

Is prophylactic tranexamic acid administration effective and safe for postpartum hemorrhage prevention?

A systematic review and meta-analysis

Chunbo Li, MD^a, Yuping Gong^b, Lingling Dong, MD^a, Bingying Xie, MD^c, Zhiyuan Dai, MD^{a,*}

Abstract

Background: To assess the efficacy and safety of tranexamic acid (TA) in reducing blood loss and lowering transfusion needs for patients undergoing caesarean section (CS) or vaginal delivery (VD).

Methods: An electronic literature search of PubMed, EMBASE, OVID, Cochrane library, Scopus, Central, and Clinical trials.gov was performed to identify studies that evaluating the usage of TA in CS or VD. The methodological quality of included trials was assessed and data extraction was performed.

Results: Finally, 25 articles with 4747 participants were included. Our findings indicated TA resulted in a reduced intra-, postoperative, and total blood loss by a mean volume of 141.25 mL (95% confidence interval [CI] -186.72 to -95.79, P < 0.00001), 36.42 mL (95% CI -46.50 to -26.34, P < 0.00001), and 154.25 mL (95% CI -182.04 to -126.47, P < 0.00001) in CS. TA administration in VD was associated with a reduced intra-, postoperative, and total blood loss by a mean volume of 22.88 mL (95% CI -50.54 to 4.77, P = 0.10), 41.24 mL (95% CI -55.50 to -26.98, P < 0.00001), and 84.79 mL (95% CI -109.93 to -59.65, P < 0.00001). In addition, TA could lower the occurrence rate of postpartum hemorrhage (PPH) and severe PPH, and reduce the risk of blood transfusions. No increased risk of deep vein thrombosis (DVT) after CS or VD was associated with TA usage, while the minor side effects were more common.

Conclusions: Our findings indicated that intravenous TA for patients undergoing CS was effective and safe. Although prophylactic TA administration is associated with reduced PPH, current existing data are insufficient to draw definitive recommendations about its clinical significance due to the poor to moderate quality of the included literatures. Thus, high-quality randomized controlled trials with larger samples are needed to validate our findings.

Abbreviations: CI = confidence interval, CS = caesarean section, DVT = deep vein thrombosis, PPH = postpartum hemorrhage, RCT = randomized controlled trial, TA = tranexamic acid, VD = vaginal delivery.

Keywords: caesarean section, meta-analysis, postpartum hemorrhage, tranexamic acid, vaginal delivery

1. Introduction

Postpartum hemorrhage (PPH) is a potential life-threatening complication of both vaginal (VD) or cesarean delivery.^[1] It is reported that PPH accounts for nearly 25% of maternal deaths and approximately 12% survivors after PPH suffer from severe

http://dx.doi.org/10.1097/MD.000000000005653

postpartum anemia.^[1] Recently, the occurrence rate of caesarean section (CS) has increased in both developed and developing countries, which would result in an increased risk of PPH.^[2] Although there has been a remarkable improvement in the prevention and treatment of PPH in recent years, deaths due to PPH remain relatively common in some parts of the world. To lower the occurrence rate of major morbidity and mortality due to PPH, it is very vital to reduce blood loss in CS and VD.

Tranexamic acid (TA), an antifibrinolytic agent, could exert its hemostasis effect via inhibiting the activation of plasminogen to plasmin.^[3] Its efficacy and safety in reducing hemorrhage and lowering transfusion requirements have been well established in various elective surgeries.^[4–6] Recently, TA has been reported to reduce blood loss in gynecology diseases such as menorrhagia, hysterectomy, and myomectomy.^[7-9] Naoulou et al^[7] reviewed all available evidence about the use of TA in menorrhagia and concluded that TA was effective and safe and could potentially improve quality of life of patients with heavy menstrual bleeding. Topsoee et al^[8] performed a randomized controlled trail (RCT) and revealed that TA could reduce the total blood loss, the incidence of substantial blood loss, and the need for reoperations for patients who underwent benign hysterectomy. Shaaban et al^[9] reported that TA reduced blood loss by a mean volume of 407 mL during and after myomectomy for patients with multiple uterine fibroids. Moreover, several studies evaluated the usage of

Editor: Jihad Mallat.

The authors have no funding and conflicts of interest to disclose.

^a Department of Obstetrics and Gynaecology, Shanghai First Maternity and Infant Hospital, Tongji University School of Medicine, ^b Department of Nursing, Zhongshan Hospital of Fudan University, ^c Department of Gynaecology and Obstetrics, Gynaecology and Obstetrics Hospital of Fudan University, Shanghai, China.

^{*} Correspondence: Zhiyuan Dai, Department of Gynaecology and Obstetrics, Shanghai First Maternity and Infant Hospital, Tongji University School of Medicine, 536 Changle Road, Shanghai 200040, China (e-mail: daizhiyuan@51mch.com).

Copyright © 2017 the Author(s). Published by Wolters Kluwer Health, Inc. This is an open access article distributed under the Creative Commons Attribution-NoDerivatives License 4.0, which allows for redistribution, commercial and non-commercial, as long as it is passed along unchanged and in whole, with credit to the author.

Medicine (2017) 96:1(e5653)

Received: 2 July 2016 / Received in final form: 20 November 2016 / Accepted: 21 November 2016

TA administration in CS^[10–31] or VD^[32–34] and showed satisfactory outcomes. Although published meta-analyses demonstrated that TA administration in CS or VD could result in a significant reduction in estimated blood loss, most of these studies limited the smaller samples and the poor quality of the included trials.^[35–38] Moreover, data about clinical relevance of the reduced blood loss with TA intervention remained inadequate because these outcomes did not distinguish the efficacy of TA administration based on the mode of delivery.

Traditional, PPH is commonly defined as blood loss of more than 500 mL following a VD, or more than 1000 mL following a CS.^[39] For a normal woman undergoing CS, a blood loss of 1000 mL seems to be common and had a minimal effect on women's health status. However, for a woman with severe anemia or cardiovascular disease undergoing VD, a blood loss of as little as 200 mL may be life-threatening and need additional intervention.^[39,40] Thus, it is important to evaluate the efficacy and safety of TA on blood loss based on the mode of delivery. As we are aware of at least 8 additional trials^[23–25,27–31] for CS and 1 trial^[34] for VD published in recent 3 years, which are not included in any published meta-analyses. Thus, we aimed to identify all available data to evaluate whether the mode of delivery had a potential effect on the efficacy of TA in reducing estimated blood loss.

2. Materials and methods

2.1. Search strategy

The relevant literatures involving in intravenous TA for CS or VD were searched using the electronic databases such as Medline, PubMed, EMBASE, OVID, Cochrane library, Scopus, Central, Clinical trials.gov, and other databases such as Google scholar, Biomed central, CINHAL, and Chinese databases such as Wanfang, CNKI, and VIP databases. No restrictions for language or geographic location were applied. The combination of terms as medical subject headings (Mesh) for the database searchers were: (Tranexamic acid OR TA OR TXA OR AMCA OR Cyclokapron) AND (pregnancy OR gestation). The last search was updated in June 1, 2016. Reference lists of the included studies and other relevant publications, including case reports, reviews, and meta-analyses, were checked for any unidentified trials from the electronic searchers. Abstracts from relevant conferences or scientific meetings were hand-searched for additional studies. Due to the characteristic of meta-analysis, no ethics approval and patient consent was necessary for the study.

2.2. Inclusion criteria

The included studies must meet the following criteria: randomized trials in any language; participants with singleton pregnancy who underwent elective CS or intended to delivery vaginally; all published studies comparing intravenous usage of TA in treatment group and normal saline or 5% glucose in control group; and the evaluation of outcomes by estimated blood loss, transfusion requirements, and complications such as the occurrence rate of deep vein thrombosis (DVT), nausea, vomiting, headache, and dizziness. We excluded the articles according to the following criteria: review articles, case reports, conference proceedings, or repeated publications; no available data reported.

2.3. Study selection and data extraction

The potential studies meeting the included criteria were identified based on the title and abstract information. If there was a doubt existing, the full text would be reviewed for clarification. Then, data were extracted from each study using a standardized form. Demographic data including publication date, sample size, age, gestational age, interventions, and surgery time for each study were recorded. The outcomes of interest including estimated blood loss, the occurrence rate of PPH/severe PPH, transfusion requirements, and drug-induced complications were analyzed. The study selection and data extraction were performed by 2 authors independently (CBL and YPG). Any disagreement for study section between 2 authors was discussed with a senior and if all authors considered that a study did not meet the inclusion criteria, the study was excluded. In case of insufficient data, we would contact the authors of the trials for more information.

2.4. Quality assessment

The methodological quality of each trial was evaluated according to the recommended criteria of CochraneHandbook for systematic Reviews of interventions by 2 independent authors (CBL and YPG). Any differences of opinion regarding methodological quality of included trials were resolved by discussion with a senior author (ZYD).

2.5. Statistical analysis

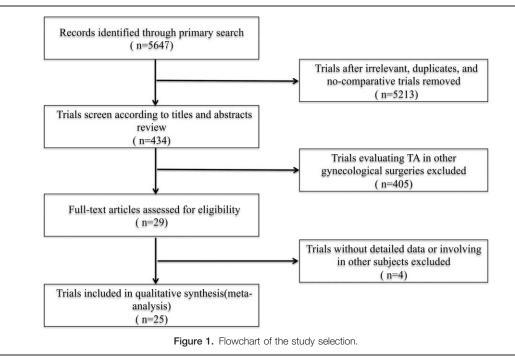
All statistical analyses were performed according to the guidelines of the Cochrane Collaboration using Review Manager software (RevMan, version 5.2). For dichotomous data including rate of PPH and severe PPH, transfusion needs, and adverse events, the summary ratio risk (RR) with 95% confidence interval (CI) was calculated. For continuous data including total, intra-, and postoperative blood loss, the mean difference with 95% CI was applied. P < 0.05 was thought to be significant difference. Because of expected substantial heterogeneity, the synthesis of the outcomes for all studies was calculated as the weighted average rate by using a random effect model. Sensitivity analysis was performed to assess the strength and robustness of the pooled results by excluding low quality studies and repeating the analysis for outcomes of interest. When the number of studies allowed, publication bias was evaluated using Funnel plots.

3. Results

3.1. Study inclusion and characteristics

A total of 5647 studies were originally identified using the electronic search system. Subsequently, 5213 studies were readily excluded due to duplication, irrelevancy, or nonrandomized trials after screening the title or abstract and 434 studies remained for further evaluation. After the full-text was obtained and reviewed thoroughly, an additional 405 studies failing to meet the included criteria were excluded. Because no adequate data were obtained, 1 trial by Sharma et al^[41] was excluded. One study by Sahhaf et al^[42] comparing the antihemorrhagic effect of TA and Misoporostol for PPH and 2 studies by Shakur et al^[43] and Ducloy-Bouthors et al^[44] evaluating the therapeutic efficacy of TA in postpartum patients were excluded. Finally, a total of 25 randomized trials (22 trials^[10–31] for CS and 3 trials^[32–34] for VD) were included. The detailed study selection process was presented in Fig. 1.

A total of 25 articles^[10–34] included a total of 4747 participants undergoing CS or VD, and no significant differences in preoperative baseline parameters were observed between TA



and control group within each study. All studies reported that TA was administrated intravenously using either a weighted or standard dose. For control group, a placebo (normal saline or 5% glucose) was given in all studies. The outcomes of interest including reduced blood loss, transfusion needs, the occurrence rate of PPH and severe PPH, and complications were recorded. The detailed characteristics of the included studies for CS and VD were presented in Table 1, respectively.

The majority of the included trials were small with sample sizes ranging from 60 to 740 patients. However, they were well designed and well implemented. Eighteen trials^[10-12,14,15,17-19,21-24,28-31,33,34] provided detailed randomization techniques using a computer-generated randomization list, consecutively numbered sealed opaque envelopes or rand list software, while 7 trials^[16,20,25-27,31,32] referred to randomization only without describing the detailed method. Eleven trials^[10,11,13,16,21,23,25,31,32] had unclear bias in the allocation concealment while only 1 study^[12] presented a higher bias. For the blinding of participants and personnel, there was a higher bias in 7 studies^[10-12,17,20,23,32] due to a lack of information and 6 studies^[13,21,25-27,31] had an unclear bias in the blinding measurement. Two studies^[19,20] had an unclear bias due to incomplete outcome data reported, and no studies had selective outcome reporting. In addition, no other sources of bias were detected in any studies. The methodological quality for each study was summarized in Fig. 2.

3.2. Blood loss

There were 15 trials^[10,11,13,14,16,17,20–23,26–29,31] for CS and 3 trials^[32–34] for VD identified to evaluate the effect of TA on total reduced blood loss (from fetus delivery to 2 hours postpartum). Our results indicated TA administration in CS resulted in a reduced blood loss by a mean volume of 154.25 mL (95% CI –182.04 to –126.47; I^2 =98%) and a reduced blood loss by a

mean volume of 84.79 mL (95% CI – 109.93 to –59.65; $I^2 = 0\%$) in VD as compared to control group. The test for subgroup differences showed a significant difference (P = 0.0003), indicating the efficacy of TA administration in reducing total blood loss was affected by the mode of delivery (Fig. 3A). A total of 614 trials^[10,11,13,15,17–19,22–25,27,28,31] and 2

A total of 614 trials^[10,11,13,15,17–19,22–25,27,28,31] and 2 trials^[32,34] provided detailed data on the effect of TA on the intraoperative blood loss (from fetus delivery to placental delivery) in CS and VD, respectively. Our results indicated that TA administration in CS resulted in a reduced blood loss by a mean volume of 141.25 mL (95% CI –186.72 to –95.79; I^2 = 99%) and a reduced blood loss by a mean volume of 22.88 mL (95% CI –50.54 to 4.77; I^2 = 0%) in VD as compared to control group. However, the latter did not reach a statistical difference. The test for subgroup differences showed significantly difference (P < 0.0001), indicating the efficacy of TA administration in reducing intraoperative blood loss was affected by the mode of delivery (Fig. 3B).

Data on the postoperative blood loss (from placental delivery to 2 hours postpartum) was available in 14 trials^[10-13,15,17,18,22-25,27,28,31] for CS and 2 trials^[32,34] for VD. Our results showed TA administration in CS resulted in a reduced blood loss by a mean volume of 36.42 mL (95% CI -46.50 to -26.34; $I^2 = 98\%$) and a reduced blood loss by a mean volume of 41.24 mL (95% CI -55.50 to -26.98; $I^2 = 0\%$) in VD as compared to control. However, the test for subgroup differences showed no significantly difference (P = 0.59), indicating the mode of delivery had no significant effect on the efficacy of TA administration in reducing postoperative blood loss (Fig. 3C).

3.3. Rate of PPH or severe PPH

The outcome measure of PPH was available in 8 trials^[10,11,17,18,22,25,28,29] in CS and 3 trials^[32–34] in VD (Fig. 4A). Our results showed that TA administration lowered

Characteristics of included trials	included trial:	<i>i</i>					
Study, year	Country	TA/control (n)	Age, year	Gestational age, year	Intervention	standardized	Adverse effects
Cesarean section	č					ġ	t
Gal (2004)	China	91/89	IA: 29.75 ± 4.18 CON: 29.75 ± 4.01	IA: 38.80±1.11 CON: 38.67 + 1.03	IA: 1 g IA IV over 10 minutes before CS. CON: 5% allucase	N	IVU
Mayur (2007)	India	50/50	TA: 24.3 ± 3.65 ; CON:	TA: 38.85 ± 1.29 CON:	TA: 1 gTA IV over 20 minutes before CS	NR	DVT
Colthorat (2000)	, ron	A6/A6	24.89±3.99 エ۸・26.2 - 4.7 CON・27.4 -	38.64±1.24 TA: 20 0 - 0.6 CON: 20 7 -	CON: normal saline	QV	
JENIAVAL (2003)	וומו	04/04	IA. 2012 エキバ りつい. 27・1 王 4.1	на, 20.0 ± 0.0 чом. 20.1 ± 0.6	LA. L. B. LA IV OVEL TO HIMINGES DETOTE CO. CON: 5% allucose		
Rashmi (2010)	India	50/50	TA: 25.70 ± 3.70 CON:	TA: 37.85±1.09 CON:	TA: 1 g TA IV 30 minutes before CS.	NR	DVT
C + + 000	T		25.10±4.73	37.80±0.95 TA: 26.6 - 0.6- 0.01: 26.7	CON: normal saline	An antimuted bland loss	E Z
aungorauk (2011)	I Urkey	330/330	14: 50.3±3.5 UUN: 20.0± 3.6	1.4、38.8土U.6, CUN: 38./ エルら	IA: IG IA IV IU MINUTES DETOTE US. CON: 5% aluciae	An estimated Diood Ioss	DVI
Movafegh (2011)	Iran	50/50	20-40	Between 38 ⁺⁵ weeks and	TA: 10mg/kg TA IV over 20minutes	Hb level was less than	DVT
				40 weeks gestation	before CS CON: normal saline	8g/dL	
Poonia (2012)	India	50/50	NR	NR	TA: 1 g TA IV over 10 minutes before CS.	NR	DVT, nausea, vomiting
Senturk (2013)	Turkev	101/122	TA: 30.2 + 6.83 CON:	NR	TA: 1 a TA IV 10 minutes before CS.	NR	DVT
			29.22 ± 6.93		CON: 5% glucose		
Xu (2013)	China	88/86	TA: 26.7±3.7 CON: 27.1±	TA: 38.7 ± 1.0 CON: 38.8±	TA: 10 mg/kg TA IV 10-20 minutes	NR	DVT, nausea, vomiting,
Chahid (201 2)	Dalvietan	90/00	4.7 TA: 24 10 , 2 02 CON:	ן.ן דאי פס פס י ח פח החאו	Defore CS CON: normal saline	dN	phosphene, dizziness
	I anotal	00,000	1.4. 24.10 ± 3.33 0014. 24.89 + 4.16	1A. 30.34 ± 0.910 38.47 ± 0.910	CON: DOT NOT NOT THE SECOND CO.		- 20
Goswami (2013)	India	60/30	TA: 23.6±2.5 CON: 24.3±	NR	TA: 10mg/kg or 15mg/kg TA N CON:	NR	DVT, Nausea
10101 moot		290/020	2.6 TA: 26.24 - 5.16 00N.	TA, 20 02 . 1 15 0001	5% glucose	ũ	DIA hoodooho morrooo
			1.4. 20:04 王 3:10 00M. 26 62 王 5 05	1.7. J3.72 王 1.1.7 CON. 30 31 ± 1 17	LA. I 9 LA IV LUTININGES DENDE CO.		uvi, ilgauaule, ilausea, vomiting
Halder (2013)	India	50/50	TA: 26.06±2.51 CON:	NR NR	TA: 1 g TA IV 10 minutes before CS.	NR	TVD
To: //001.4/	Dolvioton	60/60	26.04±2.50 TA: 72.56 - 2.82 CON:		CON: none TA: 1 of TA N/ over 10 minutes hotens CS	Q	DUT sources visual dis
idj (zui4)	ransial	00/00	14. 23.30±3.02 UUN. 24.18+3.47	14: 33 + 5 00N: 33 + 5	IA: I y IA IV OVEL TUTIIIIIULES DETOTE CO. CON: normal saline		UVI, IIAUSEA, VISUAI UIS- tiirhances
Singh (2014)	India	1 00/1 00	TA: 25±1.46 CON: 26±	TA: 39.1 ±1.24; CON: 39.3	TA: 1 g TA IV 20 minutes before CS.	NR	DVT, nausea, vomiting,
			1.24	±1.28	CON: none		diarrhea
Ahmed (2014)	Egypt	62/62	TA: 28.6 ± 5.9 CON: $26.9 \pm$	TA: 38.5 ± 0.7 CON: 38.5 ± 0.7	TA: 10 mg/kg TA IV before CS CON:	NR	DVT
Yehia (2014)	Eavot	106/106	э.г TA: 28.4+4.9 CON: 28.6+	U/0 TA: 39.1 + 1.1 CON: 39.0 +	TA: 1 a TA IV over 20minutes before CS	NR	DVT
	5		4.7	- 1.2 -	CON: normal saline		
Gobbur (2014)	India	50/50	TA: 23.62 ± 3.429 CON:	NR	TA: 1 g TA IV before CS CON: normal	NR	DVT, nausea, vomiting
Ramani (2014)	India	60/60	24.0 ± 0.302 TA: 24.9 ± 3.9 CON: 24.4 ±	NR	TA: 1g TA IV 10minutes before CS CON:	NR	DVT, sickle cell trait
	-	1	3.7			-	÷
GNOSN (2014)	India	10/10	IA:25.94 ± 3.78 UUN:26.04 + 3.39	IA: 38.62 ± 0.779; UUN: 38.72 ± 0.671	IA: 1g IA IV 10minutes before CS CON: normal saline	HD level was less than 7 n/dl	DVI, nausea, vomiting
Maged (2015)	Egypt	1 00/1 00	TA: 24.9 ± 4.6 CON: $25.3 \pm$	NR	TA: 1g TA IV 20minutes before CS CON:	NR	DVT
Sujata (2016)	India	31/29	4./ TA: 29.4±4.16 CON:	NR	TA: 1g TA IV 15minutes before CS CON:	Hb level was less than	DVT
			ついて1 土 4:01			og/uL	

Li et al. Medicine (2017) 96:1

Table 1

Medicine

4

Study, year	country		Aye, year				
Vaginal delivery Yang (2001)	China	94/87	TA: 27.6±2.9 CON: 28.0±	NR	TA: 1g TA IV over 2–3 minutes after	NR	DVT, nausea, dizziness
Gungorduk (2013)	Turkey	220/219	2.6 TA: 27.9±4.9 CON: 27.6± 4.8	TA: 38.6±1.4 CON: 39.0± 2.7	delivery of the fetus; CON: 5% glucose TA: 1g TA IV over 5minutes at delivery of the anterior shoulder: CON: 5%	An estimated blood loss > 1000 mL	DVT, nausea, vomiting, diarrhea, pvrexia
Mirghafourvand (2015)	Iran	60/60	TA: 26.2±4.8 CON: 26.1± 4.9	NR	glucose TA: 1g TA IV over 10 minutes at delivery of the anterior shoulder: CON: placeho	NR	DVT, nausea, dizziness

the occurrence rate of PPH as compared to control group in CS (RR 0.32, 95% CI 0.16–0.61, $I^2 = 91\%$) and VD (RR 0.37, 95% CI 0.20–0.67, $I^2 = 28\%$). However, the test for subgroup differences showed no significant difference (P = 0.75), indicating the mode of delivery had no significant effect on the efficacy of TA administration in occurrence rate of PPH.

The outcome measure of severe PPH was available in 4 trials^[14,17,29,30] in CS and 2 trials^[33,34] for VD (Fig. 4B). Our results showed that TA administration in CS lowered significantly the occurrence rate of severe PPH as compared to control group (RR 0.32, 95% CI 0.12–0.84, I^2 =19%). For VD, no significant difference on the occurrence rate of severe PPH was found between TA and control group (RR 0.30, 95% CI 0.06–1.47, I^2 =0%). However, the test for subgroup differences showed no significant difference (P=0.95), indicating the mode of delivery had no significant effect on the efficacy of TA administration in occurrence rate of severe PPH.

3.4. Transfusion needs

The outcome measure of transfusion needs was available in 8 trials^[14,18,19,22,24,28,30,31] in CS and 1 trial^[33] in VD (Fig. 4C). Our results showed that TA administration lowered the transfusion needs as compared to control in CS (RR 0.31, 95% CI 0.18–0.51, $I^2=0\%$) but not in VD (RR 0.33, 95% CI 0.03–3.17, $I^2=0\%$). The test for subgroup differences showed no significantly difference (P=0.95), indicating the mode of delivery had no significant effect on the efficacy of TA administration in transfusion needs.

3.5. Adverse events

All component studies provided data on thromboembolic complication in CS and VD (Fig. 5A). However, only 4 trials^[18,19,21,22] involving in women undergoing CS reported 4 DVT in TA group and 6 DVT in control group. The pooled results showed that TA administration had no significant difference (RR 0.60, 95% CI 0.20–1.85, $I^2=0\%$) between TA group and control group. Besides thromboembolic episodes, some other minor adverse events including nausea, vomiting, headache, and dizziness were compared between TA group and control group (Fig. 5B). Our results showed that TA administration resulted in increased risk of minor transient adverse events as compared to control group in CS (RR 1.74, 95% CI 1.13–2.68, $I^2=0\%$) or VD (RR 2.11, 95% CI 1.55–2.88, $I^2=0\%$).

