

Abstract

Hemodynamic Pressor Response after Mayfield's Scalp Clamp Application during Craniotomies: Is it Still a Nightmare?

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ABSTRACT

Introduction: Using Mayfield's scalp clamp became mandatory in most craniotomies but it leads to potentially hazardous hemodynamic pressor effects. Many interventions like infiltration of local anesthetics at insertion sites or injecting ketamine, dexmedetomidine, clonidine and magnesium sulphate (MgSO₄) had been studied to attenuate these effects.

Review: In 1973, Frank Mayfield and George Kees invented Mayfield skull clamp as a head holder during intracranial operations using three sterile pins deep to the periosteum at two opposite sides of the head. Nevertheless, this technique resulted in many complications as air embolism, broken clamp, dural laceration, skull fractures, epidural hematomas, traumatic aneurysm of the superficial, traumatic middle meningeal arteriovenous fistula, temporal artery and sinus fracture with cerebrospinal fluid leak were among these complications which are potentially serious and life threatening but fortunately rare. During our practice, the most frequent complication is the sudden sharp noxious stimulus resulting from skull clamp insertion leading to sudden rise in blood pressure and pulse rate which is hazardous for patients with comorbidities. Use of locally infiltrated anesthetic drugs at pins' insertion sites, injection of bolus dose of opioids, administration of α_2 -adrenoceptor agonists (clonidine), deepening level of anesthesia, Dexmedetomidine and MgSO₄ had been proved to be effective if used properly.

Conclusion: According to this mini review we can conclude that no more nightmares. Many strategies were proved to attenuate this pressor effect. For every patient, each choice must be tailored to his/her preoperative status and anesthetist's previous experience. More than one modality can be used; not only to attenuate but even to abolish this effect safely.

Keywords: Mayfield's clamp-press or Response-craniotomies

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