ORIGINAL ARTICLE

Mean Decrease in HB Level after Intra-Articular Tranexamic Acid Injection in Total Hip Arthplasty (THA)

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ABSTRACT

Aim: To determine the mean decrease in Hb level after Intra-articular Tranexamic acid injection in total hip arthplasty (THA)
Study duration: From: September 2015 to March 2016
Setting: Department of Orthopaedics, Jinnah Hospital, Lahore
Results: In our study, out of 60 cases, 22(36.67%) were between 18-50 years of age while 38(63.33%) were between 51-80 years of age, mean±sd was calculated as 55.88±7.52 years, 19(31.67%) were male while 41(68.33%) were females, mean Hb level before treatment was calculated as 11.98±0.75 g/dl, mean Hb level after treatment was calculated as 10.62±0.87 g/dl, mean decrease of Hb level after treatment was calculated as 1.36±0.48 g/dl, p value was calculated as 0.0001 showing a significant difference.
Conclusion: We concluded that Intra-articular Tranexamic acid injection is effective and useful for controlling the blood loss in total hip arthplasty
Keywords: Total hip arthplasty (THA), Intra-articular Tranexamic, post treatment Hb level

INTRODUCTION

Around one-third of patients undergoing total hip arthoplasty require one to three units of blood transfusion post-operatively.[1] Blood transfusions are found associated with risks and complications e.g. transfusion related reactions, transmission of immunomodulatory effects and infectious agents. Various methods are used to reduce the need for postoperative blood transfusions such as epoetin administration, fibrin spray, patient position, deliberate hypotension, hemodilution, autologous blood transfusion and tranexamic acid administration[2] Chen wang et al in their study concluded that tranexamic acid might reduce hemoglobin decline, volume of drainage, total blood loss and transfusion requirements after performing total hip arthoplasty, and is not associated with adverse reactions or complications including wound infection, deep vein thrombosis and pulmonary embolism[5]. Tranexamic acid (TXA) is a synthetic analog of the amino acid lysine that acts by competitively blocking the lysine-binding site of plasminogen, leading to inhibition of fibrinolysis[3].

Tranexamic acid (Antifibrinolytic) has been used in orthopedic surgery via an intravenous route, which results in a 50% reduction in the rate of transfusions. However, there are isolated case reports of thrombus formation and generated concerns over the risk of thromboembolic complications in a patient population already at higher risk for pulmonary embolism and deep vein thrombosis. This has prevented the widespread acceptance of the use of intravenous anti-fibrinolytics in total joint replacement surgery. Intra-articular application of antifibrinolytics may give the same efficacy, but with much decreased systemic absorption and thus much lower risk for thrombo-embolic complications[4].

We planned this study to evaluate the efficacy of intra-articular TXA during total hip arthoplasty as lot of cases is in need blood transfusion after surgery which poses transfusion hazards and other complications.

METHODOLOGY

Sixty cases for total hip arthoplasty of either gender between 18-80 years with unilateral primary total hip arthroplasty in Hip arthritis patients (Osteoarthritis/ arthritis hip diagnosed by Severe Hip Pain causing disability and confirmed on X-ray showing joint space narrowing (i.e., VAS<5) were included in the study. We excluded those cases with known allergy to tranexamic acid determined on history, documented History of venous thromboembolic disease and bilateral total hip arthoplasty. An informed consent through accident and emergency and OPD department of Jinnah Hospital Lahore in Orthopedic Unit-1.All patients were screened for tranexamic acid allergy and previous thromboembolic disease by detailed history and physical examination. After routine preoperative assessment, preparation and baseline hemoglobin levels, these patients were operated through posterior or lateral approach by same surgeon under spinal anesthesia. After fixation

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of implants and closure of hip capsule, a solution containing 10 ml normal saline and 1gm Tranexamic Acid was administered into the hip joint and wound was closed in standard fashion. Postoperative hemoglobin levels were measured after passing 24 hours of surgery in all patients. Decrease in Hb/level was measured as per operational definitions.

RESULTS

Mean age of the patients was calculated as 55.88±7.52 years, 19(31.67%) were male while 41(68.33%) were females. Mean Hb level before treatment was calculated as 11.98±0.75 g/dl. Mean Hb level after treatment was calculated as 10.62±0.87 g/dl. Mean decrease of Hb level after treatment was calculated as 1.36±0.48 g/dl, p value was calculated as 0.0001 showing a significant difference.

Table 1: Mean decrease of HB level after treatment (n=60)

	Hb Level	
	Mean	**SD**
Before treatment	11.98	0.75
After treatment	10.62	0.87
Mean decrease	1.36	0.48

P value: 0.0001

DISCUSSION

We compared our findings with a previous study conducted by Chih-Hsiang Chang et al the results showed that Hemoglobin decreased less in the tranexamic acid group (1.87±1.10) than in the control group (2.2±1.36g/dl p=0.01) on the first postoperative day[2] these findings are in agreement with our study.

Another study conducted by Deren T. Bagsby and John Hur showed similar results in which Postoperative hemoglobin decrease in the control group was 4.4±1.0 g/dL as compared to the decrease of 3.6±1.1g/dL in the tranexamic group, demonstrating an 18% reduction in blood loss (P<.001)[3]. Joseph G. Martin et al also confirmed the same findings in their study[6].

Masaya Ueno and others compared the effectiveness of topical tranexamic acid administration with that of intravenous (IV) tranexamic acid administration in total hip arthroplasty and concluded that Tranexamic acid reduces both post-operative and total blood loss in total hip arthroplasty. Moreover, a lower amount of tranexamic acid may be used to reduce blood loss in total hip arthroplasty with intravenous tranexamic acid administration than those with topical tranexamic acid administration. Therefore, they suggested that tranexamic acid should be administered intravenously before surgery and the posterior soft tissue should be repaired to decrease total hip arthroplasty-related complications[7].

A recent study[8] investigated the efficacy and safety of tranexamic acid (TXA) injection during primary total knee arthroplasty (TKA) to reduce postoperative hemorrhage and concluded that Intraoperative intra-articular injection of TXA in TKA can significantly reduce the initial postoperative hemorrhage and blood transfusion rate at the early stage after surgery.

This study is helpful for guidelines, setting new protocols for arthoplasty and beneficial for patient regarding decrease in hemoglobin after surgery and subsequently complication of blood loss and transfusions.

CONCLUSION

We concluded that Intra-articular Tranexamic acid injection is useful and effective to control the blood loss in total hip arthplasty in a Tertiary Care Hospital

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