3.6. Publication bias and sensitivity analysis

Thromboembolic complication was used to generate funnel plot analysis of publication bias (Fig. 6). The plot presented no clear asymmetrical, and all studies fell within the 95% CI axis, which indicated no existence of significant publication bias existing. Sensitivity analysis was conducted by repeating the analysis after excluding 4 studies^[12,25,31,32] with high risk of bias, the results remained unchanged.

4. Discussion

Our meta-analysis demonstrated that intravenous TA administration for patients undergoing CS could effectively reduce blood loss and transfusion needs, as well as lower the occurrence rate of PPH and severe PPH with only minor side effects, yet do not result in an increased risk of postoperative DVT. However, the

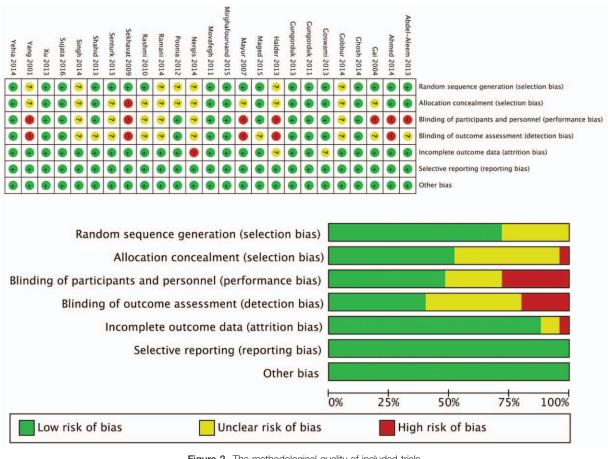


Figure 2. The methodological quality of included trials.

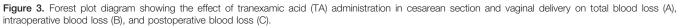
conclusion should be interpreted cautiously to assess the efficacy of TA for patients undergoing VD because of the smaller samples and the inadequate evidence from the included trials. In addition, the test of subgroup differences indicated the model of delivery had a potential effect on the efficacy of TA administration in reducing total and intraoperative blood loss.

TA, as an antifibrinolytic drugs, has been routinely used in cardiac, orthopedics, and oral surgeries.^[5,6,8,9] Relevant studies have demonstrated TA administration could reduce perioperative blood loss.^[45,46] Recent evidences from high-quality RCTs indicated that TA usage resulted in a significant reduction of blood loss in CS or VD.^[10-34] A Cochrane systematic review published in 2010 identified 2 trials evaluating the TA administration in CS and VD.^[38] Their study indicated that TA usage resulted in a significant reduction in total blood loss of 80.1 mL in CS and 71.5 mL in VD. Heesen et al^[37] identified 7 trials in which 6 reported the usage of TA in CS and one reported the usage of TA in VD. Their results showed TA usage rendered a reduced blood loss by a mean volume of 140.29 mL blood loss as compared to control group. However, their study did not take into account the influence of model of delivery, which might introduce bias.^[37] Faraoni et al^[47] conducted a meta-analysis with 10 trials that evaluated the efficacy of TA administration in reducing blood loss for women undergoing CS or VD. They concluded that TA administration significantly reduced blood loss and lowered the occurrence rate of PPH regardless of the mode of delivery. To guard against the effect of bias from the mode of delivery, we identified all available data and assessed whether the mode of delivery had a potential effect on the efficacy of TA in reducing blood loss. In addition, this was the 1st study that hade valuated systematically the usage of TA in CS or VD according to 3 different time periods.

Our findings indicated TA administration reduced in total blood loss at a mean volume of 154.25 and 84.79 mL in CS and VD, respectively, and no increased risk of thromboembolic complications occurred. In addition, there was a higher heterogeneity existing, which may have caused several potential limitations. First, of the 25 studies, 23 trials measured the blood loss by visual estimation method and only 2 trials^[14,33] evaluated the blood loss using a mathematical calculation estimation method. Although the current standard practice of PPH assessment is visual estimation, it has been reported to be inaccurate by many authors because the method depends strongly on the operators' subjective judgments.^[48,49] Second, all authors in the included trials have clearly mentioned that their methods did not take amniotic fluid quantity into account. However, it was difficult for avoiding blood loss mixed by amniotic fluid, which might overestimate the amount of blood loss. Finally, the limitation was the usage of oxytocin regimens and other uterotonic drugs. In a trial by Movafegh et al,^[15] patients received 30 units oxytocin during the first 8 hours postoperatively followed by 10 units of oxytocin in the case of uterine atony. Gohel Mayur et al^[11] described that patients received 10 units oxytocin followed by 0.4 mg methylergometrine, whereas

