Delayed versus Early cardioversion for patients with uncomplicated atrial fibrillation: Metaanalysis

Background: Prior studies have conflicting results about whether urgent restoration of sinus rhythm (RSR) is favorable in atrial fibrillation (AF) outcomes. Hence, we did a meta-analysis to assess the outcomes of early cardioversion (EC) versus spontaneous and delayed cardioversion (SDC) in patients with primary AF.

Methods: PubMed, Cochrane Library, and Web of Science databases were searched for studies evaluating the RSR in adults AF patients who were hemodynamically stable. We grouped SDC patients as they were treated with the wait and rate control approach for at least 48 hours. Primary endpoints were RSR within index admission and at the follow-up visit. Secondary outcomes were mortality, major adverse cardiac events (MACE), and cost. Odds ratio and 95% confidence interval were used to evaluate the categorical variables. The analysis was done with the DerSimonian and Laird random-effects model.

Results: Three randomized control trials and three retrospective studies met the criteria for inclusion with a total of 1342 patients (EC 630 and SDC 712). The mean age was 66.2 years old, and 45% were male. Patients in the EC group had a higher RSR (Figure 1-A, B) and costs, but less rate of MACE and mortality. However, there was not enough data to statistically compare the secondary outcomes. (Figure1-C)

Conclusion: Our analysis suggests that patients who had EC had a higher RSR during admission and at follow-up visit compared to SDC and possibly improved outcomes. Worse outcomes in the SDC need further exploration.

Figure 1-A : Events (RSR) during index admission :

	Delayed		Early		Odds Ratio		Odds Ratio			
Study or Subgroup	Events	Total	Events	Total	Weight	M-H, Fixed, 95% CI		M-H, Fixed, 95% Cl		
Cotter et al 1999	49	50	48	50	0.7%	2.04 [0.18, 23.27]		See.		
Dankner et al 2008.	80	233	105	141	61.1%	0.18 [0.11, 0.29]		2 -12- 5	1	
Dell'Orfano et al 1999	57	88	33	88	8.3%	3.06 [1.66, 5.67]				
Kim et al 2001	23	23	16	24	0.2%	24.21 [1.30, 449.29]				
Pluymaekers et al 2019	211	218	207	219	4.7%	1.75 [0.67, 4.53]		1.1.1	Carlos and	
Vardas et al 2000	40	100	61	108	25.0%	0.51 [0.30, 0.89]			5	
Total (95% CI)		712		630	100.0%	0.65 [0.50, 0.84]		•		
Total events	460		470							
Heterogeneity: Chi2 = 65.4	46, df = 5 (P < 0.0	10001); I ²	= 92%			0.004			4000
Test for overall effect Z =	3.29 (P =	0.001)					0.001	Favors [Early]	Favors [Dela	yed]

Figure 1-B : Events (RSR) at follow up :

	Delayed		Early		Odds Ratio		Odds Ratio
Study or Subgroup	Events 1	Total	Events	Total	Weight	M-H, Fixed, 95% CI	M-H, Fixed, 95% Cl
Kim et al 2001	20	23	14	24	2.4%	4.76 [1.11, 20.50]	n an
Pluymaekers et al 2019	193	218	202	219	30.8%	0.65 [0.34, 1.24]	
Vardas et al 2000	40	100	87	108	66.8%	0.16 [0.09, 0.30]	
Total (95% CI)		341		351	100.0%	0.42 [0.28, 0.63]	
Total events	253		303				
Heterogeneity: Chi ^z = 21.51, df = 2 (P < 0.0001); I ^z = 91%							
Test for overall effect: Z = 4.23 (P < 0.0001)							Favors [Early] Favors [Delayed]

Figure 1-C :

	EC .	DSC .
Sinus rhythm - Index admision (%)	86%	69%
Sinus rhythm - Follow up (%)	74%	64%
Mean follow up duration (Days)	34	39
Cost (\$)	\$6,738	\$4,357
MACE (number of events)	8	11
Mortality (number of events)	0	3