








Impact of vein of Marshall alcohol ablation on postprocedural serum ethanol concentrations

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Introduction: The Vein of Marshall (VOM) alcohol ablation technique has been introduced as a complementary procedure during catheter ablation to reduce AF recurrence, particularly in patients with persistent AF. Ethanol is directly injected into the vein to induce localized necrosis of the surrounding myocardial tissue.¹ The goal of this study is to assess the serum ethanol concentrations following the VOM alcohol ablation procedure and explore the relationship between ethanol levels and clinical factors like left atrium size and body mass index (BMI).

Patients and Methods: This prospective study included 5 patients undergoing VOM alcohol ablation as part of their treatment for atrial fibrillation. Blood samples were collected at baseline and at 30 minutes and 1 hour after ethanol administration. Serum ethanol concentrations were measured using standard laboratory methods and clinical parameters and liver function tests were monitored to assess the systemic effects of ethanol.

Results: All patients had an ethanol concentration of 0.10 mg/dl before procedure. The average ethanol concentration increased to 0.134 mg/dl after 30 minutes with levels ranging from 0,10 to 0,19 mg/dl. At 60 minutes ethanol concentration returned to 0,10 mg/dl for all patients. The correlation between administered ethanol and serum levels suggests that ethanol absorption is modest and transient. Larger left atrium and higher BMI with lower ethanol concentrations at 30 minutes. No patient experienced ethanol concentrations high enough to cause systemic toxicity or noticeable clinical effects such as altered consciousness, hypotension, or hepatic dysfunction.

Conclusion: The results indicate that VOM alcohol ablation does lead to measurable increases in serum ethanol concentrations, though these levels remain well below the toxic threshold. The transient nature of the increase suggests that systemic absorption is limited and the body efficiently metabolizes the ethanol within hours of the procedure. The metabolic response to the ethanol injection appears to vary minimally between individuals, with most patients exhibiting a rapid clearance of ethanol from their system. The procedure remains a safe and effective option for reducing atrial fibrillation recurrence, with minimal systemic ethanol exposure.

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LITERATURE

1. Kamakura T, Derval N, Duchateau J, Denis A, Nakashima T, Takagi T, et al. Vein of Marshall Ethanol Infusion: Feasibility, Pitfalls, and Complications in Over 700 Patients. *Circ Arrhythm Electrophysiol.* 2021 Aug;14(8):e010001. <https://doi.org/10.1161/CIRCEP.121.010001>