 3: Graph showing description of the effect of local application of adrenaline gauze on haemostasis during insertion of PICC line in neonates**



Figure no 3 shows the description of paired t-test for the effect of local application of adrenaline gauze on haemostasis during insertion of PICC line in neonates. In experimental group, average bleeding score at 1 minute was 1.83 which reduced to 0.93 on minute 3 and came down to 0.23 at 5 minutes. T-value for this test was 16.2 and 17.6 with 29 degrees of freedom at 3 minutes and 5 minutes. Corresponding p-value was small (less than 0.05), the null hypothesis is rejected. Bleeding reduced significantly after local application of adrenaline gauze on haemostasis during insertion of PICC line in neonates.

In control group, average bleeding score at 1 minute was 2.4 which reduced to 1.6 on minute 3 and came down to 1.07 at 5 minutes. T-value for this test was 10.8 and 13.4 with 29 degrees of freedom at 3 minutes and 5 minutes. Corresponding p-values were small (less than 0.05), the null hypothesis is rejected. Bleeding reduced significantly without local application of adrenaline gauze on haemostasis during insertion of PICC line in neonates.



**Figure no 4: Graph showing description of two sample t-test for comparison of change in experimental and control group scores**

Figure no 4 shows description of two sample t-test for the effect of local application of adrenaline gauze on haemostasis during insertion of PICC line in neonates. In experimental group, average change in bleeding score at 3 minutes was 0.9, which was 0.7 for control group. T-value for this test was 0.4 with 58 degrees of freedom. Corresponding p-value was large (greater than 0.05), there is no evidence against null hypothesis. Change in bleeding score for experimental group was not significantly higher than that in control group at 3 minutes.

In experimental group, average change in bleeding score at 5 minutes was 1.6 which was 0.4 for control group. T-value for this test was 8.8 with 58 degrees of freedom. Corresponding p-value was small (less than 0.05), the null hypothesis is rejected. At 5 minutes, change in bleeding score for experimental group was significantly higher than that in control group at 5 minutes.

Hence the graph shows that Bleeding reduced significantly after local application of adrenaline gauze on haemostasis during insertion of PICC line in neonates.

**Table 5: Effect of local application of adrenaline gauze on vital parameters in neonates****N=30, 30**

Vital parameter	Pretest mean	SD	Posttest mean	SD	T	df	p-value
Pulse (b/min)	146.8	16.8	148.5	13.3	-0.95	29	0.826
RR (breath/min)	44.1	4.2	46.0	5.0	2.23	29	0.017
SYSBP (mmHg)	74.7	14.1	75.7	13.6	-0.84	29	0.797
DIABP (mmHg)	48.7	12.0	49.1	13.1	0.25	29	0.401

Table no 5 shows the effect of local application of adrenaline gauze on haemostasis during insertion of PICC line in neonates with paired T test. T-values for this test were 0.95, 2.23, 0.84 and 0.25 with 29 degrees of freedom. Corresponding p-values were large (greater than 0.05). the table shows that Vital parameters are not significantly affected by local application of adrenaline gauze on haemostasis during insertion of PICC line in neonates.

### Section III

#### Analysis of data related to association of haemostasis during insertion of PICC line with selected demographic variables

**Table 6: Fisher's exact test for the association of haemostasis during insertion of PICC line with selected demographic variables****N=60**

Demographic variable		Grading of bleeding			P-value
		Mild	Moderate	Normal	
Day of life	Birth – 7 <sup>th</sup> day	22	13	3	0.109
	8 <sup>th</sup> day – 14 <sup>th</sup> day	11	2	4	
	15 <sup>th</sup> day – 21 <sup>st</sup> day	2	1	2	
Gender	Male	23	6	4	0.143
	Female	12	10	5	
Gestational age of neonates	32- 34 weeks	14	7	3	0.453
	35 – 37weeks	15	5	6	
	38 – 40 weeks	6	4	0	
Birth weight	1.5kg- 2kg	13	5	2	0.602
	2kg-2.5kg	11	9	5	
	2.5kg- 3kg	10	2	2	
	3kg- above	1	0	0	

Type of delivery	Normal	19	6	5	0.518
	LSCS	16	10	4	
Is Vit K given to the newborn	Yes	27	12	8	0.823
	No	8	4	1	

Since all the p-values were large (greater than 0.05), none of the demographic variable was found to have significant association with the haemostasis during insertion of PICC line with selected demographic variables.

