



Intravenous literature: Hartholt, K.A., van Lieshout, E.M., Thies, W.C., Patka, P. and Schipper, I.B. (2010) Intraosseous devices: a randomized controlled trial comparing three intraosseous devices. *Prehospital Emergency Care*. 14(1), p.6-13.

Abstract:

INTRODUCTION: Access to the circulation is mandatory for adequate treatment in medical emergency situations. Intraosseous (IO) infusion is a safe, fast, and effective alternative for gaining access to the circulation, if intravenous access fails. In the last decade, the IO method gained renewed interest. New devices have been developed, such as the Bone Injection Gun (BIG) 15G/18G and the First Access for Shock and Trauma 1 (FAST1).

OBJECTIVE: To determine which IO needle is preferable for gaining IO access in patients requiring acute administration of fluids or medication in a prehospital setting.

METHODS: In this single-blind prospective randomized trial, the IO needles were added to the equipment of the helicopter emergency medical services (HEMS) system. The HEMS nurses received training in proper use of all needles. Children (1-13 years) were randomized to the Jamshidi 15G or the BIG 18G, and adults (≥ 14 years) were randomized to the Jamshidi 15G, the BIG 15G, or the FAST1. All patients requiring acute administration of fluids or medication, without successful insertion of an intravenous (IV) catheter, were included. The IO needles were compared in terms of insertion time, success rate, bone marrow aspiration, adverse events during placement, and user satisfaction.

RESULTS: Sixty-five adult and 22 pediatric patients were included. The treatment groups were similar with respect to age, gender, mortality, and trauma mechanism ($p \geq 0.05$). The median insertion times ranged from 38 seconds for the Jamshidi 15G to 49 seconds for the BIG 15G and 62 seconds for the FAST1 ($p = 0.004$). The devices did not differ with respect to success rates (adults overall 80% and children overall 86%), complication rates, and user satisfaction.

CONCLUSIONS: The Jamshidi 15G needle could be placed significantly faster than the FAST1. The devices had similar success rates, complication rates, and user-friendliness. Intraosseous devices provide a safe, simple, and fast method for gaining access to the circulation in emergency situations.