Study or Subgroup	Mean	nexamic SD	Total	Mean	ontrol SD	Total	Weight	Mean Difference IV, Random, 95% Cl	Mean Difference IV, Random, 95% CI
Caesarean sectio								200 00 / 200 0	
Abdel-Aleem 2013	241.61		373		144.52	367	6.1%	-269.09 [-288.64, -249.54]	
Ahmed 2014 Gai 2004	391 359.29	48.5	62 91	596.7 439.36	38.02 191.48	62 89	6.2% 5.2%	-205.70 [-221.04, -190.36]	
Gungorduk 2011	499.9	206.4	330	600.7	215.7	330	5.8%	-80.07 [-130.65, -29.49] -100.80 [-133.01, -68.59	
Halder 2013	990	90.91	50	1,004	104.72	50	5.6%	-14.00 [-52.44, 24.44	
Maged 2015	459.4	75.4	100	700.3	143.9	100	5.8%	-240.90 [-272.74, -209.06]	
Mayur 2007	374.92	51.46		472.79	43.54	50	6.1%	-97.87 [-116.55, -79.19]	
Nergis 2014	260	17.23	60	481	12.06	60	6.3%	-221.00 [-226.32, -215.68	
Poonia 2012	166.5	24.72		378.48	23.75	50	6.3%	-211.98 [-221.48, -202.48]	
Ramani 2014	222.07	97.02	60	274.5	179.2	60	5.1%	-52.43 [-103.99, -0.87]	
Rashmi 2010	377.8	56.7	50	488.5	59.3	50	6.0%	-110.70 [-133.44, -87.96]	
Senturk 2013	272.05 270.05	143.23		346.87 510.45	189.49 30.34	122	5.4%	-74.82 [-118.53, -31.11	
Singh 2014 Xu 2013	379.2	30.88	88	441.7	30.34	86	6.3% 5.1%	-240.40 [-248.88, -231.92] -62.50 [-114.68, -10.32]	
Yehia 2014	454.5	201	106	737.6	217	106	5.0%	-283.10 [-339.41, -226.79]	
Subtotal (95% CI)	131.3		1671			1682		-154.25 [-182.04, -126.47]	
Heterogeneity: $Tau^2 = 2$ Test for overall effect: Z				if = 14 (i	P < 0.000	001); l ²	= 98%		2 (25)
Vaginal delivery									
Gungorduk 2013	261.5	146.8	220	349.98	188.85	219	5.8%	-88.48 [-120.13, -56.83]	
Mirghafourvand 2015	518.9	319.6	60	659.3	402.5	60	2.6%	-140.40 [-270.45, -10.35]	
Yang 2001	243.3	106.3	94	314.8	180.9	87	5.4%	-71.50 [-115.1727.83	
Subtotal (95% CI)			374			366	13.8%	-84.79 [-109.93, -59.65]	•
Heterogeneity: Tau ² = 0 Test for overall effect: Z				P = 0.57); $1^2 = 09$	6			
Total (95% CI)	045 10.	Ch.2 - 61	2045	6-17/	< 0.000			-145.32 [-172.47, -118.17]	and the second sec
Heterogeneity: Tau ² = 3 Test for overall effect: Z Test for subgroup differ	= 10.49	(P < 0.00	0001)						-200 -100 Ó 100 200 Tranexamic acid Control
and a same out and		examic a			ontrol	- 26.		Mean Difference	Mean Difference
Study or Subgroup Caesarean sectio	Mean		Total	Mean		Total	Weight	IV, Random, 95% CI	IV, Random, 95% CI
Abdel-Aleem 2013	203.91	113.5	373	418.26	121.79	367	6.5%	-214.35 [-231.32, -197.38]	
Ahmed 2014	322.4	44.7	62	513.5	36.4	62	6.5%	-191.10 [-205.45, -176.75]	
Gai 2004	322.26		91	358.34		89	6.2%	-36.08 [-79.36, 7.20]	A
Ghosh 2014	367.8	36.77	70	627.8	95.15	70		-260.00 [-283.90, -236.10]	
Gobbur 2014	289.4	71.4	50	328.4	58.9	50	6.4%	-39.00 [-64.66, -13.34]	
Goswami 2013	319	74.08	60		88.666	30		-208.17 [-245.02, -171.32]	
Mayur 2007	299.21	31.44	50	339.76	28.86	50	6.6%	-40.55 [-52.38, -28.72]	
	262.5	39.6	50	404.7	94.4	50			
Movafegh 2011 Ramani 2014	190.7		60	230	176.1	60	6.0%	-142.20 [-170.57, -113.83] -39.30 [-90.59, 11.99]	
Rashmi 2014	310.5	58.2	50	335.3	54.9	50	6.5%		
Shahid 2013	356.44	143.2		710.22		36		-24.80 [-46.98, -2.62] -353.78 [-437.95, -269.61]	+
Singh 2014	202.25	29.24	100	392.2	24.31	100			
			88			86	6.6%	-189.95 [-197.40, -182.50]	0
Xu 2013 Yehia 2014	336.7	151.2	106	368.5	156.4	106		-31.80 [-77.52, 13.92]	T
Yehia 2014 Subtotal (95% CI)	369.5	198	106	606.8	193	106		-237.30 [-289.94, -184.66] -141.25 [-186.72, -95.79]	-
Heterogeneity: $Tau^2 = 7$ Test for overall effect: 2			14.50, 0	if = 13 (I	e < 0.000			111129 [10012 [9513]	
Vaginal delivery									
Mirghafourvand 2015	241.3	171.5	60	264.1	215.8	60	5.6%	-22.80 [-92.55, 46.95]	
migharourvanu 2015		05 4	94	136.5	117.5	87	6.4%	-22.90 [-53.03, 7.23]	
Yang 2001	113.6	85.4				147	12.0%	-22.88 [-50.54, 4.77]	•
	113.6	85.4	154						
Yang 2001 Subtotal (95% CI) Heterogeneity: Tau ² = 0	0.00; Chi ²	= 0.00,	154 df = 1	(P = 1.00)); $1^2 = 09$	6			
Yang 2001 Subtotal (95% CI) Heterogeneity: Tau ² = 0 Test for overall effect: 2	0.00; Chi ²	= 0.00,	154 df = 1	(P = 1.00); $1^2 = 09$		1025		
Yang 2001 Subtotal (95% Cl) Heterogeneity: Tau ² = 0 Test for overall effect: 2 Total (95% Cl)	0.00; Chi ² 2 = 1.62 ()	= 0.00, P = 0.10)	154 df = 1) 1402			1353		-127.07 [-170.47, -83.67]	
Yang 2001 Subtotal (95% CI) Heterogeneity: Tau ² = 0 Test for overall effect: 2 Total (95% CI) Heterogeneity: Tau ² = 7 Test for overall effect: 2	$2.00; Chi^2$ 2 = 1.62 (0) 7436.70; 0 2 = 5.74 (0)	= 0.00, P = 0.10) Chi ² = 99 P < 0.000	154 df = 1 () 1402 95.09, c 001)	if = 15 (i	° < 0.000	1353 001); I ²	= 98%	-127.07 [-170.47, -83.67]	-200 -100 0 100 200 Tranexamic Control
Yang 2001 Subtotal (95% Cl) Heterogeneity: Tau ² = 0 Test for overall effect: 2 Total (95% Cl) Heterogeneity: Tau ² = 2	0.00; Chi ² Z = 1.62 (f 7436.70; C Z = 5.74 (f rences: Ch	= 0.00, P = 0.10) Chi ² = 99 P < 0.000 hi ² = 19.0	154 df = 1 1402 95.09, d 001) 00, df =	if = 15 (I = 1 (P < (? < 0.000).0001).	1353 001); I ²	= 98%		Tranexamic Control
Yang 2001. Subtotal (95% CI) Heterogeneity: Tau ² = (Total (95% CI) Heterogeneity: Tau ² = 2 Total (95% CI) Heterogeneity: Tau ² = 2 Test for overall effect: 2 Test for subgroup differ Study or Subgroup	0.00; Chi ² 2 = 1.62 (f 7436.70; G 2 = 5.74 (f rences: Ch Tran Mean	= 0.00, P = 0.10 $Chi^2 = 99$ P < 0.000 $hi^2 = 19.0$ examic	154 df = 1 1402 95.09, d 001) 00, df =	if = 15 (I = 1 (P < (9 < 0.000 0.0001), Control	1353 001); I ² I ² = 94.	= 98%	Mean Difference	
Yang 2001. Subtoal (95% CI) Heterogeneity: Tau ² = C Test for overall effect: 2 Total (95% CI) Heterogeneity: Tau ² = 7 Test for overall effect: 2 Test for subgroup differ Study or Subgroup Caesarean sect	0.00; Chi ² 2 = 1.62 (l 7436.70; C 2 = 5.74 (l rences: Ch Tran <u>Mean</u> ion	= 0.00, P = 0.10) Chi ² = 99 P < 0.000 hi ² = 19, examic SD	154 df = 1) 1402 95.09, c 001) 00, df = acid Total	if = 15 (i = 1 (P < ((Mean	e < 0.000 0.0001). Control	1353 101); I^2 $I^2 = 94$. Total	= 98% 7% Weight	Mean Difference IV, Random, 95% CI	Tranexamic Control Mean Difference
Yang 2001 Subtotal (95% CI) Heterogeneity: Tau ² = (Total (95% CI) Heterogeneity: Tau ² = 2 Total (95% CI) Heterogeneity: Tau ² = 2 Test for overall effect: 2 Test for overall effect: 2 Study or Subgroup differ Caesarean sect Abdel-Aleem 2013	0.00; Chi ² 2 = 1.62 (f 7436.70; G 2 = 5.74 (f rences: Cl Tran <u>Mean</u> ion 33.79	= 0.00, P = 0.10) Chi ² = 99 P < 0.000 hi ² = 19. examic SD + 21.05	154 df = 1 () 1402 95.09, c 001) 00, df = acid Total 373	if = 15 (i = 1 (P < 0 Mean 82.62	 2 < 0.000 0.0001). Control SD 34.5 	1353 $(01); ^2$ $ ^2 = 94.$ Total 367	= 98% 7% <u>Weight</u> 6.9%	Mean Difference IV, Random, 95% CI -48.83 [-52.96, -44.70]	Tranexamic Control Mean Difference
Yang 2001 Subtotal (95% Cl) Heterogeneity: Tau ² = (Test for overall effect: 2 Total (95% Cl) Heterogeneity: Tau ² = 2 Test for overall effect: 2 Test for subgroup differ Study or Subgroup Caesarean sect Abdel-Aleem 2013 "med 2014	0.00; Chi ² 2 = 1.62 (l 7436.70; C 2 = 5.74 (l rences: Cl Tran Mean ion 33.79 68.6	= 0.00, P = 0.10; $Chi^2 = 99$ P < 0.000; $hi^2 = 19$, examic SD 21.05 i 12.4	154 df = 1 () 1402 95.09, c 001) 00, df = acid Total 373 62	if = 15 (I = 1 (P < (Mean 82.62 83.2	 < 0.000 0.0001). Control SD 34.5 12.7 	1353 $(1); 1^2$ $1^2 = 94.$ Total 367 62	= 98% 7% Weight 6.9% 6.9%	Mean Difference IV, Random, 95% CI -48.83 [-52.96, -44.70] -14.60 [-19.02, -10.18]	Tranexamic Control Mean Difference
Yang 2001 Subtoal (95% Cl) Heterogeneity: Tau ² = (Tost for overall effect: 2 Tostal (95% Cl) Heterogeneity: Tau ² = 7 Test for overall effect: 2 Test for subgroup differ Study or Subgroup Caesarean sect Abdel-Aleem 2013 `med 2014 1 2004	0.00; Chi ² 2 = 1.62 (f 7436.70; f 2 = 5.74 (f rences: Ch Tran <u>Mean</u> 33.79 68.6 42.75	= 0.00, P = 0.10; $Chi^2 = 99$ P < 0.000; $hi^2 = 19$, examic SD 21.05 12.4 40.45	154 df = 1 () 1402 95.09, c 001) 00, df = acid Total 373 62 91	if = 15 (i = 1 (P < 0 Mear 82.62 83.2 74.25	2 < 0.000 0.0001), Control 5D 34.5 12.7 77.06	1353 001); 1 ² 1 ² = 94. Total 367 62 89	= 98% 7% Weight 6.9% 6.9% 5.6%	Mean Difference IV, Random, 95% CI -48.83 [-52.96, -44.70] 14.60 [-19.02, -10.18] -31.50 [-49.54, -13.46]	Tranexamic Control Mean Difference
Yang 2001 Subtotal (95% CI) Heterogeneity: Tau ² = (Total (95% CI) Heterogeneity: Tau ² = 3 Total (95% CI) Heterogeneity: Tau ² = 3 Test for overall effect: 2 Test for subgroup differ Study or Subgroup Gaseraan sect Abdel-Aleem 2013 'med 2014 i 2004 Chosh 2014	0.00; Chi ² 2 = 1.62 (l 7436.70; (c 2 = 5.74 (l rences: Cl Tran <u>Mean</u> 33.79 68.6 42.75 48.06	= 0.00, P = 0.10; Chi ² = 99 P < 0.000 hi ² = 19. SD 21.05 12.4 40.45 8.202	154 df = 1 () 1402 95.09, c 001) 00, df = acid Total 373 62 91 70	lf = 15 (l = 1 (P < (Mear 82.62 83.2 74.25 76.02	 2 < 0.000 0.0001), Control SD 34.5 12.7 77.06 6.209 	1353 001); 1 ² 1 ² = 94. Total 367 62 89 70	= 98% 7% Weight 6.9% 6.9% 5.6% 7.0%	Mean Difference IV, Random, 95% CI -48.83 (-52.96, -44.70) -14.60 (-19.02, -10.18) -31.50 (-49.54, -13.46) -27.96 (-30.37, -25.55)	Tranexamic Control Mean Difference
Yang 2001 Subtotal (95% CI) Heterogeneity: Tau ² = (Test for overall effect: 2 Total (95% CI) Heterogeneity: Tau ² = 5 Test for overall effect: 2 Test for overall effect: 2 Test for subgroup differ Study or Subgroup Caesarean sect Abdel-Aleem 2013 "med 2014 i 2004 Chosh 2014 Gobbur 2014	0.00; Chi ² 2 = 1.62 (l 7436.70; 6 2 = 5.74 (l rences: Cl Tran Mean 33.79 68.6 42.75 48.06 71.5	= 0.00, P = 0.10) Chi ² = 99 P < 0.000 hi ² = 19, sexamic : 5D 21.05 12.4 40.45 8.202 53.6	154 df = 1) 1402 (001) 00, df = acid Total 373 62 91 70 50	If = 15 () = 1 (P < () Mean 82.62 83.2 74.25 76.02 112.6	2 < 0.000 0.0001), Control 5D 34.5 12.7 77.06 6.209 51.7	1353 $(201); ^2$ $ ^2 = 94.$ Total 367 62 89 70 50	= 98% 7% Weight 6.9% 6.9% 5.6% 7.0% 5.3%	Mean Difference IV, Random, 95% CI -48.83 [-52.96, -44.70] -14.60 [-19.02, -10.18] -31.50 [-49.54, -13.46] -27.96 [-30.37, -25.55] -41.10 [-61.74, -20.46]	Tranexamic Control Mean Difference
Yang 2001 Subtotal (95% CI) Heterogeneity: Tau ² = (Total (95% CI) Heterogeneity: Tau ² = 7 Test for overall effect: 2 Test for subgroup Caesarean sect Abdel-Aleem 2013 'med 2014 i 2004 Chosh 2014 Gobbur 2014 Mayur 2007	0.00; Chi ² Z = 1.62 (l 7436.70; C Z = 5.74 (l rences: Cl Mean 33.79 68.6 42.75 48.06 71.5; 75.71	= 0.00, P = 0.10) Chi ² = 99 P < 0.000 hi ² = 19, examic 5D 21.05 12.4 40.45 8.202 53.6 20.02	154 df = 1 1402 95.09, c 001) 00, df = acid Total 373 62 91 70 50 50	ff = 15 (f = 1 (P < (Mean 82.62 83.2 74.25 76.02 112.6 133.03	2 < 0.000 0.0001), Control 34.5 12.7 77.06 6.209 51.7 14.68	1353 201); 1 ² 1 ² = 94. Total 367 62 89 70 50 50	= 98% 7% Weight 6.9% 5.6% 7.0% 5.3% 6.7%	Mean Difference IV, Random, 95% CI -48.83 [-52.96, -44.70] -14.60 [-19.02, -10.18] -31.50 [-49.54, -13.46] -27.96 [-30.37, -25.55] -41.10 [-61.74, -20.46] -57.32 [-64.20, -50.44]	Tranexamic Control Mean Difference
Yang 2001 Subtotal (95% Cl) Heterogeneity: Tau ² = (Test for overall effect: 2 Total (95% Cl) Heterogeneity: Tau ² = 2 Test for overall effect: 2 Test for overall effect: 2 Test for subgroup differ Study or Subgroup Caesarean sect Abdel-Aleem 2013 "med 2014 i 2004 (Mosh 2014 Gobbur 2014 Mayur 2007 Movafegh 2011	0.00; Chi ² Z = 1.62 (l 7436.70; t Z = 5.74 (l rences: Cl Tran Mean 33.79 68.6 42.75 48.06 71.5 75.71 67.1	= 0.00, P = 0.10) Chi ² = 99 P < 0.000 hi ² = 19. examic 5D 21.05 12.4 40.45 8.202 53.6 20.02 6.5	154 df = 1) 1402 (001) 00, df = acid Total 373 62 91 70 50	ff = 15 (f = 1 (P < 0 Mean 82.62 83.2 74.25 76.02 112.6 133.03 141	2 < 0.000 0.0001), 5D 34.5 12.7 77.06 6.209 51.7 14.68 33.9	1353 201); 1 ² 1 ² = 94. Total 367 62 89 70 50 50 50	= 98% 7% Weight 6.9% 5.6% 7.0% 5.3% 6.7%	Mean Difference IV, Random, 95% CI -48.83 [-52.96, -44.70] -14.60 [-19.02, -10.18] -31.50 [-49.54, -13.46] -27.96 [-30.37, -25.55] -41.10 [-61.74, -20.46] -57.32 [-64.20, -50.44] -73.90 [-83.47, -64.33]	Tranexamic Control Mean Difference
Yang 2001 Subtoal (95% CI) Heterogeneity: Tau ² = (Test for overall effect: 2 Total (95% CI) Heterogeneity: Tau ² = 7 Test for overall effect: 2 Test for subgroup differ Study or Subgroup Caesarean sect Abdel-Aleem 2013 `med 2014 i 2004 Chosh 2014 Gobbur 2014 Mayur 2007 Movafegh 2011 Ramani 2014	0.00; Chi ² Z = 1.62 (l 7436.70; C Z = 5.74 (l rences: Cl Mean 33.79 68.6 42.75 48.06 71.5; 75.71	= 0.00, P = 0.10) Chi ² = 99 P < 0.000 hi ² = 19. examic 5D 21.05 12.4 40.45 8.202 53.6 20.02 6.5	154 df = 1 1402 95.09, c 001) 00, df = acid Total 373 62 91 70 50 50	ff = 15 (f = 1 (P < 0 Mean 82.62 83.2 74.25 76.02 112.6 133.03 141	2 < 0.000 0.0001), 5D 34.5 12.7 77.06 6.209 51.7 14.68 33.9 27.8	1353 201); 1 ² 1 ² = 94. Total 367 62 89 70 50 50	= 98% 7% Weight 6.9% 5.6% 7.0% 5.3% 6.7%	Mean Difference IV, Random, 95% CI -48.83 [-52.96, -44.70] -14.60 [-19.02, -10.18] -31.50 [-49.54, -13.46] -27.96 [-30.37, -25.55] -41.10 [-61.74, -20.46] -57.32 [-64.20, -50.44] -73.90 [-83.47, -64.33]	Tranexamic Control Mean Difference
Yang 2001 Subtotal (95% Cl) Heterogeneity: Tau ² = (Test for overall effect: 2 Total (95% Cl) Heterogeneity: Tau ² = 2 Test for overall effect: 2 Test for overall effect: 2 Test for subgroup differ Study or Subgroup Caesarean sect Abdel-Aleem 2013 "med 2014 i 2004 (Mosh 2014 Gobbur 2014 Mayur 2007 Movafegh 2011	0.00; Chi ² Z = 1.62 (l 7436.70; t Z = 5.74 (l rences: Cl Tran Mean 33.79 68.6 42.75 48.06 71.5 75.71 67.1	= 0.00, P = 0.10) Chi ² = 99 P < 0.000 hi ² = 19. examic SD 21.05 12.4 40.45 8.202 53.6 20.02 6.5 31.6	154 df = 1 9 95.09, c 001) 00, df = acid Total 373 62 91 700 50 50 50	if = 15 (0 = 1 (P < 0 Mean 82.62 83.2 74.25 76.02 112.6 133.03 141 44.07	2 < 0.000 0.0001), 5D 34.5 12.7 77.06 6.209 51.7 14.68 33.9 27.8	1353 201); 1 ² 1 ² = 94. Total 367 62 89 70 50 50 50	= 98% 7% Weight 6.9% 6.9% 5.6% 7.0% 5.3% 6.7% 6.5%	Mean Difference IV, Random, 95% CI -48.83 [-52.96, -44.70] -14.60 [-19.02, -10.18] -31.50 [-49.54, -13.46] -27.96 [-30.37, -25.55] -41.10 [-61.74, -20.46] -57.32 [-64.20, -50.44] -73.90 [-83.47, -64.33] -12.87 [-23.52, -2.22]	Tranexamic Control Mean Difference
Yang 2001 Subtoal (95% CI) Heterogeneity: Tau ² = (Test for overall effect: 2 Total (95% CI) Heterogeneity: Tau ² = 7 Test for overall effect: 2 Test for subgroup differ Study or Subgroup Caesarean sect Abdel-Aleem 2013 `med 2014 i 2004 Chosh 2014 Gobbur 2014 Mayur 2007 Movafegh 2011 Ramani 2014	0.00; Chi ² Z = 1.62 (f 7436.70; C Z = 5.74 (f rences: Cl Tran Mean 33.79 68.6 42.75 48.06 71.5 75.71 67.1 31.2	= 0.00, P = 0.10) Chi ² = 99 P < 0.000 hi ² = 19, SD 21.05 12.4 40.45 8.202 53.6 20.02 6.5 31.6 26.3	154 df = 1) 1402 05.09, c 001) 00, df = acid Total 373 62 91 70 50 50 50 50 60	if = 15 (0 = 1 (P < 0 Mean 82.62 83.2 74.25 76.02 112.6 133.03 141 44.07	2 < 0.000 0.0001), 5D 34.5 12.7 77.06 6.209 51.7 14.68 3.99 27.8 19.5	1353 001); 1 ² 1 ² = 94. Total 367 62 89 70 50 50 50 60	= 98% 7% Weight 6.9% 6.9% 5.6% 7.0% 5.3% 6.7% 6.5% 6.4%	Mean Difference IV, Random, 95% CI -48.83 [-52.96, -44.70] -14.60 [-19.02, -10.18] -31.50 [-49.54, -13.46] -77.96 [-30.37, -25.55] -41.10 [-61.74, -20.46] -57.32 [-64.20, -50.44] -73.90 [-83.47, -64.33] -12.87 [-23.52, -2.22] -56.20 [-65.28, -47.12]	Tranexamic Control Mean Difference
Yang 2001 Subtotal (95% CI) Heterogeneity: Tau ² = (Total (95% CI) Heterogeneity: Tau ² = 7 Tots for overall effect: 2 Test for overall effect: 2 Test for subgroup Caesarean sect Abdel-Aleem 2013 "med 2014 Li 2004 Chosh 2014 Chosh 2014 Chosh 2014 Mayur 2007 Movafegh 2011 Ramani 2014 Rashmi 2010	0.00; Chi ² Z = 1.62 ((7436.70; 6 Z = 5.74 ((rences: Cl Tran Mean 33.79 68.6 42.75 48.06 71.5 75.71 67.1 31.2 86.5 28.02	= 0.00, P = 0.10) Chi ² = 99 P < 0.000 hi ² = 19, SD 21.05 12.4 40.45 8.202 53.6 20.02 6.5 31.6 26.3	154 df = 1) 1402 05.09, c 001) 00, df = acid Total 373 62 91 70 50 50 50 50 50 50	If = 15 ((= 1 (P < (Mear 82.62 83.2 76.02 112.6 133.03 141 44.07 142.7 37.1	2 < 0.000 0.0001), 5D 34.5 12.7 77.06 6.209 51.7 14.68 3.99 27.8 19.5	1353 001); 1 ² 1 ² = 94. Total 367 62 89 70 50 50 50 50 50 50 50	= 98% 7% Weight 6.9% 6.9% 5.6% 7.0% 5.3% 6.7% 6.5% 6.6%	Mean Difference IV, Random, 95% CI -48.83 [-52.96, -44.70] -14.60 [-19.02, -10.18] -31.50 [-49.54, -13.46] -27.96 [-30.37, -25.55] -41.10 [-61.74, -20.46] -57.32 [-64.20, -50.44] -73.90 [-83.47, -64.33] -12.87 [-23.52, -22.2] -56.20 [-65.28, -47.12] -9.08 [-12.16, -6.00]	Tranexamic Control Mean Difference
Yang 2001 Subtoal (95% Cl) Heterogeneity: Tau ² = (Test for overall effect: 2 Total (95% Cl) Heterogeneity: Tau ² = 5 Test for overall effect: 2 Test for subgroup differ Study or Subgroup Caesarean sect Abdel-Aleem 2013 'med 2014 i 2004 Gobbur 2014 Gobbur 2014 Gobbur 2014 Mayur 2007 Movafegh 2011 Ramani 2014 Rashmi 2010 Sekhavat 2009	0.00; Chi ² Z = 1.62 ((7436.70; 6 Z = 5.74 ((rences: Cl Tran Mean 33.79 68.6 42.75 48.06 71.5 75.71 67.1 31.2 86.5 28.02	= 0.00, P = 0.10) Chi ² = 99 P < 0.000 hi ² = 19. SD 21.05 12.4 40.45 8.202 53.6 20.02 53.6 20.02 53.6 20.02 53.5 31.6 26.3 5.5 23.29	154 df = 1 ()) 1402 95.09, (001) 00, df = acid Total 373 62 91 70 50 50 50 60 50 45 38	If = 15 ((= 1 (P < (Mear 82.62 83.2 76.02 112.6 133.03 141 44.07 142.7 37.1	 < 0.000 0.0001). Control SD 34.5 12.7 77.06 6.209 51.7 14.68 33.9 27.8 19.5 9 28.04 	1353 001); l ² l ² = 94. Total 3 67 62 89 70 50 50 50 60 50 60 50 60 50 60 50 60 50 60 50 60 50 60 50 60 50 60 50 60 50 60 50 60 50 60 50 60 50 60 50 60 50 50 60 50 60 50 50 50 50 50 50 50 50 50 5	= 98% 7% Weight 6.9% 5.6% 7.0% 5.3% 6.7% 6.5% 6.5% 6.9%	Mean Difference IV, Random, 95% CI -48.83 [-52.96, -44.70] -14.60 [-19.02, -10.18] -31.50 [-49.54, -13.46] -27.96 [-30.37, -25.55] -41.10 [-61.74, -20.46] -57.32 [-64.20, -50.44] -73.90 [-83.47, -64.33] -12.87 [-23.52, -2.22] -56.20 [-65.28, -47.12] -9.08 [-12.16, -6.00] -7.95 [-19.73, 3.83]	Tranexamic Control Mean Difference
Yang 2001. Subtotal (95% CI) Heterogeneity: Tau ² = (Test for overall effect: 2 Total (95% CI) Heterogeneity: Tau ² = 7 Test for overall effect: 2 Test for subgroup Caesarean sect Abdel-Aleem 2013 'med 2014 i 2004 Chosh 2014 Gobbur 2014 Gobbur 2014 Mayur 2007 Movafegh 2011 Ramani 2014 Rashmi 2010 Sekhavat 2009 Shahid 2013	0.00; Chi ² 2 = 1.62 ((7436.70; (2 = 5.74 ((rences: Cl Tran Mean ion 33.79 68.6 42.75 48.06 71.5 75.71 67.1 31.2 86.5 28.02 35.68	= 0.00, P = 0.10; Chi ² = 99 P < 0.000 hi ² = 19, examic 5D 21.05 12.4 40.45 8.2002 53.6 20.02 6.5 31.6 26.3 5.5 23.29 23.29 11.85	154 df = 1 ()) 1402 95.09, (001) 00, df = acid Total 373 62 91 70 50 50 50 60 50 45 38	df = 15 ((2 < 0.000 0.0001). Control 34.5 12.7 77.06 6.209 51.7 14.68 33.9 27.8 19.5 9 28.04 18.52 	1353 001); l ² l ² = 94. Total 367 62 89 70 50 50 50 60 50 45 36	= 98% 7% Weight 6.9% 6.9% 5.6% 7.0% 5.3% 6.7% 6.5% 6.4% 6.6% 6.9% 6.9%	Mean Difference IV, Random, 95% CI -48.83 [-52.96, -44.70] -14.60 [-19.02, -10.18] -31.50 [-49.54, -13.46] -27.96 [-30.37, -25.55] -41.10 [-61.74, -20.46] -57.32 [-64.20, -50.44] -57.32 [-64.20, -50.44] -57.39 [-83.47, -64.33] -12.87 [-23.52, -2.22] -9.08 [-12.16, -6.00] -7.95 [-19.73, 3.83] -45.45 [-49.76, -41.14]	Tranexamic Control Mean Difference
