

FASTxTM

Sternal Intraosseous Device

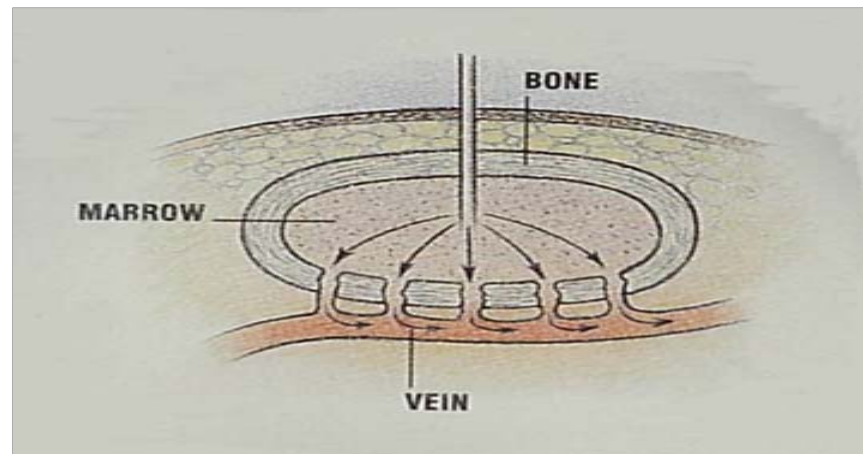
Training Session

Why IO?

- Peripheral IV is often difficult to obtain
- Requires an average of 3-12 minutes
- Failure rate ranges between 10-40%
- AHA & ILCOR guidelines now recommend IO when IV cannot be obtained

Vascular Access Via IO

- Infuses fluids and medications into bone marrow
- Bone marrow flows into vascular system
- Manubrium especially effective due to close proximity to central circulation



*The **FASTx™ Sternal Intraosseous Device** is intended for intraosseous infusion as an alternative to IV access to facilitate emergency resuscitation through the use of drugs and fluids.*

Advantages of *FASTx*TM

- **FAST:** vascular access within 10 seconds, fluids and medications to the heart in 30 seconds
- **SAFE:** automatic depth control prevents over-penetration
- **EFFECTIVE:** delivers fluids and medications to heart as quickly as a central line, with shorter access time
- **EFFICIENT:** can be inserted during other resuscitation procedures

MORE Advantages of **FASTx**TM

- **MULTI-PURPOSE:** anything that can be given via IV (emergency resuscitation fluids/drugs) can be given via **FASTx**TM
- **VERSATILE:** for use in adolescents from 12 years of age and older
- **STERILE:** designed for single, sterile use, no cross-contamination
- **SECURE:** flexible tubing with subcutaneous portal; strain-relief Target Foot ensures line does not become dislodged

MORE Advantages of *FASTx*TM

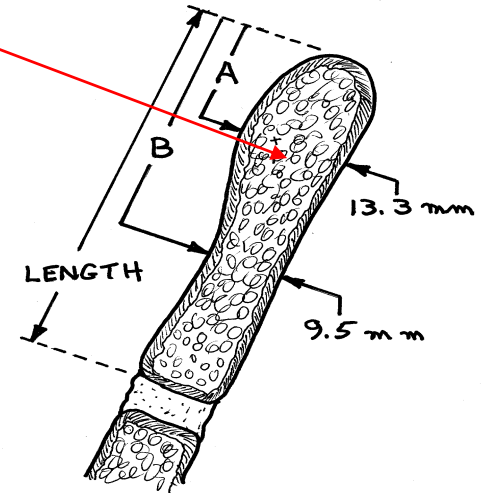
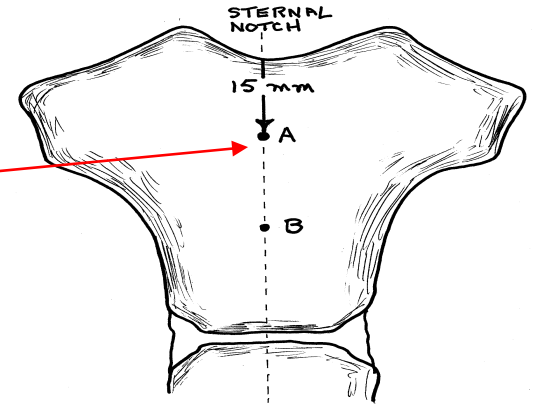
- **ADAPTABLE:** can be inserted in moving ambulances, helicopters and on stretchers
- **QUICK TO LEARN:** skill mastery within minutes
- **EXCELLENT SKILL RETENTION:** ability to use *FASTx*TM not dependent upon frequent practice or use

Indications

- For patients 12 years of age and older (adolescent to adult)
- Use whenever vascular access is required to facilitate emergency resuscitation
- Can be left in place up to 24 hours

Insertion Site

- Manubrium of sternum, 15 mm below sternal notch.
- Bone thickness at insertion site: $13.30 \text{ mm} \pm 2.18$
- Minimum thickness about 35 mm below sternal notch = $9.17 \text{ mm} \pm 1.78$
- Risk of over penetration: less than 1 in 1,000,000

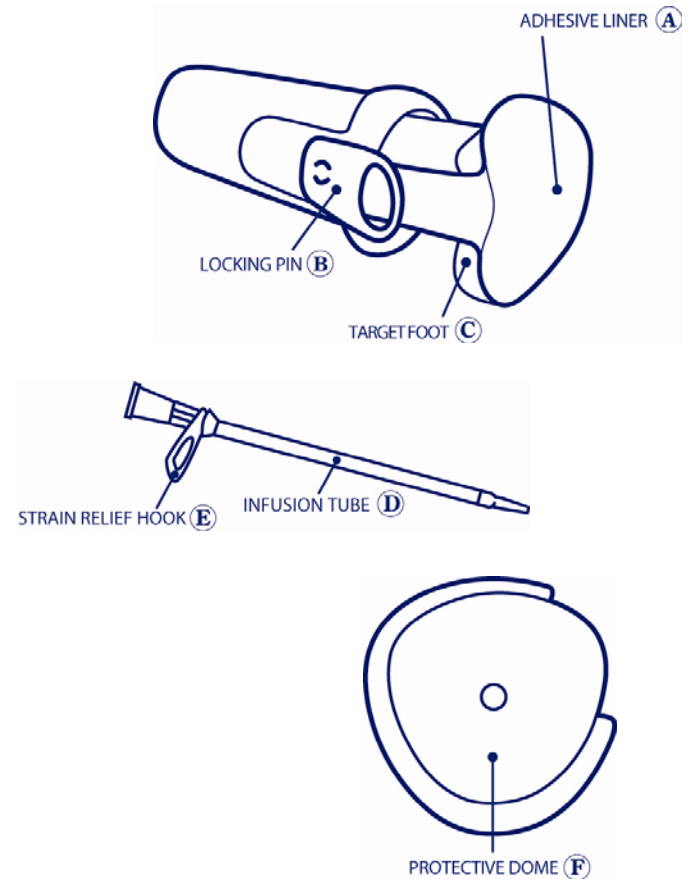


*FASTx*TM Components



FASTx™ Explained

- Introducer inserts Infusion Tube into manubrium
- