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Role Of Prophylactic Magnesium Supplementation in Prevention of Postoperative Atrial Fibrillation in Patients Undergoing Coronary Artery Bypass Grafting: A Meta-analysis of 23 Randomized Controlled Trials (Poster).

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Role Of Prophylactic Magnesium Supplementation in Prevention of Postoperative Atrial Fibrillation in Patients Undergoing Coronary Artery Bypass Grafting: A Meta-analysis of 23 Randomized Controlled Trials

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Background

Several randomized clinical trials have evaluated the efficacy of prophylactic magnesium (Mg) supplementation in prevention of post-operative atrial fibrillation (POAF) in patients undergoing cardiac artery bypass grafting (CABG). We aim to determine the role of prophylactic Mg in 3 settings (intraoperative, postoperative, intraoperative + postoperative) in prevention of POAF.

Methods

Results

A systemic literature search was performed (until October 20, 2015) using PubMed, EMBASE, Web of Science, and Cochrane Central Register of Controlled Trials to identify trials evaluating Mg supplementation post CABG (figure 1). Primary outcome of our study was reduction in the POAF. For each study, the incidence of atrial fibrillation in both the intervention and placebo groups was extracted to calculate odd ratio and 95% confidence intervals (Cls).

We included a total of 2,973 participants (1,471 in the Mg group and 1,502 in the placebo group) enrolled in 23 randomized controlled trials. By using random-effects models, pooled analysis demonstrated no significant reduction in POAF (OR 0.81; 95% CI, 0.64-1.02; p = 0.08) in Mg group as compared to placebo. However, there was reduction in POAF in the group that received prophylactic Mg postoperatively (OR 0.66; 95% CI 0.44-0.99; p = 0.04) with no significant heterogeneity. Number needed to treat in our study = 13 (95% Cl 7.04-81.34).

In nine trials that evaluated prophylactic intraoperative Mg supplementation, 27% patients had POAF in the intraoperative Mg arm versus 26% in the control arm with no significant reduction in POAF (OR 0.88; 95% CI: 0.58 - 1.33; p=0.53).

In seven trials evaluated a combined intra and postoperative magnesium supplementation approach. There was no reduction in POAF (29% and 31% in Mg arm versus control arm; OR=0.87; 95% CI=0.60 -1.27; p=0.48) (figure 2).



Figure 1: PRISMA Statement

Trials unrelated to research topic excluded based on the title and abstract (n=514)

Not randomized (n=1) Atrial fibrillation not reported (n=7); Not placebo-controlled (n=7); Surgery other than coronary artery bypass grafting (n=4); Only abstracts available (n=4)

tudy or Subgroup		nesium	No Magne	esium		Odds Ratio	Odds Ratio
	Events	Total	Events	Total	Weight	M-H, Random, 95% Cl	M-H, Random, 95% Cl
.1.1. Intraoperative	Magnesium		_			_	
Begogui et al	2	50	3	50	1.4%	0.65 [0.10, 4.09] 🗲	
asalino et al	4	48	5	49	2.3%	0.80 [0.20, 3.18] 🗲	
larris et al	1	9	1	11	0.6%	1.25 [0.07, 23.26] 🗲	
layashi et al	3	35	11	35	2.3%	0.20 [0.05, 0.81] 🗲	
l et al	2	20	8	20	1.6%	0.17 [0.03, 0.92] +	
linger et al	79	186	67	177	9.1%	1.21 [0.80, 1.85]	
hakerinia et al	5	25	8	25	2.6%	0.53 [0.15, 1.93] 🗲	
vagzdiene et al	15	52	28	106	5.6%	1.13 [0.54, 2.37]	
eatman et al	58	200	45	200	8.7%	1.41 [0.90, 2.21]	
ubtotal (95% CI)	4.60	626	. – .	673	34.2%	0.88 [0.58, 1.33]	
otal events	169		176	~ /			
leterogeneity. lau ² =	= 0.13: Chi ² = 13.44, dt	r = 8 (P = 0)	$(10); ^2 = 40$	%			
est for overall effect	: Z = 0.63 (P = 0.53)						
1 2 Doctonorative	Magnacium						
ohmonoch ot al		ГО	71	FO	л ло/		
cillianesn et al	1U 1 1	50	<u>کا</u> ۲۲	50	4.4%		
orquitouri et al		66 40	15	64 50	4.6%	0.65[0.27, 1.56]	
anning et al	10	49	14	50	3.7%	0.43 [0.16, 1.18]	
urozlor ot al	10	29 25	10	28	3.4%	0.95 [0.32, 2.81]	
		25	5	25		0.17 [0.02, 1.55] ←	
dlikka et di Koggiari Manzi at al	20	69	18		5.5%	1.20 [0.57, 2.53]	
reggiari-venzi et al	11	4/	14	51	4.3%	0.81 [0.32, 2.01]	
	70	535	07	339	27.0%	0.66 [0.44, 0.99]	
otorogonoity Tou ² -	10	c (D - 0.2)	97				
eterogeneity lau- – est for overall effect.	0.05; CIII ⁻ = 7.29, CII ⁻ = 7.	0 (P = 0.25)	9); 1- = 18%				
.1.3. Intra + Postope	erative Magnesium						
. 1.3. Intra + Postope ert et al	erative Magnesium 24	63	23	60	5.7%	0.99 [0.48. 2.05]	
. 1.3. Intra + Postope ert et al aspi et al	erative Magnesium 24 22	63 50	23 18	60 48	5.7% 5.0%	0.99 [0.48 <i>,</i> 2.05] 1.31 [0.58. 2.94]	
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Figure 2: Forest plot evaluating the efficacy of prophylactic magnesium (Mg) supplementation in prevention of postoperative atrial fibrillation (POAF) in patients undergoing cardiac artery bypass grafting (CABG).

Prophylactic postoperative Mg supplementation resulted in a lower incidence of POAF in patients undergoing CABG.

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