Yang 2001 Subtotal (95% Cl) Heterogeneity: Tau ² = (Test for overall effect: 2 Total (95% Cl) Heterogeneity: Tau ² = 2 Test for overall effect: 2 Test for overall effect: 2 Test for subgroup differ Study or Subgroup Caesarean sect Abdel-Aleem 2013 "med 2014 i 2004 (Mosh 2014 Gobbur 2014 Gobbur 2014 Gobbur 2014 Mayur 2007 Movafegh 2011 Ramani 2014 Rashmi 2010 Sekhavat 2009 Shahid 2013 Singh 2014	0.00; Chi ² 2 = 1.62 ((7436.70; 0 2 = 5.74 ((rences: Cl Tran Mean ion 33.79 68.66 42.75 48.06 71.5 75.71 67.1 31.2 86.5 28.02 35.68 66.8	= 0.00, P = 0.10; P = 0.10; P < 0.000 hi ² = 19, examic 5D 21.05; 12.4 40.45; 8.202 6.5; 31.6; 26.5; 31.6; 25.5; 23.29; 11.85; 42.7;	154 df = 1) 1402 55.09, c 001) 000, df = acid Total 373 62 91 70 50 50 50 50 50 60 50 50 838 8100	df = 15 ((= 1 (P < (Mean 82.62 83.2 74.25 76.02 112.6 133.03 141 44.07 142.7 37.1 43.63 112.25 84.7	2 < 0.000 0.0001), Control 34.5 12.7 77.06 6.209 51.7 14.68 33.9 27.8 19.5 9 28.04 18.52 80.2	1353 201); 1 ² 1 ² = 94. Total 367 62 89 70 50 50 50 60 50 45 366 100	= 98% 7% Weight 6.9% 6.9% 5.6% 7.0% 5.3% 6.7% 6.5% 6.4% 6.6% 6.9% 6.9%	Mean Difference IV, Random, 95% CI -48.83 [-52.96, -44.70] -14.60 [-19.02, -10.18] -31.50 [-49.54, -13.46] -27.96 [-30.37, -25.55] -41.10 [-61.74, -20.46] -57.32 [-64.20, -50.44] -73.90 [-83.47, -64.33] -12.87 [-23.52, -2.22] -56.20 [-55.28, -47.12] -9.08 [-12.16, -6.00] -7.95 [-19.73, 3.83] -45.45 [-49.76, -41.14] -38.10 [-57.25, -18.95]	Tranexamic Control Mean Difference
Yang 2001 Subtoal (95% CI) Heterogeneity: Tau ² = (Test for overall effect: 2 Total (95% CI) Heterogeneity: Tau ² = ; Test for overall effect: 2 Test for subgroup differ Study or Subgroup Caesarean sect Abdel-Aleem 2013 `med 2014 Cobbur 2014 Gobbur 2014 Gobbur 2014 Mayar 2007 Movafegh 2011 Ramani 2014 Rashmi 2010 Sekhavat 2009 Shahid 2013 Singh 2014 Xu 2013	0.00; Chi ² 2 = 1.62 ((7436.70; 6 2 = 5.74 ((rences: Cl Tran Mean 33.79 68.6 42.75 48.06 71.5 75.71 31.2 86.5 28.02 35.68 66.8 46.6	= 0.00, P = 0.10; Chi ² = 99 P < 0.000 hi ² = 19, examic 5D 21.05 12.4 40.45 8.202 6.5 31.6 20.02 6.5 31.6 3.5 5 23.29 11.85 42.7	154 df = 1) 1402 205.09, c 0001) 000, df = acid 373 62 91 373 62 91 700 500 500 500 500 500 500 88 800 800 88	df = 15 ((= 1 (P < (Mean 82.62 83.2 74.25 76.02 112.6 133.03 141 44.07 142.7 37.1 43.63 112.25 84.7	2 < 0.000 0.0001), Control 34.5 12.7 77.06 6.209 51.7 14.68 33.9 27.8 19.5 9 28.04 18.52 80.2	1353 201); 1 ² 1 ² = 94. Total 367 62 89 70 50 50 50 50 50 50 50 50 50 5	= 98% 7% Weight 6.9% 6.9% 5.6% 7.0% 5.3% 6.7% 6.7% 6.6% 6.9% 6.3% 6.9% 5.4% 6.9%	Mean Difference IV, Random, 95% CI -48.83 [-52.96, -44.70] -14.60 [-19.02, -10.18] -31.50 [-49.54, -13.46] -27.96 [-30.37, -25.55] -41.10 [-61.74, -20.46] -57.32 [-64.20, -50.44] -73.90 [-83.47, -64.33] -12.87 [-23.52, -2.22] -56.20 [-55.28, -47.12] -9.08 [-12.16, -6.00] -7.95 [-19.73, 3.83] -45.45 [-49.76, -41.14] -38.10 [-57.25, -18.95]	Tranexamic Control Mean Difference
Yang 2001 Subtotal (95% Cl) Heterogeneity: Tau ² = (Test for overall effect: 2 Total (95% Cl) Heterogeneity: Tau ² = 5 Test for overall effect: 2 Test for overall effect: 2 Test for subgroup differ Study or Subgroup Caesarean sect Abdel-Aleem 2013 'med 2014 i 2004 Chosh 2014 Gobbur 2014 Gobbur 2014 Gobbur 2014 Rashmi 2014 Rashmi 2010 Sekhavat 2009 Shahid 2013 Singh 2014 Xu 2013 Yeehia 2014	0.00; Chi ² 2 = 1.62 (l 7436.70; 6 2 = 5.74 (l rences: Cl Tran Mean Mean 33.79 68.6 48.06 71.5 75.71 67.1 31.2 86.5 28.02 35.68 66.8 46.6 85 = 340.34;	$= 0.00, P = 0.10, Chi^2 = 99 P < 0.00 hi^2 = 19, or constant of the second state of $	154 df = 1 1402 55.09, cc 0001) 000, df = acid Total 373 62 91 700 50 50 50 50 50 50 50 50 88 100 88 8106 1233 562.18,	ff = 15 (0 = 1 (P < 0 Mean 82.62 83.2 74.25 76.02 112.6 133.03 141 44.07 142.7 37.1 43.63 112.25 84.7 130.8 df = 13	2 < 0.000 0.0001), Control 34.5 12.7 77.06 6.209 51.7 14.68 33.9 27.8 19.5 9 28.04 18.52 80.2 49.3	1353 2011): ² Total 367 62 89 70 50 50 50 50 60 50 50 60 100 86 100 86 100 1221	= 98% 7% Weight 6.9% 6.9% 5.6% 7.0% 5.3% 6.7% 6.4% 6.6% 6.9% 6.9% 5.4% 6.9% 5.4% 89.9%	Mean Difference IV, Random, 95% CI -48.83 [-52.96, -44.70] -14.60 [-19.02, -10.18] -31.50 [-49.54, -13.46] -27.96 [-30.37, -25.55] -41.10 [-61.74, -20.46] -57.32 [-64.20, -50.44] -73.90 [-83.47, -64.33] -12.87 [-23.52, -2.22] -9.08 [-12.16, -6.00] -7.95 [-19.73, 3.83] -45.54 [-49.76, -41.14] -38.10 [-57.25, -18.95] -45.80 [-56.86, -34.74] -36.42 [-46.50, -26.34]	Tranexamic Control Mean Difference
Yang 2001 Subtotal (95% CI) Heterogeneity: Tau ² = (Total (95% CI) Heterogeneity: Tau ² = 7 Test for overall effect: 2 Test for overall effect: 2 Test for subgroup differ Study or Subgroup Caesarean sect Abdel-Aleem 2013 '-med 2014 i 2004 Chosh 2014 Gobbur 2014 Gobbur 2014 Gobbur 2014 Mayar 2007 Movafegh 2011 Ramani 2014 Rashmi 2010 Sekhavat 2009 Shahid 2013 Singh 2014 Xu 2013 Yehia 2014 Subtotal (95% CI) Heterogeneity: Tau ² = Test for overall effect:	0.00; Chi ² Z = 1.62 (1 7436.70; c z = 5.74 (0 rences: Ch Tran Mean 33.79 68.6 42.75 48.06 71.5; 75.71 67.1 31.2 86.5 28.02 35.68 66.8 46.6 85 • • • • • • • • • • • • •	$= 0.00, P = 0.10, Chi^2 = 99 P < 0.00 hi^2 = 19, or constant of the second state of $	154 df = 1 1402 55.09, cc 0001) 000, df = acid Total 373 62 91 700 50 50 50 50 50 50 50 50 88 100 88 8106 1233 562.18,	ff = 15 (0 = 1 (P < 0 Mean 82.62 83.2 74.25 76.02 112.6 133.03 141 44.07 142.7 37.1 43.63 112.25 84.7 130.8 df = 13	2 < 0.000 0.0001), Control 34.5 12.7 77.06 6.209 51.7 14.68 33.9 27.8 19.5 9 28.04 18.52 80.2 49.3	1353 2011): ² Total 367 62 89 70 50 50 50 50 60 50 50 60 100 86 100 86 100 1221	= 98% 7% Weight 6.9% 6.9% 5.6% 7.0% 5.3% 6.7% 6.4% 6.6% 6.9% 6.9% 5.4% 6.9% 5.4% 89.9%	Mean Difference IV, Random, 95% CI -48.83 [-52.96, -44.70] -14.60 [-19.02, -10.18] -31.50 [-49.54, -13.46] -27.96 [-30.37, -25.55] -41.10 [-61.74, -20.46] -57.32 [-64.20, -50.44] -73.90 [-83.47, -64.33] -12.87 [-23.52, -2.22] -9.08 [-12.16, -6.00] -7.95 [-19.73, 3.83] -45.54 [-49.76, -41.14] -38.10 [-57.25, -18.95] -45.80 [-56.86, -34.74] -36.42 [-46.50, -26.34]	Tranexamic Control Mean Difference
Yang 2001. Subtotal (95% CI) Heterogeneity: Tau ² = (Tost for overall effect: Z Tost for overall effect: Z Test for overall effect: Z Test for overall effect: Z Study or Subgroup Caesarean sect Abdel-Aleem 2013 'med 2014 i 2004 Chosh 2014 Gobbur 2014 Gobbur 2014 Mayur 2007 Movafegh 2011 Ramani 2014 Rashmi 2010 Sekhavat 2009 Shahid 2013 Singh 2014 Xu 2013 Yehia 2014 Subtotal (95% CI) Heterogeneity: Tau ² = Test for overall effect:	0.00; Chi ² Z = 1.62 (l 7436.70; c z = 5.74 (l Tran Mean ion 33.79 68.6 75.71 61.1 31.2 86.5 28.02 35.68 66.8 66.8 65.2 340.34; z = 7.08 y	= 0.00, P = 0.10' Chi ² = 99 < 0.000 + 21.05 + 21.05 + 21.05 + 21.05 + 21.05 - 3.06 - 26.3 - 3.5 - 3.16 - 26.3 - 3.5 - 42.7 - 3.07 - 23.29 - 11.8 - 23.29 - 23.29	154 df = 1 1 1402 255.09, c 001) 00, df = Total 373 62 91 70 50 50 50 50 50 60 88 8106 88 8106 88 810001)	If = 15 (0 Mear 82.62 83.2 76.02 112.6 113.03 141 44.00 142.7 37.1 37.1 37.1 37.1 37.1 37.1 37.1 37	> < 0.000	1353 3001); ² = 94, Total 367 62 89 70 50 50 50 50 60 50 45 50 50 60 60 100 86 60 61221 30001);	= 98% 7% Weight 6.9% 6.9% 5.6% 7.0% 6.5% 6.7% 6.5% 6.4% 6.9% 6.3% 6.9% 5.4% 6.9% 5.4% 8.9% 1 ² = 98%	Mean Difference IV, Random, 95% CI -48.83 [-52.96, -44.70] -14.60 [-19.02, -10.18] -31.50 [-49.54, -13.46] -27.96 [-30.37, -25.55] -41.10 [-61.74, -20.46] -57.32 [-64.20, -50.44] -73.90 [-83.47, -64.33] -12.87 [-23.52, -2.22] -56.20 [-65.28, -47.12] -9.08 [-12.16, -6.00] -7.95 [-19.73, 3.83] -45.45 [-49.76, -41.14] -38.10 [-57.25, -18.95] -45.80 [-56.86, -34.74] -36.42 [-46.50, -26.34]	Tranexamic Control Mean Difference
Yang 2001 Subtotal (95% CI) Heterogeneity: Tau ² = (Total (95% CI) Heterogeneity: Tau ² = 5 Test for overall effect: 2 Test for overall effect: 2 Test for subgroup differ Study or Subgroup Caesarean sect Abdel-Aleem 2013 'med 2014 i 2004 Cobbur 2014 Gobbur 2014 Gobbur 2014 Gobbur 2014 Gobbur 2014 Mayar 2007 Movafegh 2011 Ramani 2014 Rashmi 2010 Sekhavat 2009 Shahid 2013 Singh 2014 Xu 2013 Yehia 2014 Subtotal (95% CI) Heterogeneity: Tau ² = Test for overall effect: Vaginal deliver	0.00; Chi ² 2 = 1.62 (l 7436.70; (2 2 = 5.74 (l rences: CL Tran Mean 33.79 68.6 42.75 48.06 75.71 67.1 31.2 86.5 28.02 35.68 66.8 46.6 85 = 340.34; z = 7.08 y 68.9	= 0.00, P = 0.10' Chi ² = 99 0.20' examic SD 21.05 12.44 40.45 8.202 25.36 6.5 31.6 26.3 5.5 5.1 23.29 23.29 26.5 31.6 5.5 5.5 5.5 5.5 5.5 5.5 5.5 5.5 5.5 5	154 df = 1 () 1402 55.09, (001) 00, df = acid 770 500 500 500 500 500 500 500 500 500	ff = 15 (f) (Mear 82.62 83.32 76.02 112.6 133.02 142.7 37.7 123.7 142.7 37.7 142.7 37.7 142.7 37.7 142.7 37.7 142.6 112.25 84.7 130.8 107.6 (107.6	> < 0.000 Control SD 34.5 12.7 77.06 6.209 51.7 77.06 6.209 51.7 77.06 8.22.8 49.3 (P < 0.0 52.6	1353 3001); ² = 94. Total 367 62 899 70 50 50 50 50 50 50 50 50 50 5	= 98% 7% Weight 6.9% 6.9% 5.6% 7.0% 5.3% 6.5% 6.5% 6.5% 6.6% 6.9% 5.4% 89.9% 1 ² = 98%	Mean Difference IV, Random, 95% CI -48.83 [-52.96, -44.70] -14.60 [-19.02, -10.18] -31.50 [-49.54, -13.46] -27.96 [-30.37, -25.55] -41.10 [-61.74, -20.46] -57.32 [-64.20, -50.44] -73.90 [-83.47, -64.33] -12.87 [-23.52, -2.22] -9.08 [-12.16, -6.00] -7.95 [-19.73, 3.83] -45.45 [-49.76, -41.14] -38.10 [-57.25, -18.95] -45.80 [-56.86, -34.74] -36.42 [-46.50, -26.34]	Tranexamic Control Mean Difference
Yang 2001. Subtotal (95% CI) Heterogeneity: Tau ² = (Total (95% CI) Heterogeneity: Tau ² = 7 Total (95% CI) Heterogeneity: Tau ² = 7 Test for overall effect: 2 Test for subgroup differ Study or Subgroup Caesarean sect Abdel-Aleem 2013 'med 2014 i 2004 Chosh 2014 Gobbur 2014 Gobbur 2014 Mayur 2007 Movafegh 2011 Ramani 2014 Rashmi 2010 Sekhavat 2009 Shahid 2013 Singh 2014 Xu 2013 Yehia 2014 Subtotal (95% CI) Heterogeneity: Tau ² = Test for overall effect: Vaginal deliver Mirghafourvand 2015 Yang 2001	0.00; Chi ² Z = 1.62 (l 7436.70; c z = 5.74 (l Tran Mean ion 33.79 68.6 75.71 61.1 31.2 86.5 28.02 35.68 66.8 66.8 65.2 340.34; z = 7.08 y	= 0.00, P = 0.10' Chi ² = 99 0.20' examic SD 21.05 12.44 40.45 8.202 25.36 6.5 31.6 26.3 5.5 5.1 23.29 23.29 26.5 31.6 5.5 5.5 5.5 5.5 5.5 5.5 5.5 5.5 5.5 5	154 df = 1 () 1402 55.09, c 001) 00, df = acid 373 62 91 70 500 500 500 600 88 8106 1233 562.18, 000001) 600 94	If = 15 (0 Mear 82.62 83.2 76.02 112.6 113.03 141 44.00 142.7 37.1 37.1 37.1 37.1 37.1 37.1 37.1 37	> < 0.000 .00001). SD 34.5 12.7 77.06 6.209 51.7 77.06 6.209 51.7 77.06 8.22.8 49.3 (P < 0.0 52.6	1353 3001); ² = 94. Total 367 62 89 70 50 50 50 50 60 1001); 1221 100001); 60 87	= 98% 7% Weight 6.9% 6.9% 5.6% 7.0% 5.3% 6.5% 6.4% 6.3% 6.3% 6.3% 6.3% 6.3% 6.4% 89.9% 5.4% 89.9% 1 ² = 98%	Mean Difference IV, Random, 95% CI -48.83 [-52.96, -44.70] -14.60 [-19.02, -10.18] -31.50 [-49.54, -13.46] -27.96 [-30.37, -25.55] -41.10 [-61.74, -20.46] -57.32 [-64.20, -50.44] -73.90 [-83.47, -64.33] -12.87 [-23.52, -22.2] -56.20 [-65.28, -47.12] -9.08 [-12.16, -6.00] -7.95 [-19.73, 3.83] -45.45 [-49.76, -41.14] -38.10 [-57.25, -18.95] -45.80 [-56.86, -34.74] -36.42 [-46.50, -26.34]	Tranexamic Control Mean Difference
Yang 2001 Subtotal (95% CI) Heterogeneity: Tau ² = (Test for overall effect: 2 Total (95% CI) Heterogeneity: Tau ² = 2 Test for overall effect: 2 Test for overall effect: 2 Test for subgroup differ Study or Subgroup Caesarean sect Abdel-Aleem 2013 "med 2014 i 2004 (Mosh 2014 Gobbur 2014 Gobbur 2014 Gobbur 2014 Gobbur 2014 Gobbur 2014 Mayar 2007 Movafegh 2011 Ramani 2014 Rashmi 2010 Sekhavat 2009 Shahid 2013 Singh 2014 Xu 2013 Yehia 2014 Subtotal (95% CI) Heterogeneihy: Tau ² = Test for overall effect: Vaginal deliver Mirghafourvand 2015 Yang 2001	0.00; Chi ² Z = 1.62 (l 7436.70; (z z = 5.74 (l rences: CL Tran Mean 33.79 68.6 42.75 48.06 71.5 75.71 67.1 31.2 86.5 28.02 35.68 66.8 65.2 86.6 855 340.34; Z = 7.08 9 68.9 129.7	$\begin{array}{c} = 0.00, \\ P = 0.10^{\circ} \\ P = 0.10^{\circ} \\ P < 0.000 \\ h l^2 = 19. \\ s \\ \mathsf$	154 df = 1 () 1402 25.09, c 001) 000, df = Total 373 62 91 700 500 500 500 500 500 500 500 500 500	ff = 15 (f = 1 (P < (<u>Mear</u> 82.62 83.32 74.22 776.00 112.6 133.03 141 44.00 142.7 37.1 34.36 112.25 84.7 84.7 84.7 84.7 84.7 84.7 84.7 84.7	> < 0.000 Control SD 34.5 12.7 77.06 6.209 51.7 77.06 6.209 51.7 77.06 8.02 27.8 19.5 9 9.2 8.04 18.52 80.2 80.2 80.2 (P < 0.0 (P < 0.0 16 16 16 16 16 16 16 16 16 16 16 16 16	1353)001); ² = 94. Total 367 62 89 70 50 50 50 50 60 60 86 1000 86 1000 86 1000 86 1000 87 147	= 98% 7% Weight 6.9% 6.9% 5.6% 7.0% 5.3% 6.5% 6.4% 6.3% 6.3% 6.3% 6.3% 6.3% 6.4% 89.9% 5.4% 89.9% 1 ² = 98%	Mean Difference IV, Random, 95% CI -48.83 [-52.96, -44.70] -14.60 [-19.02, -10.18] -31.50 [-49.54, -13.46] -27.96 [-30.37, -25.55] -41.10 [-61.74, -20.46] -57.32 [-64.20, -50.44] -73.90 [-83.47, -64.33] -12.87 [-23.52, -2.22] -9.08 [-12.16, -6.00] -7.95 [-19.73, 3.83] -45.45 [-49.76, -41.14] -38.10 [-57.25, -18.95] -45.80 [-56.86, -34.74] -36.42 [-46.50, -26.34]	Tranexamic Control Mean Difference
Yang 2001 Subtoal (95% Cl) Heterogeneity: Tau ² = (Total (95% Cl) Heterogeneity: Tau ² = 5 Test for overall effect: 2 Test for overall effect: 2 Test for subgroup differ Study or Subgroup Caesarean sect Abdel-Aleem 2013 'med 2014 i 2004 Chosh 2014 Coobbur 2014 Coobbur 2014 Coobbur 2014 Coobbur 2014 Coobbur 2014 Mayar 2007 Movafegh 2011 Ramani 2014 Rashmi 2010 Sekhavat 2009 Shahid 2013 Singh 2014 Xu 2013 Yehia 2014 Subtoal (95% Cl) Heterogeneity: Tau ² = Test for overall effect: Vaginal deliver Mirghafourvand 2015 Yang 2001 Subtoal (95% Cl)	0.00; Chi ² Z = 1.62 () 7436.70; (2 z = 5.74 () rences: Cl Tran Mean 33.79 68.6 42.75 48.06 71.5; 75.71 67.1 31.2 86.5 28.02 35.68 66.8 46.6 85 : 340.34; Z = 7.08 9 (68.9 129.7 • 0.00; Ch	$\begin{array}{l} = 0.00, \\ = 0.00, \\ P = 0.10^{\circ} \\ = 99 \\ < 0.00^{\circ} \\ = 19, \\ \\ = 80, \\ = 10, $	154 df = 1 (1) 1402 25.09, c 001) 100, df = acid Total 3733 62 91 770 50 50 50 50 50 50 50 50 50 50 50 50 50	ff = 15 () = 1 (P < (Mean 82.66, 83.7 74.25 76.02 112.02 113.06 113.06 84.7 130.8 84.7 130.8 84.7 130.8 84.7 107.6 178.2 107.6 178.2 1 (P = (> < 0.000 Control SD 34.5 12.7 77.06 6.209 51.7 77.06 6.209 51.7 77.06 8.02 27.8 19.5 9 9.2 8.04 18.52 80.2 80.2 80.2 (P < 0.0 (P < 0.0 16 16 16 16 16 16 16 16 16 16 16 16 16	1353)001); ² = 94. Total 367 62 89 70 50 50 50 50 60 60 86 1000 86 1000 86 1000 86 1000 87 147	= 98% 7% Weight 6.9% 6.9% 5.6% 7.0% 5.3% 6.5% 6.4% 6.3% 6.3% 6.3% 6.3% 6.3% 6.4% 89.9% 5.4% 89.9% 1 ² = 98%	Mean Difference IV, Random, 95% CI -48.83 [-52.96, -44.70] -14.60 [-19.02, -10.18] -31.50 [-49.54, -13.46] -27.96 [-30.37, -25.55] -41.10 [-61.74, -20.46] -57.32 [-64.20, -50.44] -73.90 [-83.47, -64.33] -12.87 [-23.52, -22.2] -56.20 [-65.28, -47.12] -9.08 [-12.16, -6.00] -7.95 [-19.73, 3.83] -45.45 [-49.76, -41.14] -38.10 [-57.25, -18.95] -45.80 [-56.86, -34.74] -36.42 [-46.50, -26.34]	Tranexamic Control Mean Difference
Yang 2001 Subtotal (95% CI) Heterogeneity: Tau ² = (Test for overall effect: 2 Total (95% CI) Heterogeneity: Tau ² = 2 Test for overall effect: 2 Test for overall effect: 2 Test for subgroup differ Study or Subgroup Caesarean sect Abdel-Aleem 2013 "med 2014 i 2004 (Mosh 2014 Gobbur 2014 Gobbur 2014 Gobbur 2014 Gobbur 2014 Gobbur 2014 Mayar 2007 Movafegh 2011 Ramani 2014 Rashmi 2010 Sekhavat 2009 Shahid 2013 Singh 2014 Xu 2013 Yehia 2014 Subtotal (95% CI) Heterogeneihy: Tau ² = Test for overall effect: Vaginal deliver Mirghafourvand 2015 Yang 2001	0.00; Chi ² Z = 1.62 () 7436.70; (2 z = 5.74 () rences: Cl Tran Mean 33.79 68.6 42.75 48.06 71.5; 75.71 67.1 31.2 86.5 28.02 35.68 66.8 46.6 85 : 340.34; Z = 7.08 9 (68.9 129.7 • 0.00; Ch	$\begin{array}{l} = 0.00, \\ = 0.00, \\ P = 0.10^{\circ} \\ = 99 \\ < 0.00^{\circ} \\ = 19, \\ \\ = 80, \\ = 10, $	154 df = 1 (1) 1402 25.09, c 001) 100, df = acid Total 3733 62 91 770 50 50 50 50 50 50 50 50 50 50 50 50 50	ff = 15 () = 1 (P < (Mean 82.66, 83.7 74.25 76.02 112.02 113.06 113.06 84.7 130.8 84.7 130.8 84.7 130.8 84.7 107.6 178.2 107.6 178.2 1 (P = (> < 0.000 Control SD 34.5 12.7 77.06 6.209 51.7 77.06 6.209 51.7 77.06 8.02 27.8 19.5 9 9.2 8.04 18.52 80.2 80.2 80.2 (P < 0.0 (P < 0.0 16 16 16 16 16 16 16 16 16 16 16 16 16	1353)001); ² = 94. Total 367 62 89 70 50 50 50 50 60 60 86 1000 86 1000 86 1000 86 1000 87 147	= 98% 7% Weight 6.9% 6.9% 5.6% 7.0% 5.3% 6.5% 6.4% 6.3% 6.3% 6.3% 6.3% 6.3% 6.4% 89.9% 5.4% 89.9% 1 ² = 98%	Mean Difference IV, Random, 95% CI -48.83 [-52.96, -44.70] -14.60 [-19.02, -10.18] -31.50 [-49.54, -13.46] -27.96 [-30.37, -25.55] -41.10 [-61.74, -20.46] -57.32 [-64.20, -50.44] -73.90 [-83.47, -64.33] -12.87 [-23.52, -22.2] -56.20 [-65.28, -47.12] -9.08 [-12.16, -6.00] -7.95 [-19.73, 3.83] -45.45 [-49.76, -41.14] -38.10 [-57.25, -18.95] -45.80 [-56.86, -34.74] -36.42 [-46.50, -26.34]	Tranexamic Control Mean Difference
Yang 2001 Subtoal (95% Cl) Heterogeneity: Tau ² = (Total (95% Cl) Heterogeneity: Tau ² = 5 Total (95% Cl) Heterogeneity: Tau ² = 5 Test for overall effect: 2 Test for subgroup differ Study or Subgroup Caesarean sect Abdel-Aleem 2013 'med 2014 i 2004 Cobbur 2014 Gobbur 2014 Gobbur 2014 Gobbur 2014 Gobbur 2014 Mayar 2007 Movafegh 2011 Ramani 2014 Rashmi 2010 Sekhavat 2009 Shahid 2013 Singh 2014 Xu 2013 Yehia 2014 Subtoal (95% Cl) Heterogeneity: Tau ² = Test for overall effect: Vaginal deliver Mirghafourvand 2015 Yang 2001 Subtoal (95% Cl)	0.00; Chi ² Z = 1.62 () 7436.70; (2 z = 5.74 () rences: Cl Tran Mean 33.79 68.6 42.75 48.06 71.5; 75.71 67.1 31.2 86.5 28.02 35.68 66.8 46.6 85 : 340.34; Z = 7.08 9 (68.9 129.7 • 0.00; Ch	$\begin{array}{l} = 0.00, \\ = 0.00, \\ P = 0.10^{\circ} \\ = 99 \\ < 0.00^{\circ} \\ = 19, \\ \\ = 80, \\ = 10, $	154 df = 1 (1) 1402 25.09, c 001) 100, df = acid Total 3733 62 91 770 50 50 50 50 50 50 50 50 50 50 50 50 50	$\begin{aligned} & \mathrm{df} = 15 \ (0 \\ & \mathrm{Mean} \\ & \mathrm{82.662} \\ & \mathrm{83.3} \\ & \mathrm{74.25} \\ & \mathrm{74.25} \\ & \mathrm{76.02} \\ & \mathrm{112.21} \\ & \mathrm{113.00} \\$	> < 0.000 Control SD 34.5 12.7 77.06 6.209 51.7 77.06 6.209 51.7 77.06 8.02 27.8 19.5 9 9.2 8.04 18.52 80.2 80.2 80.2 (P < 0.0 (P < 0.0 16 16 16 16 16 16 16 16 16 16 16 16 16	1353 001); I ² 2 ² = 94. Total 367 62 89 70 50 50 50 50 50 50 50 50 50 5	= 98% 7% Weight 6.9% 6.9% 5.6% 7.0% 5.3% 6.5% 6.5% 6.5% 6.6% 6.9% 5.8% 89.9% 1 ² = 98% 5.8% 4.4% 10.1%	Mean Difference IV, Random, 95% CI -48.83 [-52.96, -44.70] -14.60 [-19.02, -10.18] -31.50 [-49.54, -13.46] -27.96 [-30.37, -25.55] -41.10 [-61.74, -20.46] -57.32 [-64.20, -50.44] -73.90 [-83.47, -64.33] -12.87 [-23.52, -22.2] -56.20 [-65.28, -47.12] -9.08 [-12.16, -6.00] -7.95 [-19.73, 3.83] -45.45 [-49.76, -41.14] -38.10 [-57.25, -18.95] -45.80 [-56.86, -34.74] -36.42 [-46.50, -26.34]	Tranexamic Control Mean Difference

