

**COST EFFECTIVENESS OF DURAGRAFT AS A VEIN GRAFT TREATMENT IN CORONARY ARTERY BYPASS GRAFTING IN TURKEY**

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**OBJECTIVES**

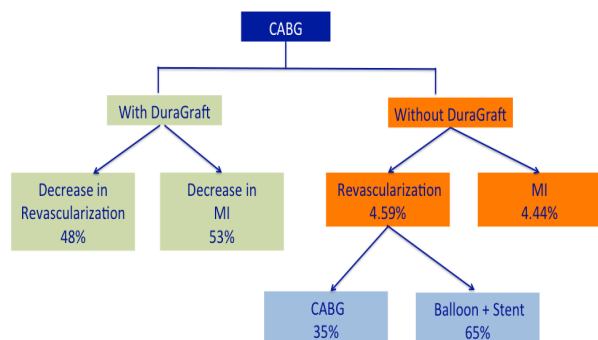
Following revascularization procedures, Vein Graft Failure (VGF) can generate problems such as repeat revascularization, myocardial infarction (MI), mortality, hospital readmission, loss of quality of life and co-morbidities. VGF is the most common complication of Coronary Artery Bypass Grafting (CABG). Storage and flushing of the vein graft is the most critical stage of the surgery. DuraGraft is a one-time intraoperative vein graft treatment that prevents VGF and reduces repeat revascularization and MI by 48% and 53% respectively. The main objective of this study is to analyze the cost effectiveness of DuraGraft in CABG in Turkey.

**METHODS**

A simple decision model was used in the study. All analyses were made from the Turkish Social Security Institution's (SSI) perspective. Literature research and expert opinions were used to estimate the cost of CABG, revascularization and myocardial infarction. The comparison was made with use and nonuse of DuraGraft. Outcome measures were taken from literature, cost data were obtained from expert views of use of resources in both CABG and treatment of complications. The results are presented as incremental cost per averted complication.

**FINDINGS**

Figure 1: DuraGraft Model



The following data from the literature and expert views were used in the analyses:

1. Annual number of CABG operations was 43,353 in 2011 (Taşçı, Ak, 2014). This figure was increased by the population increase rate to make estimates for 2016. In 2016 there were 46,956 operations.
2. Revascularization rate after CABG (4,59%) was taken from systematic effectiveness research.
3. MI rate after CABG (4,44) was taken from systematic effectiveness research.
4. Expert views were used in order to explore the procedures followed after revascularization. Experts stated that 35% of these patients undergo another CABG and 65% undergo balloon and stent procedures.
5. Cost of Balloon+ Stent was calculated with SSI prices as 1,865 TRY
6. Cost of MI per patient was calculated from expert views as 8,277 TRY.

Table 1: No of CABG Patients and Complications

	2016
Population	78,741,053
CABG %	0.06
No of CABG Patients	46,956
Revascularization Rate after CABG (%)	4.59
No of Patients with revascularization	2,155
CABG rate after revascularization (%)	35
Balloon + Stent Rate After Revascularization (%)	65
MI Rate After CABG	4.44
No of MI Patients After CABG	2,085

Table 2: Cost of CABG With SSI Prices

CABG Procedures	SSI Package Price	%*	%*	No of Patients	Cost of CABG (TRY)	
CABG, autogenous graft, 4 or more coroner grafts	5,486.90	10	15	704	3,864,643	
CABG, autogenous graft, 1 coroner graft	4,220.70		15	704	2,972,808	
CABG, autogenous graft, 2 coroner grafts	4,642.80		35	1,643	7,630,256	
CABG, autogenous graft, 3 coroner grafts	5,064.90		35	1,643	8,323,961	
CABG, autogenous graft, 5 coroner grafts with cardiopulmonary bypass	7,821.21	90	7,5	3,170	24,789,560	
CABG, autogenous graft, 5 + coroner grafts with cardiopulmonary bypass	8,798.90		7,5	3,170	27,888,378	
CABG, autogenous graft, 4 coroner grafts with cardiopulmonary bypass	7,262.50		7,5	3,170	23,018,712	
CABG, autogenous graft, 1 coroner grafts with cardiopulmonary bypass	4,220.70		7,5	3,170	13,377,635	
CABG, autogenous graft, 2 coroner grafts with cardiopulmonary bypass	6,145.20		35	14,791	90,894,514	
CABG, autogenous graft, 3 coroner grafts with cardiopulmonary bypass	6,703.90		35	14,791	99,158,323	
Total CABG Cost						301,918,789
CABG cost per patient (301,918,789/46,956)						6,430

\* Percentages are from expert views

Table 3: Patient Numbers and Total Costs With and Without DuraGraft

	Number of Patients	DuraGraft + Cost of Prevented Complications (TRY)	Total Cost (TRY)
With DuraGraft	3,807	21,312,986	327,279,913
	No of Patients With Complications	Number of Prevented Complications With DuraGraft	
	1,573	2,724	
Without DuraGraft	Number of Patients	Cost of Complications (TRY)	CABG+ Total Complication Cost (TRY)
	3,807	25,049,678	
	No of Patients With Complications	No of Prevented Complications	
	4,297	0	331,016,605

Table 4: Cost Effectiveness of Use of DuraGraft in CABG Operations

	No of Complications	Incremental Prevented Complications	Total Cost (TRY)	Incremental Cost	ICER
With DuraGraft	1,573	2,724	327,279,913	-3,736,692	DOMINATES
Without DuraGraft	4,297		331,016,605		

**RESULTS**

There were 46,956 CABG procedures performed in Turkey in 2016. Revascularization after CABG was 4.59% and experts stated that 35% of these patients undergo another CABG, with and balloon+stent applied to the other patients. MI rate after CABG was 4.44%. Cost of treatment per patient was 6,430 TRY for CABG, 1,865 TRY for balloon +stent and 8,277 TRY for MI. The incremental number of averted complications was 2,724. In terms of incremental cost effectiveness ratio, use of DuraGraft as a vein graft treatment dominated non-use and achieved better outcomes with lower cost.

**CONCLUSION**

The results showed that use of DuraGraft as a vein graft treatment in CABG is a cost effective option for the SSI.

Taşçı, C.; Ak, C. (2014) "Cost-effectiveness of Diagnostic Strategies in Guidance of Treatment Strategies in Stable Coronary Artery Disease: "Myocardial Perfusion Scan as a Gatekeeper", Istanbul Med. J., 15, pp.145-153.

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