## Discussion

The present study was designed to assess the effect of local application of adrenaline gauze on haemostasis' during PICC line insertion in selected hospital.

The study design was experimental in nature conducted over a period of 1 month. The data was collected from 60 neonates who all undergoing PICC line insertion, admitted in NICU of Dr.D.Y.Patil hospital.

The findings of the study were discussed with reference to the objectives and findings of the similar studies. Discussion of findings is presented as for demographic variables, effect of local application of adrenaline gauze on hemostasis. Association of hemostasis after local application of adrenaline gauze during insertion of PICC line with selected demographic variables.

In this present study, in experimental group at minute 1, 26.7% of neonates had normal bleeding, 63.3% of them had mild bleeding and 10% of them had moderate bleeding, at 3 minutes, 23.3% of them did not have bleeding, 60% of them had normal bleeding and 16.7% of them had mild bleeding at 5 min.

The above statistical values shows that bleeding reduced significantly after local application of adrenaline gauze on hemostasis during insertion of PICC line in neonates.

A systematic review was done to assess the haemostatic agent for skin wound. Researcher search all randomized clinical trials (RCTs) on haemostasis after SSG in Medline, Embase and the Cochrane Library until January 2011. Two reviewers independently assessed trial relevance and quality and performed data analysis. Primary endpoint was effectiveness regarding haemostasis. Secondary endpoints were wound healing, adverse effects, and costs. The result of systematic review was shown that total nine studies found with the comparing between different haemostatic agents epinephrine, thrombin, fibrin sealant, alginate dressings, saline, and mineral oil. And it was found that Epinephrine achieved haemostasis significantly faster than thrombin (difference up to 2.5 minutes), comparing with saline or mineral oil the hemostasis rate is up to 6.5 minutes. Fibrin sealant also resulted in an up to 1 minute quicker haemostasis than thrombin and up to 3 minutes quicker than placebo, but none of the above haemostatic agent will directly challenge against epinephrine. And the adverse effect appeared negligible. The conclusion of the study was on the basis of all above mention evidences epinephrine and fibrin sealant appear superior to achieve haemostasis when substantial topical blood loss is anticipated

Epinephrine achieved haemostatic rate faster in skin wound or insertion site which is similar to present study.

A study was conducted to assess the efficacy of endoscopic injection of adrenaline for actively bleeding ulcers. Total 961 patients admitted for upper gastrointestinal haemorrhage identified 68 patients



with actively bleeding ulcers. These 68 patients were randomised to receive either endoscopic injection of adrenaline or no endoscopic treatment after endoscopy both groups were managed in an identical manner, and strict criteria for emergency operation were adhered to in both groups. Bleeding was initially controlled in all 34 patients assigned to the treatment group. Significantly fewer patients in the treatment group than in the control group needed emergency operations. In the treatment group the median transfusion requirement was significantly less (three v five units of blood) and the median hospital stay shorter (six v eight days). No complications were observed with the injection of adrenaline, and the rate of healing of ulcers in those attending for endoscopy six weeks after discharge was similar in both groups (81% (17 out of 21 patients) in the treatment group v 79% (11 out of 14) in the control group). Hence study concluded that Injection of adrenaline is effective in stopping bleeding from actively bleeding ulcers.

The sample of the study was children undergoing surgical procedure (Adenoidectomy) and study were done to assess the effect of topical application of adrenaline gauze during procedure with observation of vital parameters, and study shows that the topical application of adrenaline gauze significantly controls bleeding during procedure, which is similar to present study.

### **Conclusion:**

The neonates undergoing PICC line insertion was assessed for severity of bleeding by observational checklist was found that 63.3% of them had mild bleeding and 10% of them had moderate bleeding during insertion of PICC line insertion, so it is necessary to control the bleeding during PICC line insertion to prevent further complications related to the bleeding during insertion of PICC line. From the present study it was concluded that the local application of adrenaline gauze during PICC line insertion among neonates decreases and control bleeding. And there was no significant association with selected demographic variables among neonates with neonates undergoing PICC line insertion.

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“Blessed are those who find wisdom those who gain understanding. “ (Proverbs 3: 13)

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