C Test for subgroup differences: $Chi^2 = 0.29$, df = 1 (P = 0.59), $I^2 = 0\%$



Ramani and Nayak^[31] applied the same dose of oxytocin infusion followed by 10 units as intramuscular along with 400 μ g of table misoprostol sublingually after delivery of placenta. It is known that the oxytocin usage could reduce blood loss, which

may overestimate the efficacy of TA. Although the use of TA resulted in a reduction of blood loss, statistically significant differences in blood loss might not always convey a parallel clinical significance because a mean blood loss of 150 mL was

	bgroup	Tranexami Events		Contr Events		Weight	Risk Ratio M-H, Random, 95% CI	Risk Ratio M-H, Random, 95% Cl	
	rean section								
Abdel-Aleer	m 2013	12	373	179	367	9.8%	0.07 [0.04, 0.12]		
Gai 2004		22	91	35	89	10.2%	0.61 [0.39, 0.96]		
Gobbur 201		6	50	15	50	8.5%	0.40 [0.17, 0.95]		
Maged 2015		12	100	94	100	9.9%	0.13 [0.07, 0.22]		
Mayur 2007		5	50	14	50	8.1%	0.36 [0.14, 0.92]		
Shahid 201	3	5	38	11	36	8.0%	0.43 [0.17, 1.12]		
Xu 2013		19	88	28	86	10.0%	0.66 [0.40, 1.09]		
Yehia 2014	F9/ C1)	33	106	67	106	10.6%	0.49 [0.36, 0.68]	-	
Subtotal (9			896		884	75.1%	0.32 [0.16, 0.61]	-	
	ity: $Tau^2 = 0$	114 .77; $Chi^2 = 3$ = 3.45 (P =		443 F = 7 (P <	< 0.000	001); I ² = 9	91%		
Vagin	al delivery								
Gungorduk		4	220	15	219	7.4%	0.27 [0.09, 0.79]		
Mirghafour		9	60	15	60	9.0%	0.60 [0.28, 1.26]		
Yang 2001		6	94	22	87	8.5%	0.25 [0.11, 0.59]		
Subtotal (9	5% CI)		374		366	24.9%	0.37 [0.20, 0.67]	•	
Total events		19		52					
		.08; $Chi^2 = 2$ = 3.29 (P =		= 2 (P =	0.25);	l ² = 28%			
Total (95%	CI)		1270		1250	100.0%	0.32 [0.19, 0.55]	•	
Total events		133		495					
Heterogene	ity: $Tau^2 = 0$.64; Chi ² = 3	78.38, df	= 10 (P	< 0.00	$(001); ^2 =$	87%	0.01 0.1 1 10	100
Test for ove	rall effect: Z	= 4.24 (P <	0.0001)					0.01 0.1 1 10 Tranexamic acid Control	100
		ences: Chi ²			= 0.75), $1^2 = 0\%$		Tranexamile acto Control	
		Tranexami	c acid	Contr	ol		Risk Ratio	Risk Ratio	
Study or Su	bgroup	Events				Weight	M-H, Random, 95% CI	M-H, Random, 95% CI	
	rean section						C C C C C C C C C C C C C C C C C C C		-
Abdel-Aleer	m 2013	2	373	2	367	11.5%	0.98 [0.14, 6.95]		
Gungorduk		7	330	19	330	60.3%	0.37 [0.16, 0.86]		
Maged 201		0	100	6	100	5.4%	0.08 [0.00, 1.35]	· · · · · · · · · · · · · · · · · · ·	
Sujata 2016		0	30	7	30	5.5%	0.07 [0.00, 1.12]		
Subtotal (9			833		827	82.6%	0.32 [0.12, 0.84]		
Total events		9		34					
	rall effect: Z	= 2.32 (P =	0.02)						
Gungorduk		1	220	5	219	9.6%	0.20 [0.02, 1.69]		
Mirghafour		1	60	2	60	7.8%	0.50 [0.05, 5.37]		
		-	280		279	17.4%	0.30 [0.06, 1.47]		
	5% CI)							and the second sec	
Subtotal (9 Total events		2		7					
Subtotal (9 Total events Heterogene	ity: Tau ² = 0	2 .00; Chi ² = 0 = 1.48 (P =			0.57);	l ² = 0%			
Subtotal (9 Total events Heterogene Test for ove	ity: Tau ² = 0 rall effect: Z	.00; $Chi^2 = 0$	0.14)				0.33 [0.17, 0.65]	-	
Subtotal (9 Total events Heterogene Test for ove Total (95%	ity: Tau ² = 0 rall effect: Z CI)	.00; Chi ² = 0 = 1.48 (P =		= 1 (P =		1 ² = 0%	0.33 [0.17, 0.65]	•	
Subtotal (9 Total events Heterogene Test for ove Total (95% Total events	ity: Tau ² = 0 rall effect: Z CI)	.00; $Chi^2 = 0$	0.14)	= 1 (P =	1106	100.0%	0.33 [0.17, 0.65]	-	100
Subtotal (9 Total events Heterogene Test for ove Total (95% Total events Heterogene	ity: Tau ² = 0 rall effect: Z CI) ity: Tau ² = 0 rall effect: Z igroup differ	100; $Chi^2 = ($ = 1.48 (P = 11 0.00; $Chi^2 = 4$ = 3.25 (P = rences: Chi^2	0.14) 1113 4.04, df = 0.001) = 0.00, d	= 1 (P = 41 = 5 (P = 4f = 1 (P	1106 0.54); = 0.95	100.0% $1^2 = 0\%$		0.01 0.1 1 Tranexamic acid Control	100
Subtotal (9 Total events Heterogene Test for over Total (95% Total events Heterogene Test for over Test for sub	ity: Tau ² = 0 rall effect: Z CI) ity: Tau ² = 0 rall effect: Z igroup differ	.00; $Chi^2 = 0$ = 1.48 (P = 11 .00; $Chi^2 = 4$ = 3.25 (P = ences: Chi^2 Tranexamic	0.14) 1113 4.04, df = 0.001) = 0.00, c acid	= 1 (P = 41 = 5 (P = tf = 1 (P Contro	1106 0.54); = 0.95	100.0% $l^2 = 0\%$), $l^2 = 0\%$	Risk Ratio	Tranexamic acid Control Risk Ratio	100
Subtotal (9 Total events Heterogenei Test for over Total (95% Total events Heterogenei Test for over Test for sub Study or Su	ity: Tau ² = 0 rall effect: Z CI) ity: Tau ² = 0 rall effect: Z igroup differ	.00; Chi ² = (= 1.48 (P = 11 .00; Chi ² = 4 = 3.25 (P = ences: Chi ² + Tranexamic Events	0.14) 1113 4.04, df = 0.001) = 0.00, c acid	= 1 (P = 41 = 5 (P = tf = 1 (P Contro	1106 0.54); = 0.95	100.0% $l^2 = 0\%$), $l^2 = 0\%$		Tranexamic acid Control	100
Subtotal (9 Total events Heterogenei Test for over Total (95% Total events Heterogenei Test for over Test for sub Study or Su	ity: Tau ² = 0 rall effect: Z CI) it try: Tau ² = 0 rall effect: Z ogroup differ ubgroup differ rean sectio	.00; Chi ² = (= 1.48 (P = 11 .00; Chi ² = 4 = 3.25 (P = ences: Chi ² + Tranexamic Events	0.14) 1113 4.04, df = 0.001) = 0.00, c acid	= 1 (P = 41 = 5 (P = tf = 1 (P Contro	1106 0.54); = 0.95	100.0% $l^2 = 0\%$), $l^2 = 0\%$	Risk Ratio	Tranexamic acid Control Risk Ratio M-H, Random, 95% Cl	100
Subtotal (9 Total events Heterogene Test for ove Total (95% Total events Heterogene Test for ove Test for ove Study or Su Caesa Ghosh 2014 Goswami 20	ity: Tau ² = 0 rall effect: Z CI) ity: Tau ² = 0 ity: Tau ² = 0 rall effect: Z igroup differ rean sectio t 13	0.00; Chi ² = (= 1.48 (P = 11 0.00; Chi ² = 4 = 3.25 (P = ences: Chi ² = Tranexamic Events n 0 0	0.14) 1113 4.04, df = 0.001) = 0.00, d acid Total E 70 60	41 = 5 (P = 41 = 5 (P = 41 = 1 (P Contro Events 3 2	1106 0.54); = 0.95 ol Total 70 30	100.0% $i^2 = 0\%$), $i^2 = 0\%$ Weight M 2.9% 2.8%	Risk Ratio 1-H, Random, 95% Cl	Tranexamic acid Control Risk Ratio M-H, Random, 95% Cl	100
Subtotal (9 Total events Heterogenei Test for ove Total (95% Total events Heterogenei Test for ove Test for ove Study or Su Caess Ghosh 2014 Goswami 20 Gungorduk	ity: Tau ² = 0 rall effect: Z CI) ity: Tau ² = 0 rall effect: Z group differ regroup differ rean section trean section 1013 2011	00; Chi ² = (= 1.48 (P = 11 0.00; Chi ² = 4 = 3.25 (P = ences: Chi ² + Tranexamic <u>Events</u> n	0.14) 1113 4.04, df = 0.001) = 0.00, d acid Total E 70	41 = 5 (P = ff = 1 (P Contro Events	1106 0.54); = 0.95 ol Total 70	100.0% $I^2 = 0\%$), $I^2 = 0\%$ Weight M 2.9%	Risk Ratio 4-H, Random, 95% CI 0.14 [0.01, 2.72]	Tranexamic acid Control Risk Ratio M-H, Random, 95% Cl	100
Subtotal (9 Total events Heterogene Test for ove Total (95% Total events Heterogene Test for ove Test for ove Test for ove Study or Su Caesa Ghosh 2014 Goswami 20	ity: Tau ² = 0 rall effect: Z CI) ity: Tau ² = 0 rall effect: Z group differ regroup differ rean section trean section 1013 2011	0.00; Chi ² = (= 1.48 (P = 11 0.00; Chi ² = 4 = 3.25 (P = ences: Chi ² = Tranexamic Events n 0 0	0.14) 1113 4.04, df = 0.001) = 0.00, d acid Total E 70 60	41 = 5 (P = 41 = 5 (P = 41 = 1 (P Contro Events 3 2	1106 0.54); = 0.95 ol Total 70 30	100.0% $i^2 = 0\%$), $i^2 = 0\%$ Weight M 2.9% 2.8%	Risk Ratio 4-H, Random, 95% CI 0.14 [0.01, 2.72] 0.10 [0.01, 2.05]	Tranexamic acid Control Risk Ratio M-H, Random, 95% Cl	100
Subtotal (9 Total events Heterogenei Test for over Total (95% Total events Heterogenei Test for over Test for over Study or Su Caess Ghosh 2014 Goswami 20 Gungorduk	ity: Tau ² = 0 rall effect: Z CI) ity: Tau ² = 0 rall effect: Z group differ regroup differ rean section to 113 2011 4	0.00; Chi ² = (= 1.48 (P = 11 0.00; Chi ² = 4 = 3.25 (P = ences: Chi ² + Tranexamic Events n 0 2	0.14) 1113 4.04, df = 0.001) = 0.00, c acid Total E 70 60 330	41 = 5 (P = 41 = 5 (P = 41 = 1 (P Contro Events 3 2 7	1106 0.54); = 0.95 J Total 70 30 330	100.0% $i^{2} = 0\%$ $i), i^{2} = 0\%$ Weight M 2.9% 2.8% 10.3%	Risk Ratio A-H, Random, 95% CI 0.14 [0.01, 2.72] 0.10 [0.01, 2.05] 0.29 [0.06, 1.37]	Tranexamic acid Control Risk Ratio M-H, Random, 95% Cl	100
Subtotal (9 Total events Heterogene Test for over Total (95% Total events Heterogene Test for over Test for over Test for over Test for over Caesa Ghosh 2014 Goswami 2(0 Gungorduk Ramani 201	ity: Tau ² = 0 rall effect: Z CI) ity: Tau ² = 0 rall effect: Z ogroup differ ubgroup urean section 1 2011 4 3	1.00; Chi ² = (= 1.48 (P = 11 0.00; Chi ² = 4 = 3.25 (P = ences: Chi ² + Tranexamic Events n 0 2 2 3 1	0.14) 1113 4.04, df = 0.001) = 0.00, d acid Total E 70 60 330 60	41 = 5 (P = ff = 1 (P Contro Events 3 2 7 6	1106 0.54); = 0.95 0 Total 70 30 330 60	100.0% $l^2 = 0\%$), $l^2 = 0\%$ Weight M 2.9% 2.8% 10.3%	Risk Ratio 4-H, Random, 95% CI 0.14 [0.01, 2.72] 0.10 [0.01, 2.05] 0.29 [0.06, 1.37] 0.33 [0.07, 1.59]	Tranexamic acid Control Risk Ratio M-H, Random, 95% Cl	100
Subtotal (9 Total events Heterogene Test for ove Total (95% Total events Heterogene Test for ove Study or St. Caesa Ghosh 2014 Goswami 20 Gungorduk Ramani 201 Shahid 201	ity: Tau ² = 0 rall effect: Z CI) ity: Tau ² = 0 rall effect: Z ogroup differ ubgroup urean section 1 2011 4 3	1.00; $Chi^2 = 0$ = 1.48 (P = 11 1.00; $Chi^2 = 4$ = 3.25 (P = ences: Chi^2 ; Tranexamic Events n 0 2 2 3	0.14) 1113 4.04, df = 0.001) = 0.00, d acid Total E 70 60 330 60 38	= 1 (P = 41 = 5 (P = df = 1 (P Contro Events 3 2 7 6 12	1106 0.54); = 0.95 0 Total 70 30 330 60 36	100.0% $i^2 = 0\%$), $i^2 = 0\%$ Weight N 2.9% 2.8% 10.3% 10.3% 18.1%	Risk Ratio 1-H, Random, 95% CI 0.14 (0.01, 2.72) 0.10 (0.01, 2.05) 0.29 (0.06, 1.37) 0.33 (0.07, 1.59) 0.24 (0.07, 0.77)	Tranexamic acid Control Risk Ratio M-H, Random, 95% Cl	100
Subtotal (9 Total events Heterogene Test for over Total (95% Total events Heterogene Test for over Test for over Test for over Caesa Chosh 2014 Goswami 20 Goswami 20 Suhalt 2013 Sujata 2016 Xu 2013 Yehia 2014	ity: Tau ² = 0 ity: Tau ² = 0 cl) ity: Tau ² = 0 ity: Tau ²	1.00; Chi ² = (= 1.48 (P = 11 0.00; Chi ² = 4 = 3.25 (P = ences: Chi ² + Tranexamic Events n 0 2 2 3 1	0.14) 1113 4.04, df = 0.001) = 0.00, d acid Total E 70 60 330 60 330 60 38 30 88 106	= 1 (P = 41 = 5 (P = if = 1 (P Contro Events 3 2 7 6 12 4	1106 0.54); = 0.95 0 Total 70 30 330 60 330 60 36 30 86 106	100.0% i ² = 0%), l ² = 0% Weight N 2.9% 2.8% 10.3% 10.3% 18.1% 5.5% 42.4% 2.8%	Risk Ratio 4-H, Random, 95% CI 0.14 (0.01, 2.72) 0.10 (0.01, 2.05) 0.29 (0.06, 1.37) 0.33 (0.07, 1.59) 0.24 (0.07, 0.77) 0.25 (0.03, 2.11) 0.41 (0.19, 0.89) 0.20 (0.01, 4.12)	Tranexamic acid Control Risk Ratio M-H, Random, 95% Cl	100
Subtotal (9 Total events Heterogene Total (95% Total events Heterogene Test for ove Test for ove Test for ove Study or St. Caesa Chosh 2014 Goswami 2(Gungorduk Ramani 201 Shahid 2013 Sujata 2016 Xu 2013 Yehia 2014	ity: Tau ² = 0 rall effect: Z Cl) ity: Tau ² = 0 rall effect: Z itgroup differ group differ recan section 1013 2011 4 3 5% Cl)	.00; Chi ² = (= 1.48 (P = 11 .00; Chi ² = 4 = 3.25 (P = ences: Chi ² Tranexamic Events n 0 0 2 2 3 1 8 0	0.14) 1113 4.04, df = 0.001) = 0.00, c acid Total E 70 60 330 60 38 30 88	41 = 5 (P = df = 1 (P Contro Contro Contro Contro 2 7 6 12 4 19 2	1106 0.54); = 0.95 0 Total 70 30 330 60 36 30 86	100.0% $i^2 = 0\%$), $i^2 = 0\%$ Weight N 2.9% 2.8% 10.3% 10.3% 10.3% 10.3% 10.3% 10.3% 10.3%	Risk Ratio A-H, Random, 95% CI 0.14 (0.01, 2.72) 0.10 (0.01, 2.05) 0.29 (0.06, 1.37) 0.33 (0.07, 1.59) 0.24 (0.07, 0.77) 0.25 (0.03, 2.11) 0.41 (0.19, 0.89)	Tranexamic acid Control Risk Ratio M-H, Random, 95% Cl	100
Subtotal (9 Total events Heterogene Total (95% Total events Heterogene Test for ove Study or St. Caese Ghosh 2014 Goswami 2(Gungorduk Ramani 201 Shahid 2013 Sujata 2016 Xu 2013 Yehia 2014 Subtotal (9 Total events Heterogene	ity: Tau ² = 0 ity: Tau ² = 0 (C) ity: Tau ²	.00; Chi ² = (= 1.48 (P = 11 .00; Chi ² = - = 3.25 (P = ences: Chi ² : Tranexamic Events n 0 0 2 2 3 1 8	0.14) 1113 4.04, df = 0.001) = 0.00, d acid Total E 70 60 330 60 330 60 338 30 60 38 38 106 782 1.67, df	41 = 5 (P = 4f = 1 (P Contro Events 7 6 12 4 19 2 55 = 7 (P =	1106 0.54): = 0.95 0 Total 70 30 330 60 36 30 60 36 30 86 106 748	100.0% $l^2 = 0\%$), $l^2 = 0\%$ Weight N 2.9% 2.8% 10.3% 10.3% 10.3% 13.1% 5.5% 42.4% 2.8% 95.1%	Risk Ratio 4-H, Random, 95% CI 0.14 (0.01, 2.72) 0.10 (0.01, 2.05) 0.29 (0.06, 1.37) 0.33 (0.07, 1.59) 0.24 (0.07, 0.77) 0.25 (0.03, 2.11) 0.41 (0.19, 0.89) 0.20 (0.01, 4.12)	Tranexamic acid Control Risk Ratio M-H, Random, 95% Cl	100
Subtotal (9 Total events Heterogene Total (95% Total events Heterogene Test for over Test for over Study or Su Caese Ghosh 2014 Coswami 20 Gungorduk Ramani 201 Sujata 2016 Xu 2013 Yehia 2014 Subtata (9 Total events Heterogene Total events	ity: Tau ² = 0 ity: Tau ² = 0 (C) ity: Tau ²	.00; Chi ² = (= 1.48 (P = 11 .00; Chi ² = - = 3.25 (P = ences: Chi ² = Tranexamic Events 0 0 2 2 3 3 1 8 0 0 0 2 2 3 1 8 0 0 0 0 2 2 5 3 1 8 0 0 0 0 2 2 5 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	0.14) 1113 4.04, df = 0.001) = 0.00, d acid Total E 70 60 330 60 330 60 338 30 60 38 38 106 782 1.67, df	41 = 5 (P = 4f = 1 (P Contro Events 7 6 12 4 19 2 55 = 7 (P =	1106 0.54): = 0.95 0 Total 70 30 330 60 36 30 60 36 30 86 106 748	100.0% $l^2 = 0\%$), $l^2 = 0\%$ Weight N 2.9% 2.8% 10.3% 10.3% 10.3% 13.1% 5.5% 42.4% 2.8% 95.1%	Risk Ratio 4-H, Random, 95% CI 0.14 (0.01, 2.72) 0.10 (0.01, 2.05) 0.29 (0.06, 1.37) 0.33 (0.07, 1.59) 0.24 (0.07, 0.77) 0.25 (0.03, 2.11) 0.41 (0.19, 0.89) 0.20 (0.01, 4.12)	Tranexamic acid Control Risk Ratio M-H, Random, 95% Cl	100
Subtotal (9 Total events Heterogene Test for ove Total events Heterogene Test for ove Test for sub Study or St Caese Chosh 2014 Goswami 20 Goswami 20 Goswami 20 Goswami 20 Shahid 2011 Sujata 2016 Xu 2013 Yehia 2014 Subtotal (9 Total events Heterogene Test for ove Vagin Gungorduk	ity: Tau ² = 0 ity: Tau ² = 0 CI) ity: Tau ² = 0 retail effect: 2 group differ recan sectio ity: Tau ² = 0 103 2011 4 5 5% CI) 5 ity: Tau ² = 0 crall effect: 2 al delivery 2013	.00; Chi ² = (= 1.48 (P = 11 .00; Chi ² = - = 3.25 (P = ences: Chi ² = Tranexamic Events 0 0 2 2 3 3 1 8 0 0 0 2 2 3 1 8 0 0 0 0 2 2 5 3 1 8 0 0 0 0 2 2 5 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	0.14) 1113 4.04, df = 0.001) = 0.00, d acid Total E 70 60 330 60 330 60 338 30 60 38 38 106 782 1.67, df	41 = 5 (P = 4f = 1 (P Contro Events 7 6 12 4 19 2 55 = 7 (P =	1106 0.54); = 0.95 Total 70 30 330 60 330 36 30 86 106 748 0.98); 219	100.0% $i^{2} = 0\%$ $), i^{2} = 0\%$ Weight N 2.9% 2.8% 10.3\% 10.3\% 10.3\% 10.3\% 10.3\% 10.3\% 10.3\% 10.3\% 10.3\% 10.3\% 10.3\% 10.3\% 10.3\% 10.3\% 10.3\% 10.3\% 10.3\% 10.3\% 10.3\% 10.3\% 1	Risk Ratio A-H, Random, 95% CI 0.14 (0.01, 2.72) 0.10 (0.01, 2.05) 0.29 (0.06, 1.37) 0.33 (0.07, 1.59) 0.24 (0.07, 0.77) 0.25 (0.03, 2.11) 0.41 (0.19, 0.89) 0.20 (0.01, 4.12) 0.31 (0.18, 0.51) 0.33 (0.03, 3.17)	Tranexamic acid Control Risk Ratio M-H, Random, 95% Cl	100
Subtotal (9 Total events Heterogene Total (95% Total events Heterogene Test for ove Test for ove Study or Su Caesa Chosh 2011 Goswami 20 Gungorduk Ramani 201 Shahid 201. Shahid 201. Shah	ity: Tau ² = 0 ity: Tau ² = 0 CI) ity: Tau ² = 0 retail effect: 2 group differ recan sectio ity: Tau ² = 0 103 2011 4 5 5% CI) 5 ity: Tau ² = 0 crall effect: 2 al delivery 2013	0.00; Chi ² = (= 1.48 (P = 11 0.00; Chi ² = = = 3.25 (P = ences: Chi ² = Tranexamic Events 0 0 2 2 3 3 1 1 8 0 0 2 2 2 3 1 1 8 0 0 0 2 2 2 3 1 1 8 0 0 0 2 2 2 3 1 1 8 0 0 1 6 1 9 1 9 1 9 1 9 1 9 1 9 1 9 1 9 1 9	0.14) 1113 4.04, df = 0.001) = 0.00, c acid Total E 70 60 330 60 38 106 782 1.67, df 0.0000	41 = 5 (P = 41 = 5 (P = 41 = 5 (P = 41 Contro Events 3 2 7 6 12 4 4 19 2 55 = 7 (P = 1)	1106 0.54): = 0.95 01 70 300 360 360 360 360 360 360 360 360 36	100.0% $i^{2} = 0\%$ $), i^{2} = 0\%$ Weight M 2.9% 2.8% 10.3% 10.3% 10.3% 18.1% 5.5% 42.4% 2.8% 95.1% $i^{2} = 0\%$	Risk Ratio A-H, Random, 95% CI 0.14 (0.01, 2.72) 0.10 (0.01, 2.05) 0.29 (0.06, 1.37) 0.33 (0.07, 1.59) 0.24 (0.07, 0.77) 0.25 (0.03, 2.11) 0.41 (0.19, 0.89) 0.20 (0.01, 4.12) 0.31 [0.18, 0.51]	Tranexamic acid Control Risk Ratio M-H, Random, 95% Cl	100
Subtotal (9 Total events Heterogene Test for ove Total events Heterogene Test for ove Study or St Caese Ghosh 2014 Goswami 20 Goswami 20 Goswami 20 Goswami 20 Suhdi 2014 Subtotal (9 Subtotal (9 Subtotal 9 Total events Heterogene Test for ove Vagin Gungorduk	ity: Tau ² = 0 ity: Tau ² = 0 (C) ity: Tau ² = 0 ity: Tau ² = 0 ity: Tau ² = 0 ity: Tau ² = 0 (C) ity: Tau ² = 0 (C) (C) ity: Tau ² = 0 (C) (C) (C) (C) (C) (C) (C) (C)	0.00; Chi ² = (= 1.48 (P = 11 0.00; Chi ² = = = 3.25 (P = ences: Chi ² = Tranexamic Events 0 0 2 2 3 3 1 1 8 0 0 2 2 2 3 1 1 8 0 0 0 2 2 2 3 1 1 8 0 0 0 2 2 2 3 1 1 8 0 0 1 6 1 9 1 9 1 9 1 9 1 9 1 9 1 9 1 9 1 9	0.14) 1113 4.04, df = 0.00, 0 0.001) 0.001, 0 acid Total E 70 60 330 60 330 60 38 30 88 88 80 82 1.67, df 0.0000 220	41 = 5 (P = 41 = 5 (P = 41 = 5 (P = 41 Contro Events 3 2 7 6 12 4 4 19 2 55 = 7 (P = 1)	1106 0.54); = 0.95 Total 70 30 330 60 330 36 30 86 106 748 0.98); 219	100.0% $i^{2} = 0\%$ $), i^{2} = 0\%$ Weight N 2.9% 2.8% 10.3\% 10.3\% 10.3\% 10.3\% 10.3\% 10.3\% 10.3\% 10.3\% 10.3\% 10.3\% 10.3\% 10.3\% 10.3\% 10.3\% 10.3\% 10.3\% 10.3\% 10.3\% 10.3\% 10.3\% 1	Risk Ratio A-H, Random, 95% CI 0.14 (0.01, 2.72) 0.10 (0.01, 2.05) 0.29 (0.06, 1.37) 0.33 (0.07, 1.59) 0.24 (0.07, 0.77) 0.25 (0.03, 2.11) 0.41 (0.19, 0.89) 0.20 (0.01, 4.12) 0.31 (0.18, 0.51) 0.33 (0.03, 3.17)	Tranexamic acid Control Risk Ratio M-H, Random, 95% Cl	100
Subtotal (9 Total events Heterogene Test for ove Total events Heterogene Test for ove Study or Su Caese Ghosh 2014 Coswami 20 Gungorduk Ramani 201 Sujata 2016 Xu 2013 Yehia 2014 Subtotal (9 Total events Heterogene Total events Heterogene Total events	ity: Tau ² = 0 ity: Tau ² = 0 (Cl) ity: Tau ² = 0 rean section ity: Tau ² = 0 rean section ity: Tau ² = 0 ity: Tau ² = 0 ity: Tau ² = 0 real effect: 2 al delivery 2013 5% Cl) 5 ity: Tau ² = 0 real effect: 2 al delivery 2013 5% Cl) 5 ity: Tau ² = 0 ity: Tau ² =	$.00; Chi^2 = (-1.48)(P = -1.48)(P = -1.48)$	0.14) 1113 4.04, df 4 0.001) = 0.00, c acid Total E 70 60 60 330 60 330 60 88 80 80 80 81 106 7782 1.67, df 10 220 220	411 = 5 (P = if = 1 (P (P = if = 1 (P (P = control (P = = 1)) 3 55 = 7 (P = 1) 3	1106 0.54); = 0.95 Total 70 30 330 60 330 36 30 86 106 748 0.98); 219	100.0% $i^{2} = 0\%$ $), i^{2} = 0\%$ Weight N 2.9% 2.8% 10.3\% 10.3\% 10.3\% 10.3\% 10.3\% 10.3\% 10.3\% 10.3\% 10.3\% 10.3\% 10.3\% 10.3\% 10.3\% 10.3\% 10.3\% 10.3\% 10.3\% 10.3\% 10.3\% 10.3\% 1	Risk Ratio A-H, Random, 95% CI 0.14 (0.01, 2.72) 0.10 (0.01, 2.05) 0.29 (0.06, 1.37) 0.33 (0.07, 1.59) 0.24 (0.07, 0.77) 0.25 (0.03, 2.11) 0.41 (0.19, 0.89) 0.20 (0.01, 4.12) 0.31 (0.18, 0.51) 0.33 (0.03, 3.17)	Tranexamic acid Control Risk Ratio M-H, Random, 95% Cl	100
Subtotal (9 Total events Heterogene Test for ove Total events Heterogene Test for ove Study or Su Caese Ghosh 2014 Coswami 20 Gungorduk Ramani 201 Sujata 2016 Xu 2013 Yehia 2014 Subtotal (9 Total events Heterogene Total events Heterogene Total events	ity: Tau ² = 0 try: Tau ² = 0 CI) ity: Tau ² = 0 try: Tau ² = 0 rean section ity: Tau ² = 0 10 10 10 10 10 10 10 10 10 1	.00; Chi ² = (1.48 (P = 11 .00; Chi ² = (3.25 (P) = Tranexamic Events n 0 0 2 2 3 1 1 8 8 0 .00; Chi ² = (1 1 icable	0.14) 1113 4.04, df 4 0.001) = 0.00, c acid Total E 70 60 60 330 60 330 60 88 80 80 80 81 106 7782 1.67, df 10 220 220	411 = 5 (P = if = 1 (P (P = if = 1 (P (P = control (P = = 1)) 3 55 = 7 (P = 1) 3	1106 0.54); = 0.95 70 300 360 330 360 360 300 366 106 748 0.98); 219 219	100.0% $i^{2} = 0\%$ $), i^{2} = 0\%$ Weight M 2.9% 2.8% 10.3% 10.3% 10.3% 18.1% 2.8% 95.1% $j^{2} = 0\%$ 4.9% 4.9%	Risk Ratio A-H, Random, 95% CI 0.14 (0.01, 2.72) 0.10 (0.01, 2.05) 0.29 (0.06, 1.37) 0.33 (0.07, 1.59) 0.24 (0.07, 0.77) 0.25 (0.03, 2.11) 0.41 (0.19, 0.89) 0.20 (0.01, 4.12) 0.31 (0.18, 0.51) 0.33 (0.03, 3.17] 0.33 (0.03, 3.17]	Tranexamic acid Control Risk Ratio M-H, Random, 95% Cl	100
Subtotal (9 Total events Heterogene Total (95%) Total events Heterogene Test for over Test for over Study or Su Caese Ghosh 2014 Coswami 2(Caeses Ghosh 2014 Coswami 2(Caugorduk Ramani 201 Sujata 2016 Xu 2013 Yehia 2014 Subtotal (9 Total events Heterogene Total events Heterogene Total events Heterogene Total events	ity: Tau ² = 0 ity: Tau ² = 0 (C1) ity:	0.00; Chi ² = (= 1.48 (P = 11 .00; Chi ² = (= 3.25 (P ² = 3.25 (P ² = Tranexamic Events n 0 0 2 2 3 1 1 8 8 0 0 0 0 2 2 3 3 1 1 8 8 0 0 0 0 2 2 3 3 1 1 8 8 0 0 0 0 0 2 2 3 3 1 1 8 8 0 0 1 6 1 9 1 9 1 9 1 9 1 9 1 9 1 9 1 9 1 9	0.14) 1113 4.04, df (0.001) 9.000, cc acid Total E 70 60 330 60 60 330 88 106 782 1.67, df 0.0000 220 220 0.34)	41 = 5 (P = if = 1 (P Contro cvents 3 2 7 6 12 4 9 9 9 2 5 5 5 = 7 (P = 1) 3 3 3	1106 0.54); = 0.95 70 300 360 330 360 360 300 366 106 748 0.98); 219 219	100.0% $i^{2} = 0\%$ $), i^{2} = 0\%$ Weight N 2.9% 2.8% 10.3\% 10.3\% 10.3\% 10.3\% 10.3\% 10.3\% 10.3\% 10.3\% 10.3\% 10.3\% 10.3\% 10.3\% 10.3\% 10.3\% 10.3\% 10.3\% 10.3\% 10.3\% 10.3\% 10.3\% 1	Risk Ratio A-H, Random, 95% CI 0.14 (0.01, 2.72) 0.10 (0.01, 2.05) 0.29 (0.06, 1.37) 0.33 (0.07, 1.59) 0.24 (0.07, 0.77) 0.25 (0.03, 2.11) 0.41 (0.19, 0.89) 0.20 (0.01, 4.12) 0.31 (0.18, 0.51) 0.33 (0.03, 3.17)	Tranexamic acid Control Risk Ratio M-H, Random, 95% Cl	100
Subtotal (9 Total events Heterogene Test for ove Total events Heterogene Test for ove Total events Study or St Caese Chosh 2014 Caese Chosh 2014 Caese Chosh 2014 Caese Shoha 2014 Subtotal (9 Total events Heterogene Test for ove Vagin Cungorduk Ramani 201 Subtotal (9 Total events Heterogene Test for ove Vagin Cungorduk Subtotal (9 Total events	ity: Tau ² = 0 ity: Tau ² = 0 (CI) ity: Tau ² = 0 ity: Not appl real effect: Z (CI) ity: Not appl ity: N	.00; Chi ² = (1.48 (P = 11 .00; Chi ² = (3.25 (P) = Tranexamic Events n 0 0 2 2 3 1 1 8 8 0 .00; Chi ² = (1 1 icable	0.14) 1113 4.04, df - 0.001, 0	41 = 5 (P = If = 1 (P Contro Contro Sector 12 4 19 2 5 5 5 7 (P = 1) 3 3 5 8	1106 0.54): = 0.95 Total 70 30 60 36 60 36 60 86 106 748 0.98): 219 219 967	100.0% $i^2 = 0\%$), $i^2 = 0\%$ Weight N 2.9% 2.8% 10.3% 18.1% 5.5% 42.4% 2.8% 42.4% 2.8% 42.4% 2.8% 4.9% 4.9% 4.9% 100.0%	Risk Ratio A-H, Random, 95% CI 0.14 (0.01, 2.72) 0.10 (0.01, 2.05) 0.29 (0.06, 1.37) 0.33 (0.07, 1.59) 0.24 (0.07, 0.77) 0.25 (0.03, 2.11) 0.41 (0.19, 0.89) 0.20 (0.01, 4.12) 0.31 (0.18, 0.51) 0.33 (0.03, 3.17] 0.33 (0.03, 3.17]	Tranexamic acid Control Risk Ratio M-H, Random, 95% Cl	100

