Comparison of two intraosseous access devices in adult patients under resuscitation in the emergency department: A prospective, randomized study.

Abstract:
Current guidelines recommend intraosseous (IO) vascular access in adults if peripheral venous access is unavailable. Most available data derive from children, animal models, cadaver studies or the prehospital setting. Therefore we compared two different IO access devices in adults under resuscitation in the hospital setting. This prospective, randomized clinical study compared two different IO access devices in adults (>=18 years of age) under trauma or medical resuscitation admitted to our emergency department with impossible peripheral venous access. Each adult was randomized to either spring-loaded BIG Bone Injection Gun or battery-powered EZ-IO. Outcome measures included success rates on first attempt, procedure times and complications. Forty consecutive adults under resuscitation were enrolled. Twenty patients received the BIG, another twenty patients the EZ-IO. Over all success rate on first attempt was 85% and mean procedure time 2.0min+/−0.9. Comparing the two devices, success rate on first attempt was 80% for the BIG versus 90% for the EZ-IO and mean procedure time was 2.2min+/−1.0 for the BIG versus 1.8min+/−0.9 for the EZ-IO. The differences between both IO devices were not statistically significant. No other relevant complications like infection, extravasation or bleeding were observed. IO vascular access was a reliable and safe method to gain
rapid vascular access for in-hospital adult emergency patients under resuscitation. Further studies are necessary regarding comparative effectiveness of different IO devices.