

The T.A.L.O.N.TM 7-SITE INTRAOSSEOUS VASCULAR ACCESS SYSTEM

Vidacare® Clinical & Science Department

INTRODUCTION AND BACKGROUND

Sternal IO Access

First described by Tocantins in 1940, the sternum was among the first bones used for IO access.¹ In the early years of IO access, virtually any hypodermic needle was successfully used in the sternum due to the bone's relative softness. But the softness presented the danger of totally penetrating the sternum and inadvertently piercing the mediastinum; and expanded use of IO access was hindered by a lack of needles designed specifically for IO access. This changed in the early 21st century with the introduction of IO devices specifically designed for the sternum.

Complications Resulting from IO Access

IO access is characterized by a low complication rate. Earlier studies, summarized by Rosetti et al in their 1985 meta-analysis, showed the most frequent complication to be osteomyelitis at 0.6%² – thought to be due to poor sterile technique inherent in the emergency setting.³ Since that study, there have been five cases reported in the clinical literature.^{4,5,6,7,8} Recently, extravasation appears to be more prevalent;⁹ and while uncommon, other complications include fracture,¹⁰ compartment syndrome (some resulting in amputation),¹¹ and failure to infuse due to catheter bending or clogging.¹² With sternal IO access the complication rate remains low. The evidence concludes that IO access is a safe and effective method for providing vascular access in emergency situations.

EZ-IO® TACTICALLY ADVANCED LIFESAVING INTRAOSSEOUS NEEDLE (T.A.L.O.N.TM)

The EZ-IO® T.A.L.O.N.TM by Vidacare® introduced in 2013 is a 15 gauge, 38.5mm in length, manually inserted EZ-IO® Needle Set designed for use in the distal and proximal tibia, proximal humerus and sternum (with use of a sternal locator). This device provides medical teams with the ability to access multiple IO insertion sites with one package, a flexibility particularly beneficial for tactical medicine. The T.A.L.O.N.TM has been cleared by the U.S. Food and Drug Administration, Health Canada, and the European Union for the administration of emergency drugs and fluids.

CLINICAL STUDIES AND SAFETY DATA INVOLVING THE

EZ-IO® T.A.L.O.N.TM

In two separate studies, conducted in 2012 and 2013, the T.A.L.O.N.TM was used to establish IO access in healthy volunteers. Fourteen military-trained medics participated in the studies, in which 34 healthy subjects received sternal IO insertions. A functioning IO catheter was defined as one in which the catheter tip was confirmed by x-ray to be seated in the medullary cavity, and fluid/drug infusion could be performed without extravasation. Operators evaluated their perceived ease of use and level of satisfaction with the device by completing a questionnaire after each insertion.¹³

RESULTS

The first attempt success rate was 92%, with excellent infusion flow rates. There was no incidence of penetration of the posterior cortex of the sternum or other serious complication. Results suggest that the T.A.L.O.N.TM may be used by military and tactical medicine personnel to establish IO vascular access in the sternum with an expectation of insertion success, excellent infusion flow rates, and a high degree of safety. Device operators can expect to find the device easy to use with a high degree of confidence. Clinical study data is available from Vidacare® on request.

Figure 1. EZ-IO® T.A.L.O.N.TM Intraosseous Vascular Access Device



T.A.L.O.N.TM by vidacare®

EZ-IO® by vidacare®

Intraosseous Vascular Access

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1-866-479-8500

REFERENCES

- 1 Tocantins LM. Rapid absorption of substances injected into the bone marrow. *Proc Soc Exp Biol Med* 1940; 45: 292-6.
- 2 Rosetti VA, Thompson BM, Miller J, et al. Intraosseous infusion: an alternative route of pediatric intravascular access. *Annals of Emergency Medicine* 1985;14:885-8.
- 3 Smith R, Davis N, Bouamra O, et al. The utilisation of intraosseous infusion in the resuscitation of paediatric major trauma patients. *Injury* 2005;36(9):1034-8.
- 4 Platt SL, Notterman DA, Winchester P. Fungal osteomyelitis and sepsis from intraosseous infusion. *Pediatr Emerg Care* 1993;9:149-50.
- 5 Rosovsky M, FitzPatrick M, Goldfarb CR, Finestone H. Bilateral osteomyelitis due to intraosseous infusion: case report and review of the English-language literature. *Pediatr Radiol* 1994;24:72-3.
- 6 Barron BJ, Tran HD, Lamki LM. Scintigraphic findings of osteomyelitis after intraosseous infusion in a child. *Clin Nucl Med* 1994;19:307-8.
- 7 Stoll E, Golej J, Burda G, Hermon M, Boigner H, Trittenwein G. Osteomyelitis at the injection site of adrenalin through an intraosseous needle in a 3-month-old infant. *Resuscitation* 2002;53:315-8.
- 8 Dogan A, Irmak H, Harman M, Ceylan A, Akpinar F, Tosun N. Tibial osteomyelitis following intraosseous infusion: a case report. *Acta Orthop Traumatol Turc* 2004;38:357-360.
- 9 Gluckman W, Forti RJ. Intraosseous cannulations. *Emedicine* [serial on-line] 2004; doc 1.
- 10 Katz DS, Wojtowycz AR. Tibial fracture: a complication of intraosseous infusion. *Am J Emerg Med* 1994;12(2):258-9.
- 11 Vidal R, Kissoon N, Gayle M. Compartment syndrome following intraosseous infusion. *Pediatrics* 1993;91(6):1201-2.
- 12 Dogan A, Irmak H, Harman M, Ceylan A, Akpinar F, Tosun N. Tibial osteomyelitis following intraosseous infusion: a case report. *Acta Orthop Traumatol Turc* 2004;38:357-360.
- 13 Vidacare Internal Studies (2013); data on file.