Figure 4. Forest plot diagram showing the effect of TA administration in cesarean section and vaginal delivery on the number of PPH (A), severe PPH (B), and transfusion needs (C). PPH=postpartum hemorrhage, TA=tranexamic acid.

common in pregnancy women and most of women undergoing CS or VD were young and healthy. However, for patients with severe anemia or cardiovascular diseases, blood loss of as little as 200 mL might be a life-threatening. In addition, it was unclear whether the reduction of the volume of blood loss was associated with other potential benefits of TA. Levy discussed the relation between the reduction of blood loss and the major favorable TA effect on mortality and morbidity in trauma patients and emphasized that the potential and unexplored side benefits of TA needed further research. $^{\left[50\right] }$

Traditional, PPH has been defined as blood loss in excess of 500 mL following a VD, or a loss of more than 1000 mL following CS.^[39] Because the occurrence rate of PPH will be influenced by the total volume of blood loss and also the response to treatment, the Royal College of Obstetricians and Gynaecologists (RCOG) recommended that 500 mL of blood loss is used as

A

Study or Subgroup	Tranexamic Events		Contr Events		Weight	Risk Ratio M-H, Random, 95% CI	Risk Ratio M-H, Random, 95% CI
Caesarean section							
Abdel-Aleem 2013	0	373	0	367		Not estimable	<i>.</i>
Ahmed 2014	0	62	0	62		Not estimable	y
Gai 2004	0	91	0	89		Not estimable	
Ghosh 2014	0	70	0	70		Not estimable	
Gobbur 2014	0	50	0	50		Not estimable	V
Goswami 2013	0	60	2	30	17.2%	0.10 [0.01, 2.05]	
Gungorduk 2011	0	330	0	330		Not estimable	
Halder 2013	0	50	0	50		Not estimable	
Maged 2015	0	100	0	100		Not estimable	
Mayur 2007	0	50	0	50		Not estimable	
Movafegh 2011 Nergis 2014	0	50	0	50 60		Not estimable Not estimable	
Poonia 2012	0	50	0	50		Not estimable	
Ramani 2014	o	60	0	60		Not estimable	
Rashmi 2010	0	50	0	50		Not estimable	
Sekhavat 2009	0	45	0	45		Not estimable	
Senturk 2013	1	101	1	122	20.5%	1.21 [0.08, 19.07]	
Shahid 2013	1	38	1	36	20.8%	0.95 [0.06, 14.59]	
Singh 2014	0	100	0	100		Not estimable	
Sujata 2016	0	30	0	30		Not estimable	5
Xu 2013	2	88	2	86	41.5%	0.98 [0.14, 6.78]	
Yehia 2014	0	106	0	106		Not estimable	
Subtotal (95% CI)		2014		1993	100.0%	0.69 [0.20, 2.39]	
Total events	4		6				
Heterogeneity: $Tau^2 = 0$.			= 3 (P =	0.59); 1	$^{2} = 0\%$		
Test for overall effect: Z	= 0.59 (P =	0.55)					
Manhard Arth							
Vaginal delivery	100		100				
Gungorduk 2013	0	219	0	220		Not estimable	
Mirghafourvand 2015	0	60	0	60		Not estimable	
Yang 2001 Subtotal (95% CI)	0	94 373	0	87 367		Not estimable Not estimable	
Total events	0	3/3	0	307		Not estimable	
Heterogeneity: Not applie			0				
Test for overall effect: No		3					
rest for overall effect. He	n applicable						
Total (95% CI)		2387		2360	100.0%	0.69 [0.20, 2.39]	
Total events	4		6				
Heterogeneity: $Tau^2 = 0$.			And the second sec		2 0.04		
	00; $Chi^2 = 1$.94, df	= 3 (P =	0.59); I	* = 0%		0.01 0.1 10 100
Test for overall effect: Z			= 3 (P =	0.59); I	* = 0%		
	= 0.59 (P =	0.55)		0.59); I	* = 0%		0.01 0.1 1 10 100 Tranexamic acid Control
Test for overall effect: Z	= 0.59 (P =	0.55) pplicable			² = 0%	Risk Ratio	
Test for overall effect: Z	= 0.59 (P = ences: Not a	0.55) pplicable c acid	Contr	ol		Risk Ratio M-H, Random, 95% CI	Tranexamic acid Control
Test for overall effect: Z Test for subgroup differe Study or Subgroup Caesarean sectior	= 0.59 (P = ences: Not a Tranexami Events	0.55) pplicable c acid Total	Contr Events	ol Total	Weight	M-H, Random, 95% CI	Tranexamic acid Control Risk Ratio
Test for overall effect: Z Test for subgroup differe Study or Subgroup Caesarean sectior Abdel-Aleem 2013	= 0.59 (P = ences: Not a Tranexami Events 277	0.55) pplicable c acid Total 373	Contr Events 195	ol Total 367		M-H, Random, 95% CI 1.40 [1.25, 1.57]	Tranexamic acid Control Risk Ratio
Test for overall effect: Z Test for subgroup differe Study or Subgroup Caesarean sectior Abdel-Aleem 2013 Ahmed 2014	= 0.59 (P = ences: Not a Tranexami Events 277 0	0.55) pplicable c acid Total 373 62	Contr Events 195 0	ol Total 367 62	Weight	M-H, Random, 95% CI 1.40 [1.25, 1.57] Not estimable	Tranexamic acid Control Risk Ratio
Test for overall effect: Z Test for subgroup differe Study or Subgroup Caesarean sectior Abdel-Aleem 2013 Ahmed 2014 Gai 2004	= 0.59 (P = ences: Not a) Tranexami Events 277 0 0	0.55) pplicable c acid Total 373 62 91	Contr Events 195 0 0	ol Total 367 62 89	Weight 29.0%	M-H, Random, 95% CI 1.40 [1.25, 1.57] Not estimable Not estimable	Tranexamic acid Control Risk Ratio
Test for overall effect: Z Test for subgroup differe Study or Subgroup Caesarean sectior Abdel-Aleem 2013 Ahmed 2014 Gai 2004 Ghosh 2014	= 0.59 (P = ences: Not a) Tranexami Events 277 0 0 5	0.55) pplicable c acid Total 373 62 91 70	Contr Events 195 0 0 4	ol Total 367 62 89 70	Weight 29.0% 5.9%	M-H, Random, 95% CI 1.40 [1.25, 1.57] Not estimable Not estimable 1.25 [0.35, 4.46]	Tranexamic acid Control Risk Ratio
Test for overall effect: Z : Test for subgroup differe Study or Subgroup Caesarean sectior Abdel-Aleem 2013 Ahmed 2014 Gai 2004 Ghosh 2014 Gobbur 2014	= 0.59 (P = ences: Not a Tranexami Events 277 0 0 5 26	0.55) pplicable c acid Total 373 62 91 70 50	Contr Events 195 0 0 4 21	ol Total 367 62 89 70 50	Weight 29.0% 5.9% 20.7%	M-H, Random, 95% CI 1.40 [1.25, 1.57] Not estimable 1.25 [0.35, 4.46] 1.24 [0.81, 1.89]	Tranexamic acid Control Risk Ratio
Test for overall effect: Z Test for subgroup differe Study or Subgroup Caesarean sectior Abdel-Aleem 2013 Ahmed 2014 Gai 2004 Ghosh 2014 Gobbur 2014 Gobbur 2014 Goswami 2013	= 0.59 (P = ences: Not a <u>Tranexami</u> <u>Events</u> 277 0 0 5 26 3	0.55) pplicable c acid Total 373 62 91 70 50 60	Contr Events 195 0 0 4 21 2	ol Total 367 62 89 70 50 30	Weight 29.0% 5.9%	M-H, Random, 95% CI 1.40 [1.25, 1.57] Not estimable Not estimable 1.25 [0.35, 4.46] 1.24 [0.81, 1.89] 0.75 [0.13, 4.25]	Tranexamic acid Control Risk Ratio
Test for overall effect: Z Test for subgroup differe Study or Subgroup Caesarean sectior Abdel-Aleme 2013 Ahmed 2014 Gai 2004 Ghosh 2014 Gobbur 2014 Goswami 2013 Gungorduk 2011	= 0.59 (P = ences: Not ap Tranexami Events 277 0 0 5 26 3 0	0.55) pplicable c acid Total 373 62 91 70 50 60 330	Contr Events 195 0 0 4 21 2 0	ol Total 367 62 89 70 50 30 330	Weight 29.0% 5.9% 20.7%	M-H, Random, 95% CI 1.40 [1.25, 1.57] Not estimable 1.25 [0.35, 4.46] 1.24 [0.81, 1.89] 0.75 [0.13, 4.25] Not estimable	Tranexamic acid Control Risk Ratio
Test for overall effect: Z : Test for subgroup differe Study or Subgroup Caesarean sectior Abdel-Aleem 2013 Ahmed 2014 Gai 2004 Ghosh 2014 Gobbur 2014 Gobbur 2014 Goswami 2013 Gungorduk 2011 Halder 2013	= 0.59 (P = ences: Not a) Tranexami Events 277 0 0 5 26 3 0 0 0 5 26 3 0 0 0	0.55) pplicable c acid Total 373 62 91 70 50 60 330 50	Contr Events 195 0 0 4 21 2 0 0 0	ol Total 367 62 89 70 50 30 330 50	Weight 29.0% 5.9% 20.7%	M-H, Random, 95% CI 1.40 [1.25, 1.57] Not estimable Not estimable 1.25 [0.35, 4.46] 1.24 [0.81, 1.89] 0.75 [0.13, 4.25] Not estimable Not estimable	Tranexamic acid Control Risk Ratio
Test for overall effect: Z Test for subgroup differe Study or Subgroup Caesarean sectior Abdel-Aleem 2013 Ahmed 2014 Gai 2004 Ghosh 2014 Gobbur 2014 Goswami 2013 Gungorduk 2011 Halder 2013 Maged 2015	= 0.59 (P = mces: Not at Tranexami Events 277 0 0 5 26 3 0 0 0 0	0.55) pplicable c acid Total 373 62 91 70 50 60 330 50 100	Contr Events 195 0 0 4 21 2 0 0 0 0	ol Total 367 62 89 70 50 30 330 50 100	Weight 29.0% 5.9% 20.7%	M-H, Random, 95% CI 1.40 [1.25, 1.57] Not estimable 1.25 [0.35, 4.46] 1.24 [0.81, 1.89] 0.75 [0.13, 4.25] Not estimable Not estimable Not estimable	Tranexamic acid Control Risk Ratio
Test for overall effect: Z Test for subgroup differe Study or Subgroup Caesarean sectior Abdel-Aleme 2013 Ahmed 2014 Gai 2004 Ghosh 2014 Gobbur 2014 Gobbur 2014 Gobbur 2014 Goswami 2013 Gungorduk 2011 Halder 2013 Maged 2015 Mayur 2007	= 0.59 (P = mces: Not ap Tranexami Events 277 0 0 5 26 3 0 0 0 0 0 0 0 0 0 0 0 0 0	0.55) pplicable c acid Total 373 62 91 70 50 60 330 50 50 100 50	Contr Events 195 0 0 4 21 2 0 0 0 0 0 0 0	ol Total 367 62 89 70 50 30 330 50 100 50	Weight 29.0% 5.9% 20.7%	M-H, Random, 95% CI 1.40 [1.25, 1.57] Not estimable Not estimable 1.25 [0.35, 4.46] 1.24 [0.81, 1.89] 0.75 [0.13, 4.25] Not estimable Not estimable Not estimable	Tranexamic acid Control Risk Ratio
Test for overall effect: Z Test for subgroup differe Study or Subgroup Caesarean sectior Abdel-Alem 2013 Ahmed 2014 Gai 2004 Ghosh 2014 Gobbur 2014 Goswami 2013 Gungorduk 2011 Halder 2013 Maged 2015 Mayur 2007 Movafegh 2011	= 0.59 (P = mces: Not ar Tranexami Events 277 0 0 5 26 3 0 0 0 0 0 0 0 0 0 0 0 0 0	0.55) pplicable c acid Total 373 62 91 70 50 60 330 50 100 50 50	Contr Events 195 0 4 21 2 0 0 0 0 0 0 0 0 0 0 0	ol Total 367 62 89 70 50 30 330 50 100 50 50	Weight 29.0% 5.9% 20.7%	M-H, Random, 95% CI 1.40 [1.25, 1.57] Not estimable 1.25 [0.35, 4.46] 1.24 [0.81, 1.89] 0.75 [0.13, 4.25] Not estimable Not estimable Not estimable Not estimable Not estimable	Tranexamic acid Control Risk Ratio
Test for overall effect: Z Test for subgroup differe Study or Subgroup Caesarean sectior Abdel-Aleme 2013 Ahmed 2014 Gai 2004 Ghosh 2014 Gosbar 2014 Goswami 2013 Gungorduk 2011 Halder 2013 Maged 2015 Mayur 2007 Movafegh 2011 Nergis 2014	= 0.59 (P = rnces: Not al Tranexami Events 2777 0 0 5 26 3 0 0 0 0 0 0 0 0 0 0 0 0 0	0.55) pplicable c acid Total 373 62 91 700 50 60 330 50 100 50 50 50 60	Contr Events 195 0 4 21 2 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	ol Total 367 62 89 70 50 30 330 330 50 100 50 50 60	Weight 29.0% 5.9% 20.7% 3.5%	M-H, Random, 95% CI 1.40 (1.25, 1.57) Not estimable 1.25 (0.33, 4.46) 1.25 (0.33, 4.46) 1.24 (0.81, 1.89) 0.75 (0.13, 4.25) Not estimable Not estimable Not estimable Not estimable Not estimable	Tranexamic acid Control Risk Ratio
Test for overall effect: Z Test for subgroup differe Study or Subgroup Caesarean section Abdel-Aleem 2013 Ahmed 2014 Gai 2004 Ghosh 2014 Gobbur 2014 Gobbur 2014 Gobbur 2014 Gobbur 2013 Gungorduk 2011 Halder 2013 Mague 2015 Mayur 2007 Movafegh 2011 Nergis 2014 Poonia 2012	= 0.59 (P = ences: Not ar Tranexami Events 2277 0 0 5 26 3 3 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0.55) pplicable c acid Total 373 62 91 70 50 60 330 50 100 50 50 60 50 50	Contr Events 195 0 0 4 21 2 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	ol Total 367 62 89 70 50 30 330 50 50 50 60 50	Weight 29.0% 5.9% 20.7% 3.5%	M-H, Random, 95% CI 1.40 [1.25, 1.57] Not estimable Not estimable 1.25 [0.35, 4.46] 1.24 [0.81, 1.89] 0.75 [0.13, 4.25] Not estimable Not estimable Not estimable Not estimable Not estimable Stot estimable Stot [1.15, 21.67]	Tranexamic acid Control Risk Ratio
Test for overall effect: Z Test for subgroup differe Study or Subgroup differe Caesarean sectior Abdel-Aleem 2013 Ahmed 2014 Gai 2004 Ghosh 2014 Gobbur 2014 Gobbur 2014 Gobbur 2014 Goswami 2013 Maged 2015 Mayur 2007 Movafegh 2011 Nergis 2014 Poonia 2012 Ramani 2014	= 0.59 (P = ences: Not al Tranexami Events 277 0 0 5 266 3 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0.55) pplicable c acid Total 373 62 91 70 50 60 3300 50 100 50 50 60 50 60	Contr Events 195 0 0 4 21 2 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	ol Total 367 62 89 70 50 30 30 30 30 30 50 100 50 60 50 60	Weight 29.0% 5.9% 20.7% 3.5%	M-H, Random, 95% Cl 1.40 [1.25, 1.57] Not estimable Not estimable 1.25 [0.35, 4.46] 1.24 [0.81, 1.89] 0.75 [0.13, 4.25] Not estimable Not estimable Not estimable Not estimable Not estimable Not estimable S.00 [1.15, 21.67] 7.00 [0.37, 132.66]	Tranexamic acid Control Risk Ratio
Test for overall effect: Z Test for subgroup differe Study or Subgroup Caesarean sectior Abdel-Aleme 2013 Ahmed 2014 Gai 2004 Ghosh 2014 Gosbar 2014 Goswami 2014 Goswami 2013 Gungorduk 2011 Halder 2013 Maged 2015 Mayur 2007 Movafegh 2011 Nergis 2014 Poonia 2012 Ramani 2014 Rashmi 2010	= 0.59 (P = ences: Not al Tranexami Events 277 0 0 0 5 26 3 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0.55) pplicable c acid Total 373 62 91 70 50 60 330 50 50 50 60 50 60 50 60 50	Contr Events 195 0 0 4 21 2 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	ol Total 367 62 89 70 50 30 330 50 100 50 50 60 50 50	Weight 29.0% 5.9% 20.7% 3.5%	M-H, Random, 95% Cl 1.40 (1.25, 1.57) Not estimable Not estimable 1.25 [0.35, 4.46] 1.24 (0.81, 1.89) 0.75 (0.13, 4.25] Not estimable Not estimable Not estimable Not estimable 5.00 [1.15, 21.67] 7.00 [0.37, 132.66] Not estimable	Tranexamic acid Control Risk Ratio
Test for overall effect: Z Test for subgroup differe Study or Subgroup differe Caesarean sectior Abdel-Aleem 2013 Ahmed 2014 Gai 2004 Ghosh 2014 Gobbur 2014 Gobbur 2014 Gobbur 2014 Goswami 2013 Maged 2015 Mayur 2007 Movafegh 2011 Nergis 2014 Poonia 2012 Ramani 2014	= 0.59 (P = ences: Not al Tranexami Events 277 0 0 5 266 3 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0.55) pplicable c acid Total 373 62 91 70 50 60 3300 50 100 50 50 60 50 60	Contr Events 195 0 0 4 21 2 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	ol Total 367 62 89 70 50 30 30 30 30 30 50 100 50 60 50 60	Weight 29.0% 5.9% 20.7% 3.5%	M-H, Random, 95% Cl 1.40 [1.25, 1.57] Not estimable Not estimable 1.25 [0.35, 4.46] 1.24 [0.81, 1.89] 0.75 [0.13, 4.25] Not estimable Not estimable Not estimable Not estimable Not estimable Not estimable S.00 [1.15, 21.67] 7.00 [0.37, 132.66]	Tranexamic acid Control Risk Ratio
Test for overall effect: Z Test for subgroup differe Study or Subgroup Caesarean sectior Abdel-Alem 2013 Ahmed 2014 Gai 2004 Ghosh 2014 Gobbur 2014 Gobbur 2014 Goswami 2013 Maged 2015 Mayur 2007 Mavaregh 2011 Nergis 2014 Poonia 2012 Ramani 2014 Rashmi 2010 Sekhavat 2009	= 0.59 (P = ences: Not al Tranexami Events 277 0 0 0 5 26 3 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0.55) pplicable c acid Total 373 62 91 70 50 60 330 50 100 50 60 50 60 50 60 50 60 50 60 50 60	Contr Events 195 0 4 21 2 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	ol Total 367 62 89 70 50 30 330 50 60 50 60 50 60 50 60 50 45	Weight 29.0% 5.9% 20.7% 3.5%	M-H, Random, 95% Cl 1.40 [1.25, 1.57] Not estimable 1.25 [0.35, 4.46] 1.24 [0.81, 1.89] 0.75 [0.13, 4.25] Not estimable Not estimable	Tranexamic acid Control Risk Ratio
Test for overall effect: Z Test for subgroup differe Study or Subgroup Caesarean sectior Abdel-Aleme 2013 Ahmed 2014 Gai 2004 Ghosh 2014 Gobsur 2014 Goswami 2013 Gungorduk 2011 Halder 2013 Mayed 2015 Mayur 2007 Movafegh 2011 Nergis 2014 Poonia 2012 Ramani 2014 Rashmi 2010 Sekhavat 2009 Senturk 2013	= 0.59 (P = ences: Not al Tranexami Events 2277 0 0 0 5 26 3 3 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0.55) pplicable c acid Total 373 62 91 700 50 60 330 50 60 50 60 50 60 50 60 50 60 50 60	Contr Events 195 0 4 21 2 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	ol Total 367 62 89 70 50 30 30 30 30 50 60 50 60 50 60 50 60 50 60 50 60 50 60 50 60 50 60 50 50 50 50 50 50 50 50 50 50 50 50 50	Weight 29.0% 5.9% 20.7% 3.5%	M-H, Random, 95% Cl 1.40 (1.25, 1.57) Not estimable Not estimable 1.25 (0.33, 4.46) 1.24 (0.81, 1.89) 0.75 (0.13, 4.25) Not estimable Not estimable Not estimable Not estimable 5.00 (1.15, 21.67) 7.00 [0.37, 132.66] Not estimable Not estimable Not estimable Not estimable Not estimable Not estimable Not estimable Not estimable Not estimable	Tranexamic acid Control Risk Ratio
Test for overall effect: Z Test for subgroup differe Study or Subgroup Caesarean section Abdel-Aleme 2013 Ahmed 2014 Gai 2004 Ghosh 2014 Goswami 2013 Gungorduk 2011 Halder 2013 Maged 2015 Mayur 2007 Movafegh 2011 Nergis 2014 Poonia 2012 Ramani 2014 Rashmi 2014 Rashmi 2010 Sekhavat 2009 Senturk 2013	= 0.59 (P = ences: Not al Tranexami Events 277 0 0 0 5 26 3 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0.55) pplicable c acid Total 373 62 911 70 50 60 3300 50 60 50 60 50 60 50 60 50 60 50 60 50 60 50 60 50 80 50 80 80 80 80 80 80 80 80 80 80 80 80 80	Contr Events 195 0 4 21 2 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	ol Total 367 62 89 70 50 300 300 500 500 500 500 500 500 500	Weight 29.0% 5.9% 20.7% 3.5%	M-H, Random, 95% Cl 1.40 (1.25, 1.57) Not estimable Not estimable 1.25 (0.35, 4.46) 1.24 (0.81, 1.89) 0.75 (0.13, 4.25) Not estimable Not estimable Not estimable 5.00 [1.15, 21.67] 7.00 (0.37, 132.66] Not estimable Not estimable Not estimable Not estimable Not estimable Not estimable Not estimable Not estimable	Tranexamic acid Control Risk Ratio
Test for overall effect: Z Test for subgroup differe Study or Subgroup differe Caesarean sectior Abdel-Aleem 2013 Ahmed 2014 Gai 2004 Ghosh 2014 Gobsur 2014 Gobsur 2014 Goswami 2013 Gungorduk 2011 Halder 2013 Mayer 2007 Movafegh 2011 Nergis 2014 Poonia 2012 Ramani 2014 Rashmi 2010 Senturk 2013 Shahid 2013 Shahid 2013	= 0.59 (P = ences: Not a) Tranexami 2vents 2 2 2 2 2 2 2 2	0.55) pplicable c acid Total 373 62 91 70 50 60 330 50 100 50 60 50 50 60 50 50 60 50 50 50 50 50 50 50 50 50 50 50 50 50	Contr Events 195 0 0 4 21 2 2 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	ol Total 367 62 89 70 30 30 30 30 30 30 50 50 50 60 50 60 50 60 50 60 50 22 36 60 50 20 50 50 50 50 50 50 50 50 50 50 50 50 50	Weight 29.0% 5.9% 20.7% 3.5%	M-H, Random, 95% Cl 1.40 [1.25, 1.57] Not estimable Not estimable 1.25 [0.35, 4.46] 1.24 [0.81, 1.89] 0.75 [0.13, 4.25] Not estimable Not estimable Not estimable Not estimable Not estimable S.00 [1.15, 21.67] 7.00 [0.37, 132.66] Not estimable Not estimable	Tranexamic acid Control Risk Ratio
Test for overall effect: Z Test for subgroup differe Study or Subgroup Caesarean sectior Abdel-Alem 2013 Ahmed 2014 Gai 2004 Ghosh 2014 Gobwar 2014 Goswami 2013 Gungorduk 2011 Halder 2013 Maged 2015 Mayur 2007 Movafegh 2011 Nergis 2014 Poonia 2012 Ramani 2014 Rashmi 2010 Sekhavat 2009 Senturk 2013 Shahid 2013 Singh 2014 Sujata 2016	= 0.59 (P = ences: Not al Tranexami 2277 0 0 0 5 226 3 3 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0.55) pplicable c acid Total 373 62 91 70 50 60 330 50 50 60 50 50 50 50 50 50 50 50 50 50 50 50 50	Contr Events 195 0 4 21 2 2 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	ol Total 367 62 89 70 50 300 300 500 600 500 600 500 600 500 600 500 600 500 600 500 600 500 600 500 800 800 800 800 800 800 800 800 8	Weight 29.0% 5.9% 20.7% 3.5% 4.7% 1.3%	M-H, Random, 95% Cl 1.40 [1.25, 1.57] Not estimable Not estimable 1.25 [0.35, 4.46] 1.24 [0.81, 1.89] 0.75 [0.13, 4.25] Not estimable Not estimable S.86 [2.12, 16.19] Not estimable	Tranexamic acid Control Risk Ratio
Test for overall effect: Z Test for subgroup differe Study or Subgroup Caesarean sectior Abdel-Alem 2013 Ahmed 2014 Gai 2004 Ghosh 2014 Goswami 2013 Gungorduk 2011 Halder 2013 Maged 2015 Mayur 2007 Movafegh 2011 Nergis 2014 Poonia 2012 Ramani 2014 Rashmi 2010 Sekhavat 2009 Senturk 2013 Shahid 2013 Shahid 2013 Singh 2014 Sujata 2016 Xu 2013 Yehia 2014	= 0.59 (P = ences: Not al Tranexami Events 277 0 0 0 5 266 3 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0.55) pplicable c acid Total 373 622 91 70 50 60 330 50 60 50 50 50 50 50 50 50 50 50 50 50 50 50	2 Contr Events 195 0 0 0 4 4 21 2 2 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	ol Total 367 62 89 70 50 30 300 50 50 50 60 50 60 50 60 50 60 50 60 50 60 50 60 50 60 50 60 50 50 60 50 50 60 50 50 50 50 50 50 50 50 50 50 50 50 50	Weight 29.0% 5.9% 20.7% 3.5% 4.7% 1.3%	M-H, Random, 95% Cl 1.40 [1.25, 1.57] Not estimable Not estimable 1.25 [0.35, 4.46] 1.24 [0.81, 1.89] 0.75 [0.13, 4.25] Not estimable Not estimable	Tranexamic acid Control Risk Ratio
Test for overall effect: Z Test for subgroup differe Study or Subgroup differe Caesarean sectior Abdel-Alewn 2013 Ahmed 2014 Gai 2004 Ghosh 2014 Gobbur 2014 Gobbur 2014 Gobbur 2014 Goswami 2013 Gungorduk 2011 Halder 2013 Mayer 2007 Movafegh 2011 Nergis 2014 Poonia 2012 Ramani 2014 Rashmi 2010 Sekhavat 2009 Senturk 2013 Shahid 2013 Shahid 2013 Singh 2014 Sujata 2016 Xu 2013 Yehia 2014 Subtotal (95% CI)	= 0.59 (P = ences: Not a) Tranexami Events 2277 0 0 0 5 26 3 3 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0.55) poplicabilit c acid Total 373 62 91 1373 62 91 100 50 50 50 50 50 50 50 50 50 50 50 50 5	2 Contr Events 1955 0 0 0 4 211 2 2 0 0 0 4 2 21 2 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	ol Total 367 62 89 70 50 330 50 50 50 50 50 50 50 50 50 50 50 50 50	Weight 29.0% 5.9% 20.7% 3.5% 4.7% 1.3% 8.3% 73.4%	M-H, Random, 95% Cl 1.40 [1.25, 1.57] Not estimable Not estimable 1.25 [0.35, 4.46] 1.24 [0.81, 1.89] 0.75 [0.13, 4.25] Not estimable Not estimable S.86 [2.12, 16.19] Not estimable	Tranexamic acid Control Risk Ratio
Test for overall effect: Z Test for subgroup differe Study or Subgroup Caesarean sectior Addel-Alem 2013 Ahmed 2014 Gai 2004 Ghosh 2014 Gosban 2014 Gosban 2014 Goswami 2013 Gungorduk 2011 Halder 2013 Mayed 2015 Mayur 2007 Movafegh 2011 Nergis 2014 Poonia 2012 Ramani 2014 Rashmi 2010 Sekhavat 2009 Senturk 2013 Shahid 2013 Shahid 2013 Singh 2014 Sujata 2016 Xu 2013 Yehia 2014 Subtotal (95% CI) Total events Heterogeneity: Tau ² = 0.	= 0.59 (P = ences: Not al Tranexami 2277 0 0 5 26 3 3 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0.55) pplicable Total 373 62 91 700 50 60 60 330 60 50 50 50 50 60 50 50 60 50 50 60 88 80 80 80 80 80 80 80 80 80 80 80 80	2 Contr Events 1955 0 0 0 4 211 2 2 0 0 0 4 2 21 2 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	ol Total 367 62 89 70 50 330 50 50 50 50 50 50 50 50 50 50 50 50 50	Weight 29.0% 5.9% 20.7% 3.5% 4.7% 1.3% 8.3% 73.4%	M-H, Random, 95% Cl 1.40 [1.25, 1.57] Not estimable Not estimable 1.25 [0.35, 4.46] 1.24 [0.81, 1.89] 0.75 [0.13, 4.25] Not estimable Not estimable S.86 [2.12, 16.19] Not estimable	Tranexamic acid Control Risk Ratio
Test for overall effect: Z Test for subgroup differe Study or Subgroup differe Caesarean sectior Abdel-Alewn 2013 Ahmed 2014 Gai 2004 Ghosh 2014 Gobbur 2014 Gobbur 2014 Gobbur 2014 Goswami 2013 Gungorduk 2011 Halder 2013 Mayer 2007 Movafegh 2011 Nergis 2014 Poonia 2012 Ramani 2014 Rashmi 2010 Sekhavat 2009 Senturk 2013 Shahid 2013 Shahid 2013 Singh 2014 Sujata 2016 Xu 2013 Yehia 2014 Subtotal (95% CI)	= 0.59 (P = ences: Not al Tranexami 2277 0 0 5 26 3 3 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0.55) pplicable Total 373 62 91 700 50 60 60 330 60 50 50 50 50 60 50 50 60 50 50 60 88 80 80 80 80 80 80 80 80 80 80 80 80	2 Contr Events 1955 0 0 0 4 211 2 2 0 0 0 4 2 21 2 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	ol Total 367 62 89 70 50 330 50 50 50 50 50 50 50 50 50 50 50 50 50	Weight 29.0% 5.9% 20.7% 3.5% 4.7% 1.3% 8.3% 73.4%	M-H, Random, 95% Cl 1.40 [1.25, 1.57] Not estimable Not estimable 1.25 [0.35, 4.46] 1.24 [0.81, 1.89] 0.75 [0.13, 4.25] Not estimable Not estimable S.86 [2.12, 16.19] Not estimable	Tranexamic acid Control Risk Ratio
Test for overall effect: Z Test for subgroup differe Study or Subgroup Caesarean sectior Abdel-Alem 2013 Ahmed 2014 Gai 2004 Ghosh 2014 Gobwar 2013 Gungorduk 2011 Halder 2013 Maged 2015 Mayur 2007 Movafegh 2011 Nergis 2014 Poonia 2012 Ramani 2014 Rashmi 2010 Sekhavat 2009 Senturk 2013 Shahid 2013 Shahid 2013 Shahid 2013 Shahid 2014 Sujata 2016 Xu 2013 Yehia 2014 Subtata (95% CI) Total events Heterogeneity: Tau ² = 0. Test for overall effect: Z	= 0.59 (P = ences: Not al Tranexami 2277 0 0 5 26 3 3 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0.55) pplicable Total 373 62 91 700 50 60 60 330 60 50 50 50 50 60 50 50 60 50 50 60 88 80 80 80 80 80 80 80 80 80 80 80 80	2 Contr Events 1955 0 0 0 4 211 2 2 0 0 0 4 2 21 2 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	ol Total 367 62 89 70 50 330 50 50 50 50 50 50 50 50 50 50 50 50 50	Weight 29.0% 5.9% 20.7% 3.5% 4.7% 1.3% 8.3% 73.4%	M-H, Random, 95% Cl 1.40 [1.25, 1.57] Not estimable Not estimable 1.25 [0.35, 4.46] 1.24 [0.81, 1.89] 0.75 [0.13, 4.25] Not estimable Not estimable S.86 [2.12, 16.19] Not estimable	Tranexamic acid Control Risk Ratio
Test for overall effect: Z Test for subgroup differe Study or Subgroup Caesarean section Abdel-Alem 2013 Ahmed 2014 Gai 2004 Ghosh 2014 Gobwar 2014 Gobwar 2014 Goswami 2013 Gungorduk 2011 Halder 2013 Maged 2015 Mayur 2007 Movafegh 2011 Nergis 2014 Poonia 2012 Ramani 2014 Poonia 2012 Ramani 2014 Rashmi 2010 Sekhavat 2009 Senturk 2013 Shahid 2013 Shahid 2013 Shahid 2014 Sujata 2016 Xu 2013 Yehia 2014 Subtotal (95% CI) Total events Heterogeneity: Tau ² = 0. Test for overall effect: Z	= 0.59 (P = ences: Not al Tranexami 2277 0 0 5 26 3 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0.55) poplicabile c acid Total 373 62 91 70 50 60 60 50 60 60 50 60 60 50 60 60 50 60 60 50 60 60 50 60 60 50 60 60 50 60 60 50 60 60 50 60 60 60 60 50 60 60 60 60 60 60 60 60 60 6	2 Events 195 0 0 0 4 21 2 2 0 0 0 0 0 0 0 0 0 0 0 0 0	ol Total 367 62 89 70 30 30 30 30 50 50 50 60 50 60 50 60 50 60 50 60 86 100 30 86 100 30 86 60 97 97 70 97 97 70 97 97 70 97 97 70 97 97 70 97 97 70 97 70 97 70 97 70 97 70 97 70 97 70 97 70 97 70 97 70 70 97 70 70 97 70 70 97 70 70 70 70 70 70 70 70 70 70 70 70 70	Weight 29.0% 5.9% 20.7% 3.5% 4.7% 1.3% 8.3% 73.4% I ² = 55%	M-H, Random, 95% Cl 1.40 (1.25, 1.57) Not estimable Not estimable 1.25 [0.35, 4.46] 1.24 [0.81, 1.89] 0.75 [0.13, 4.25] Not estimable Not estimable Not estimable Not estimable 5.00 [1.15, 21.67] 7.00 [0.37, 132.66] Not estimable Not estimable 1.74 [1.13, 2.68]	Tranexamic acid Control Risk Ratio
Test for overall effect: Z Test for subgroup differe Study or Subgroup differe Caesarean sectior Abdel-Alewn 2013 Ahmed 2014 Gai 2004 Ghosh 2014 Gobbur 2014 Gobbur 2014 Gobbur 2014 Gobwar 2013 Mayer 2015 Mayer 2014 Senturk 2013 Shahid 2013 Shahid 2013 Shahid 2014 Sujata 2016 Xu 2013 Yehia 2014 Subtotal (95% CI) Total events Heterogeneity: Tau ² = 0. Test for overall effect: Z Vaginal delivery Gungorduk 2013	= 0.59 (P = ences: Not a) Tranexamis 2277 0 0 2277 0 0 5 26 3 0 0 0 0 0 0 0 0 0 0 0 0 0	0.55) poplicabile cacid Total 373 62 91 70 50 60 330 300 300 300 300 500 600 500 888 1001 101 888 1001 2014 113.42, di 10.01 113.42, di 2014 12.220 12.220 12.220 12.220 12.220 12.2200 12.2000 12.2000	2 Events 195 0 0 4 4 21 195 0 0 0 0 0 0 0 0 0 0 0 0 0	ol Total 367 62 89 70 30 30 30 30 50 50 50 60 50 60 50 60 50 60 50 60 50 60 50 60 50 60 50 60 50 60 50 60 50 50 50 50 50 50 50 50 50 50 50 50 50	Weight 29.0% 5.9% 20.7% 3.5% 4.7% 1.3% 8.3% 73.4% 1 ² = 55% 24.0%	M-H, Random, 95% Cl 1.40 [1.25, 1.57] Not estimable Not estimable 1.25 [0.35, 4.46] 1.24 [0.81, 1.89] 0.75 [0.13, 4.25] Not estimable Not estimable Not estimable Not estimable Not estimable S.00 [1.15, 21.67] 7.00 [0.37, 132.66] Not estimable Not estimable Not estimable Not estimable Not estimable Not estimable Not estimable Not estimable Not estimable Not estimable 1.74 [1.13, 2.68] 2.06 [1.51, 2.82]	Tranexamic acid Control Risk Ratio
Test for overall effect: Z Test for subgroup differe Study or Subgroup Caesarean section Abdel-Alem 2013 Ahmed 2014 Gai 2004 Ghosh 2014 Gobwan 2013 Gungorduk 2011 Halder 2013 Maged 2015 Mayur 2007 Movafegh 2011 Nergis 2014 Poonia 2012 Ramani 2014 Rashni 2010 Sekhavat 2009 Senturk 2013 Shahid 2013 Shahid 2013 Shahid 2013 Shahid 2014 Sujata 2016 Xu 2013 Yehia 2014 Sujata 2014 Subtal (95% CI) Total events Heterogeneity: Tau ² = 0. Test for overall effect: Z Vaginal delivery Gungorduk 2013	= 0.59 (P = ences: Not a) Tranexamis 2277 0 0 2277 0 0 5 26 3 3 0 0 0 0 0 0 0 0 0 0 0 0 0	0.55) poplicabile c acid Total 701 703 703 703 70 50 60 60 60 60 60 60 60 60 60 6	2 Contr Events 195 0 0 0 4 2 2 0 0 0 0 0 0 0 0 0 0 0 0 0 0	ol Total 367 62 89 70 50 30 30 30 30 50 50 50 50 50 50 50 50 50 50 60 50 50 60 50 50 50 50 50 50 50 50 50 50 50 50 50	Weight 29.0% 5.9% 20.7% 3.5% 4.7% 1.3% 8.3% 73.4% 1 ² = 55% 24.0% 1.4%	M-H, Random, 95% Cl 1.40 [1.25, 1.57] Not estimable Not estimable 1.25 [0.35, 4.46] 1.24 [0.81, 1.89] 0.75 [0.13, 4.25] Not estimable Not estimable Not estimable Not estimable Not estimable Solo [1.15, 21.67] 7.00 [0.37, 132.66] Not estimable Not estimable 1.74 [1.13, 2.68] 2.06 [1.51, 2.82] 9.00 [0.50, 163.58]	Tranexamic acid Control Risk Ratio
Test for overall effect: Z Test for subgroup differe Study or Subgroup Caesarean sectior Abdel-Aleem 2013 Ahmed 2014 Gai 2004 Ghosh 2014 Gobbur 2014 Gobbur 2014 Gobbur 2014 Gobbur 2014 Gobbur 2014 Gobbur 2014 Mayed 2013 Maged 2015 Mayur 2007 Movafegh 2011 Nergis 2014 Poonia 2012 Ramani 2014 Rashmi 2010 Senturk 2013 Singh 2014 Subtotal (95% CI) Total events Heterogeneity: Tau ² = 0. Test for overall effect: Z Vaginal delivery Gungorduk 2013 Mirghafourvand 2015 Yang 2001	= 0.59 (P = ences: Not a) Tranexamis 2277 0 0 2277 0 0 5 26 3 0 0 0 0 0 0 0 0 0 0 0 0 0	0.55) poplicabile c acid Total 373 62 91 170 50 60 330 300 50 60 60 50 60 60 50 60 60 50 60 60 50 60 60 50 60 60 50 60 60 50 60 60 50 60 60 50 60 60 50 60 60 50 60 60 50 60 60 50 60 60 60 50 60 60 60 50 60 60 60 50 60 60 60 50 60 60 50 60 60 60 50 60 60 60 60 50 60 60 60 50 60 60 60 50 60 60 50 60 60 50 60 60 50 60 60 50 60 60 50 60 60 50 60 60 50 60 60 50 60 60 50 60 60 50 60 60 50 60 60 60 50 60 60 88 88 100 60 60 80 88 80 60 60 80 80 80 80 80 80 80 80 80 8	2 Events 195 0 0 4 4 21 195 0 0 0 0 0 0 0 0 0 0 0 0 0	ol Total 367 62 89 70 50 300 50 50 50 50 50 50 50 50 50 50 50 50 5	Weight 29.0% 5.9% 20.7% 3.5% 4.7% 1.3% 8.3% 73.4% 1 ² = 55% 24.0% 1.4%	M-H, Random, 95% Cl 1.40 [1.25, 1.57] Not estimable Not estimable 1.25 [0.35, 4.46] 1.24 [0.81, 1.89] 0.75 [0.13, 4.25] Not estimable Not estimable 1.74 [1.13, 2.68] 2.06 [1.51, 2.82] 9.00 [0.50, 163.58] 4.63 [0.23, 95.14]	Tranexamic acid Control Risk Ratio
Test for overall effect: Z Test for subgroup differe Study or Subgroup differe Caesarean sectior Abdel-Alewn 2013 Ahmed 2014 Gai 2004 Gobsh 2014 Gobbur 2014 Gobbur 2014 Gobwar 2013 Maged 2015 Mayur 2007 Mayur 2007 Movafegh 2011 Nergis 2014 Poonia 2012 Ramani 2014 Rashmi 2010 Sekhavat 2009 Senturk 2013 Shahid 2013 Shahid 2013 Shahid 2013 Shahid 2013 Yehia 2014 Subtotal (95% CI) Total events Heterogeneity: Tau ² = 0. Test for overall effect: Z Vaginal delivery Gungorduk 2013 Mirghafourvand 2015 Yang 2001	= 0.59 (P = ences: Not a) Tranexamis 2277 0 0 5 26 3 3 0 0 0 0 0 0 0 0 0 0 0 0 0	0.55) poplicabile c acid Total 701 703 703 703 70 50 60 60 60 60 60 60 60 60 60 6	2 Contr Events 195 0 0 0 4 2 0 0 0 0 0 0 0 0 0 0 0 0 0	ol Total 367 62 89 70 50 30 30 30 30 50 50 50 50 50 50 50 50 50 50 60 50 50 60 50 50 50 50 50 50 50 50 50 50 50 50 50	Weight 29.0% 5.9% 20.7% 3.5% 4.7% 1.3% 8.3% 73.4% 1 ² = 55% 24.0% 1.4%	M-H, Random, 95% Cl 1.40 [1.25, 1.57] Not estimable Not estimable 1.25 [0.35, 4.46] 1.24 [0.81, 1.89] 0.75 [0.13, 4.25] Not estimable Not estimable Not estimable Not estimable Not estimable Solo [1.15, 21.67] 7.00 [0.37, 132.66] Not estimable Not estimable 1.74 [1.13, 2.68] 2.06 [1.51, 2.82] 9.00 [0.50, 163.58]	Tranexamic acid Control Risk Ratio
Test for overall effect: Z Test for subgroup differe Study or Subgroup Caesarean section Abdel-Alem 2013 Ahmed 2014 Gai 2004 Ghosh 2014 Gobbur 2014 Goswami 2013 Gungorduk 2011 Halder 2013 Mayed 2015 Mayur 2007 Movafegh 2011 Nergis 2014 Poonia 2012 Ramani 2014 Rashmi 2010 Sekhavat 2009 Senturk 2013 Shahid 2013 Shahid 2013 Shahid 2013 Shahid 2014 Sujata 2016 Xu 2013 Yehia 2014 Subtotal (95% CI) Total events Yang 2001 Subtotal (95% CI) Total events	= 0.59 (P = ences: Not a) Tranexamis 2277 0 0 5 26 3 0 0 0 0 0 0 0 0 0 0 0 0 0	0.55) poplicabilic c acid Total 373 62 91 70 50 60 60 50 50 50 60 50 50 60 50 50 50 60 50 50 60 50 50 60 50 50 60 50 50 50 50 50 50 50 50 50 5	2 Events 195 0 0 0 4 21 2 0 0 0 0 0 0 0 0 0 0 0 0 0	ol Total 367 62 89 70 50 30 30 30 50 50 60 60 50 60 60 50 60 60 50 60 60 50 60 60 50 60 60 50 60 60 50 50 60 60 50 50 50 50 50 50 50 50 50 50 50 50 50	Weight 29.0% 5.9% 20.7% 3.5% 4.7% 1.3% 8.3% 73.4% 1 ² = 55% 24.0% 1.4% 1.2% 26.6%	M-H, Random, 95% Cl 1.40 [1.25, 1.57] Not estimable Not estimable 1.25 [0.35, 4.46] 1.24 [0.81, 1.89] 0.75 [0.13, 4.25] Not estimable Not estimable 1.74 [1.13, 2.68] 2.06 [1.51, 2.82] 9.00 [0.50, 163.58] 4.63 [0.23, 95.14]	Tranexamic acid Control Risk Ratio
Test for overall effect: Z Test for subgroup differe Study or Subgroup Caesarean sectior Abdel-Alewn 2013 Ahmed 2014 Gai 2004 Ghosh 2014 Gobbur 2014 Gobbur 2014 Gobwar 2013 Gungorduk 2011 Halder 2013 Mayed 2015 Mayur 2007 Movafegh 2011 Nergis 2014 Poonia 2012 Ramani 2014 Rashmi 2010 Senturk 2013 Shahid 2013 Shahid 2013 Shahid 2013 Shahid 2013 Shahid 2013 Shahid 2013 Shahid 2014 Sujata 2016 Xu 2013 Yehia 2014 Subtotal (95% CI) Total events Heterogeneity: Tau ² = 0. Total for overall effect: Z Vagnal delivery Gungorduk 2013 Mirghafourvand 2015 Yang 2001 Subtotal (95% CI) Total events Heterogeneity: Tau ² = 0. Total events Heterogeneity: Tau ² = 0. Total events Heterogeneity: Tau ² = 0. Total events Heterogeneity: Tau ² = 0. Subtotal (95% CI) Total events Subtotal (9	= 0.59 (P = ences: Not a) Tranexamis 2277 0 0 5 26 3 0 0 0 0 0 0 0 0 0 0 0 0 0	0.55) poplicabile cacid Total 373 62 91 70 50 60 330 300 300 300 300 500 600 500 700 700 700 700 700 700 7	2 Contr Events 195 0 0 0 4 4 21 195 0 0 0 0 0 0 0 0 0 0 0 0 0	ol Total 367 62 89 70 50 30 30 30 50 50 60 60 50 60 60 50 60 60 50 60 60 50 60 60 50 60 60 50 60 60 50 50 60 60 50 50 50 50 50 50 50 50 50 50 50 50 50	Weight 29.0% 5.9% 20.7% 3.5% 4.7% 1.3% 8.3% 73.4% 1 ² = 55% 24.0% 1.4% 1.2% 26.6%	M-H, Random, 95% Cl 1.40 [1.25, 1.57] Not estimable Not estimable 1.25 [0.35, 4.46] 1.24 [0.81, 1.89] 0.75 [0.13, 4.25] Not estimable Not estimable 1.74 [1.13, 2.68] 2.06 [1.51, 2.82] 9.00 [0.50, 163.58] 4.63 [0.23, 95.14]	Tranexamic acid Control Risk Ratio
Test for overall effect: Z Test for subgroup differe Study or Subgroup Caesarean sectior Abdel-Aleem 2013 Ahmed 2014 Gai 2004 Ghosh 2014 Gobsun 2014 Gobsun 2014 Gobsun 2014 Goswami 2013 Maged 2015 Mayur 2007 Movafegh 2011 Nergis 2014 Poonia 2012 Ramani 2014 Ramani 2014 Rashmi 2010 Sekhavat 2009 Senturk 2013 Shahid 2013 Singh 2014 Subtotal (95% CI) Total events Heterogeneity: Tau ² = 0. Test for overall effect: Z Vaginal delivery Gungorduk 2013 Subtotal (95% CI) Total events Heterogeneity: Tau ² = 0. Total events	= 0.59 (P = ences: Not a) Tranexamis 2277 0 0 5 26 3 0 0 0 0 0 0 0 0 0 0 0 0 0	0.55) poplicabile c acid Total 373 62 91 170 50 60 330 300 50 60 50 60 50 60 50 60 50 60 60 50 60 60 50 60 60 50 60 60 50 60 50 60 50 60 50 60 60 88 8 100 60 60 88 8 100 60 88 8 100 60 60 88 8 100 60 60 88 8 100 60 60 88 8 100 60 60 88 8 102 60 60 88 8 102 60 60 88 8 102 60 60 88 8 102 102 102 102 102 102 102 102	2 Contr Events 195 0 0 0 4 4 21 195 0 0 0 0 0 0 0 0 0 0 0 0 0	ol Total 367 62 89 70 50 30 30 30 50 50 60 60 50 60 60 50 60 60 50 60 60 50 60 60 50 60 60 50 60 60 50 50 60 60 50 50 50 50 50 50 50 50 50 50 50 50 50	Weight 29.0% 5.9% 20.7% 3.5% 4.7% 1.3% 8.3% 73.4% 1 ² = 55% 24.0% 1.4% 1.2% 26.6%	M-H, Random, 95% Cl 1.40 [1.25, 1.57] Not estimable Not estimable 1.25 [0.35, 4.46] 1.24 [0.81, 1.89] 0.75 [0.13, 4.25] Not estimable Not estimable 1.74 [1.13, 2.68] 2.06 [1.51, 2.82] 9.00 [0.50, 163.58] 4.63 [0.23, 95.14] 2.11 [1.55, 2.88]	Tranexamic acid Control Risk Ratio
Test for overall effect: Z Test for subgroup differe Study or Subgroup Caesarean sectior Abdel-Alewn 2013 Ahmed 2014 Gai 2004 Ghosh 2014 Gobbur 2014 Gobbur 2014 Gobwar 2013 Gungorduk 2011 Halder 2013 Mayed 2015 Mayur 2007 Movafegh 2011 Nergis 2014 Poonia 2012 Ramani 2014 Rashmi 2010 Senturk 2013 Shahid 2013 Shahid 2013 Shahid 2013 Shahid 2013 Shahid 2013 Shahid 2013 Shahid 2014 Sujata 2016 Xu 2013 Yehia 2014 Subtotal (95% CI) Total events Heterogeneity: Tau ² = 0. Total for overall effect: Z Vagnal delivery Gungorduk 2013 Mirghafourvand 2015 Yang 2001 Subtotal (95% CI) Total events Heterogeneity: Tau ² = 0. Total events Heterogeneity: Tau ² = 0. Total events Heterogeneity: Tau ² = 0. Total events Heterogeneity: Tau ² = 0. Subtotal (95% CI) Total events Subtotal (9	= 0.59 (P = ences: Not a) Tranexamis 2277 0 0 5 26 3 0 0 0 0 0 0 0 0 0 0 0 0 0	0.55) poplicabile cacid Total 373 62 91 70 50 60 330 300 300 300 300 500 600 500 700 700 700 700 700 700 7	2 Contr Events 195 0 0 0 4 4 21 195 0 0 0 0 0 0 0 0 0 0 0 0 0	ol Total 367 62 89 90 50 30 30 50 60 50 60 50 60 50 60 50 60 50 60 50 60 50 60 50 60 50 60 50 60 50 60 50 60 50 60 50 50 60 50 50 60 50 50 50 50 50 50 50 50 50 50 50 50 50	Weight 29.0% 5.9% 20.7% 3.5% 4.7% 1.3% 8.3% 73.4% 1 ² = 55% 24.0% 1.4% 1.2% 26.6%	M-H, Random, 95% Cl 1.40 [1.25, 1.57] Not estimable Not estimable 1.25 [0.35, 4.46] 1.24 [0.81, 1.89] 0.75 [0.13, 4.25] Not estimable Not estimable 1.74 [1.13, 2.68] 2.06 [1.51, 2.82] 9.00 [0.50, 163.58] 4.63 [0.23, 95.14]	Tranexamic acid Control Risk Ratio
Test for overall effect: Z Test for subgroup differe Study or Subgroup Caesarean sectior Abdel-Aleem 2013 Ahmed 2014 Gai 2004 Ghosh 2014 Gobsun 2014 Gobsun 2014 Gobsun 2014 Goswami 2013 Maged 2015 Mayur 2007 Movafegh 2011 Nergis 2014 Poonia 2012 Ramani 2014 Ramani 2014 Rashmi 2010 Sekhavat 2009 Senturk 2013 Shahid 2013 Singh 2014 Subtotal (95% CI) Total events Heterogeneity: Tau ² = 0. Test for overall effect: Z Vaginal delivery Gungorduk 2013 Subtotal (95% CI) Total events Heterogeneity: Tau ² = 0. Total events	= 0.59 (P = ences: Not a) Tranexamis 2277 0 0 5 26 3 3 0 0 0 0 0 0 0 0 0 0 0 0 0	0.55) poplicabile c acid Total 373 62 91 70 50 60 60 50 50 60 50 50 60 50 50 60 50 50 60 50 50 60 50 50 60 50 50 50 60 50 50 50 50 50 50 50 50 50 5	2 Events 195 0 0 4 21 2 0 0 0 0 0 0 0 0 0 0 0 0 0	ol Total 367 62 89 70 50 30 30 50 50 50 50 50 50 50 50 50 50 50 50 50	Weight 29.0% 5.9% 20.7% 3.5% 4.7% 1.3% 8.3% 73.4% 1 ² = 55% 24.0% 1.4% 1.2% 26.6% ² = 0% 100.0%	M-H, Random, 95% Cl 1.40 (1.25, 1.57) Not estimable Not estimable 1.25 (0.35, 4.46) 1.24 (0.81, 1.89) 0.75 (0.13, 4.25) Not estimable Not estimable 1.74 [1.13, 2.68] 2.06 [1.51, 2.82] 9.00 [0.50, 163.58] 4.63 [0.23, 95.14] 2.11 [1.55, 2.88] 1.85 [1.31, 2.61]	Tranexamic acid Control Risk Ratio

Figure 5. Forest plot diagram showing the effect of TA administration in cesarean section and vaginal delivery on occurrence rate of DVT (A), and other minor adverse events (B). DVT = deep venous thrombosis, TA = tranexamic acid.

a point of "alert," while treatment is only performed once the patient loses over 1000 mL of blood.^[51] The effect of TA on PPH is important, especially for CS, as maternal deaths usually occur when blood loss is over 1000 mL.^[51] Our findings indicated that TA usage rendered a significant reduction of PPH and severe PPH in both CS and VD. However, the current level of evidence was

B Test for subgroup differences: $Chi^2 = 0.51$, df = 1 (P = 0.48), $I^2 = 0\%$

insufficient to reach a definitive conclusion. The rate of PPH varied greatly depending on the criteria that were used to define it, and it was not the same among different regions around the world, which might be associated with a higher heterogeneity.

The rate of thromboembolic events during pregnancy and puerperium is higher than that in the general population.^[1] Thus,

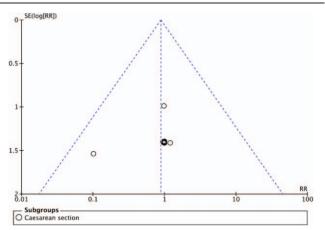


Figure 6. A funnel plot of the logarithm of effect size (RR) versus the SE for each study. RR=risk ratio, SE=standard error.

the safety of TA administration for pregnancy women must be evaluated carefully. Previous studies evaluating the usage of TA in oral, cardiac, and orthopedic surgeries, and recent studies evaluating the usage of TA in obstetrics have confirmed its safety.^[1,5,8,9,42] A study by Heesen et al^[37] evaluated the usage of TA in 1578 participants who undergoing CS or VD and showed no associated between TA usage and the incidence of thromboembolic events. Our findings showed 4 thromboembolic events in CS following TA administration, which had no significant difference with control group. However, caution was required in the interpretation of these results due to the lower rate of complication and the different methods of DVT screening. Thus, a prolonged treatment with TA should be monitored closely to avoid the risk for underlying thrombosis. Our study was not powered to address safety issues, because the minor side effects including gastrointestinal and neurological manifestations, which were mild and reversible, were higher in TA administration than control group. Although the minor side effects were not the same importance with thromboembolic events, it was essential to balance the clinical effect of TA in reducing blood loss with disabling symptoms. Whether a lower dosage of TA rendered a lower risk of complications needed further studies. In addition, studies evaluating the effective of TA on neonate reported no difference regarding neonatal Apagar score in both groups and no other adverse neonatal outcomes occurred after prophylactic TA administration. Thus, the usage of TA is safety for neonate.

4.1. Strength

The reliability and robustness of the pooled results were supported by the most rigorous assessment of methodology quality of included studies in our meta-analysis: the comprehensive literature search without language restrictions and including the gray literature and conference proceedings; a relative large number of studies in the systematic review, most of which were published in recent years; the quantitative summary of the evidence; the performance of subgroup analyses according to the mode of delivery; the analysis of blood loss according to the different time period; and the sensitivity analysis restricted to trials with low risk of bias.

5. Limitation

Some limitations of this study should be acknowledged. There was substantial statistical heterogeneity existing for several outcomes, especially for bleeding volume. Therefore, our findings should be interpreted in this context. To reduce the clinical heterogeneity among the included studies, we used random effects models to pool data across studies to attempt to incorporate any heterogeneity and explore possible sources of heterogeneity. In addition, the mean difference for evaluating the amount of reduced blood loss was adopted between TA and control group. Despite this, we could not explain most of the heterogeneity, which might be due to the differences in study population, doses of TA or usage of addition uterine drugs, cesarean delivery technique, surgical experience, method of assessment of blood loss, or study implementation. Only 3 studies with small samples were included to evaluate the usage of TA in VD, which might result in a certain bias of the conclusion. In addition, because unpublished data could not be required, we could not fully exclude the publication bias. The majority of studies included relatively small sample size, which perhaps affected the accuracy of the conclusion. Although some studies stated that TA was a cheap drug and did not increase the cost of patients, no study presented the detailed data in their results. Thus, the data were inadequate to pool and the conclusion of cost was unconvincing. Finally, similar with any meta-analyses, ours was limited by the quality of original data.

6. Conclusion

Based on the current evidence, the present meta-analysis demonstrates that TA administration in CS significantly could reduce blood loss, lower the incidence rate of PPH, and severe PPH, and render a significant reduction in blood needs without no apparent increase in harm. Thus, TA seems to be an efficacious and safe drug in patients undergoing CS. However, data are insufficient to evaluate the clinical effect of TA in patients undergoing VD because of the smaller samples and the lower methodology quality of included studies. Therefore, further welldesigned RCTs with larger samples are needed to validate our findings.

References

- AbouZahr C. Global burden of maternal death and disability. Br Med Bull 2003;67:1–1.
- [2] IKambo I, Bedi N, Dhillon BS, et al. A critical appraisal of cesarean section rates at teaching hospitals in India. IntJ Gynecol Obstet 2002; 79:151–8.
- [3] Pau LM. Tranexamic acid: a review of its use in the treatment of hyperfibrinolysis. Drugs 2012;72:585–617.
- [4] Wang C, Xu GJ, Han Z, et al. Topical application of tranexamic acid in primary total hip arthroplasty: a systemic review and meta-analysis. Int J Surg 2015;15:134–9.
- [5] Cheriyan T, Maier SP 2nd, Bianco K, et al. Efficacy of tranexamic acid on surgical bleeding in spine surgery: a meta-analysis. Spine J 2015;15: 752–61.
- [6] Faraoni D, Willems A, Melot C, et al. Efficacy of tranexamic acid in paediatric cardiac surgery: a systematic review and meta-analysis. Eur J Cardiothorac Surg 2012;42:781–6.
- [7] Naoulou B, Tsai MC. Efficacy of tranexamic acid in the treatment of idiopathic and non-functional heavy menstrual bleeding: a systematic review. Acta Obstet Gynecol Scand 2012;91:529–37.
- [8] Topsoee MF, Bergholt T, Ravn P, et al. Anti-hemorrhagic effect of prophylactic tranexamic acid in benign hysterectomy-a double-blinded randomized placebo-controlled trial. Am J Obstet Gynecol 2016;215:72. e1-8.

- [9] Shaaban MM, Ahmed MR, Farhan RE, et al. Efficacy of tranexamic acid on myomectomy-associated blood loss in patients with multiple myomas: a randomized controlled clinical trial. Reprod Sci 2016;23:908–12.
- [10] Gai MY, Wu LF, Su QF, et al. Clinical observation of blood loss reduced by tranexamic acid during and after caesarian section: a multi-center, randomized trial. Euro J Obstet, Gynecol, Reprod Biol 2004;112:154–7.
- [11] Gohel Mayur PP, Gupta A, Desai P. Efficacy of tranexamic acid in decreasing blood loss during and after cesarean section: A randomized case controlled prospective study. J Obstet Gynecol India 2007;57:227–30.
- [12] Sekhavat L, Tabatabaii A, Dalili M, et al. Efficacy of tranexamic acid in reducing blood loss after cesarean section. Int J Gynaecol Obstet 2009;22:72–5.
- [13] Rashmi PS, Sudha TR, Prema P, et al. Roll of Tranexamic acid in reducing blood loss during and after cesarean section a randomized case control prospective study. J Med Res Pract 2010;1:40–3.
- [14] Gungorduk K, Yildirim G, Asicioglu O, et al. Efficacy of intravenous tranexamic acid in reducing blood loss after elective cesarean section: a prospective, randomized, double-blind, placebo-controlled study. Am J Perinatol 2011;28:233–40.
- [15] Movafegh A, Eslamian L, Dorabadi A. Effect of intravenous tranexamic acid administration on blood loss during and after cesarean delivery. Int J Gynaecol Obstet 2011;115:224–6.
- [16] Poonia M, Bhardwaj N, Bhardwaj N, et al. Role of Tranexamic acid in reducing blood loss after caesarean section: a randomized case control prospective study. J Med Sci Res 2012;3:44–6.
- [17] Abdel-Aleem H, Alhusaini TK, Abdel-Aleem MA, et al. Effectiveness of tranexamic acid on blood loss in patients undergoing elective cesarean section: randomized clinical trial. J Matern Fetal Neonatal Med 2013;26:1705–9.
- [18] Shahid A, Khan K. Tranexamic acid in decreasing blood loss during and after caesarean section. J Coll Physicians Surg Pak 2013;23:459–62.
- [19] Goswami U, Sarangi S, Gupta S, et al. Comparative evaluation of two doses of tranexamic acid used prophylactically in anemic parturients for lower segment cesarean section: A double-blind randomized case control prospective trial. Saudi J Anaesth 2013;7:427–31.
- [20] Halder S, Samanta B, Sardar R, et al. Tranexamic acid used before caesarean section reduces blood loss based on pre- and postoperative haemaoglobin level: a case-control study. J India Med Assoc 2013;111:184–6.
- [21] Senturk MB, Cakmak Y, Yildiz G, et al. Tranexamic acid for cesarean section: a double-blind, placebo-controlled, randomized clinical trial. Arch Gynecol Obstet 2013;287:641–5.
- [22] Xu J, Gao W, Ju Y. Tranexamic acid for the prevention of postpartum hemorrhage after cesarean section: a double-blind randomization trial. Arch Gynecol Obstet 2013;287:463–8.
- [23] Ahmed MR, Sayed Ahmed WA, Madny EH, et al. Efficacy of tranexamic acid in decreasing blood loss in elective caesarean delivery. J Matern Fetal Neonatal Med 1-5;2014:
- [24] Ghosh A, Chaudhuri P, Muhuri B. Efficacy of intravenous tranexamic acid before cesarean section in preventing post partum hemorrhage-a prospective randomized double blind placebo controlled study. Int J Bio Med Res 2014;5:4461–4.
- [25] Gobbur V, Shiragur S, Jhanwar U, et al. Efficacy of tranexamic acid in reducing blood loss during lower segment caesarean section. Int J Reprod Contracept Obstet Gynecol 2014;3:414.
- [26] Taj N, Firdous A, Akhtar N, et al. Efficacy of tranexamic acid in reducing blood loss during and after cesarean section. Ra Med J 2014;39:311–3.
- [27] Singh T, Burute SB, Deshpande HG, et al. Efficacy of tranexamic acid in decreasing blood loss during and after caesarean section: a randomized case control prospective study. J Evolut Med Dent Sci 2014;3:2780–8.
- [28] Yehia AH, Koleib MH, Abdelazim IA, et al. Tranexamic acid reduces blood loss during and after cesarean section: a double blinded, randomized, controlled trial. Asian Pac J Reprod 2014;3:53–6.
- [29] Maged AM, Helal OM, Elsherbini MM, et al. A randomized placebocontrolled trial of preoperative tranexamic acid among women undergoing elective cesarean delivery. Int J Gynaecol Obstet 2015; 131: 265–8.
- [30] Sujata N, Tobin R, Kaur R, et al. Randomized controlled trial of tranexamic acid among parturients at increased risk for postpartum

hemorrhage undergoing cesarean delivery. Int J Gynaecol Obstet 2016;133:312–5.

- [31] Ramani B, Nayak L. Intravenous 1 gram tranexamic acid for prevention of blood loss and blood transfusion during caesarean section: a randomized case control study. Int J Reprod Contracept Obstet Gynecol 2014;3:366.
- [32] Yang H, Zhang S, Shi C, et al. Clinical study on the efficacy of tranexamic acid in reducing postpartum blood lose: a randomized, comparative, multicenter trial. Zhonghua Fu Chan Ke Za Zhi 2001;36:590–2.
- [33] Gungorduk K, Asicioglu O, Yildirim G, et al. Can intravenous injection of tranexamic acid be used in routine practice with active management of the third stage of labor in vaginal delivery? A randomized controlled study. Am J Perinatol 2013;30:407–13.
- [34] Mirghafourvand M, Mohammad-Alizadeh S, Abbasalizadeh F, et al. The effect of prophylactic intravenous tranexamic acid on blood loss after vaginal delivery in women at low risk of postpartum haemorrhage: a double-blind randomised controlled trial. Aust N Z J Obstet Gynaecol 2015;55:53–8.
- [35] Panagiotis P, Kadir RA. Antifibrinolytic therapy with tranexamic acid in pregnancy and postpartum. Expert Opin Pharmacother 2011;12: 503–16.
- [36] Ferrer P, Roberts I, Sydenham E, et al. Anti-fibrinolytic agents in post partum haemorrhage: a systematic review. BMC Pregnancy Childbirth 2009;9:29.
- [37] Heesen M, Bohmer J, Klohr S, et al. Prophylactic tranexamic acid in parturients at low risk for post-partum haemorrhage: systematic review and meta-analysis. Acta Anaesthesiol Scand 2014;58:1075–85.
- [38] Novikova N, Hofmeyr G. Tranexamic acid for preventing postpartum haemorrhage. Cochrane Database Syst Rev 2010;7:CD007872.
- [39] Chi BH. Translating clinical management into an effective public health response for postpartum haemorrhage. BJOG 2015;122:211.
- [40] Nadisauskiene RJ, Kliucinskas M, Dobozinskas P, et al. The impact of postpartum haemorrhage management guidelines implemented in clinical practice: a systematic review of the literature. Eur J Obstet Gynecol Reprod Biol 2014;178:21–6.
- [41] Sharma R, Najam R, Misra MK. Efficacy of tranexamic acid in decreasing blood loss during and after cesarean section. Biomed Pharmacol J 2011;4:231–5.
- [42] Sahhaf F, Abbasalizadeh S, Ghojazadeh M, et al. Comparison effect of intravenous tranexamic acid and misoprostol for postpartum haemorrhage. Nig Med J 2015;55:348–53.
- [43] Shakur H, Gülmezoglu M, Alfirevic Z, et al. The WOMAN Trial (World Maternal Antifibrinolytic Trial): tranexamic acid for the treatment of postpartum haemorrhage: an international randomised, double blind placebo controlled trial. Trials 2010;11:40.
- [44] Ducloy-Bouthors AS, Jude B, Duhamel A, et al. High-dose tranexamic acid reduces blood loss in postpartum haemorrhage. Crit Care 2011; R117.
- [45] Vigna-Taglianti F, Basso L, Rolfo P, et al. Tranexamic acid for reducing blood transfusions in arthroplasty interventions: a cost-effective practice. Eur J Orthop Surg Traumatol 2014;24:545–51.
- [46] Sepah YJ, Umer M, Ahmad T, et al. Use of tranexamic acid is a cost effective method in preventing blood loss during and after total knee replacement. J Orthop Surg Res 2011;6:22.
- [47] Faraoni D, Carlier C, Samama CM, et al. Efficacy and safety of tranexamic acid administration for the prevention and/or the treatment of post-partum haemorrhage: a systematic review with meta-analysis. Ann Fr Anesth Reanim 2014;33:563–71.
- [48] Gabel KT, Weeber TA. Measuring and communicating blood loss during obstetric hemorrhage. J Obstet Gynecol Neonatal Nurs 2012;41:551–8.
- [49] Patel A, Goudar SS, Geller SE, et al. Drape estimation vs. visual assessment for estimating postpartum hemorrhage. Int J Gynaecol Obstet 2006;93:220–4.
- [50] Levy JH. Antifi brinolytic therapy: new data and new concepts. Lancet 2010;376:3–4.
- [51] Dahlke JD, Mendez-Figueroa H, Maggio L, et al. Prevention and management of postpartum hemorrhage: a comparison of 4 national guidelines. AJOG 2015;213:76.e1–0.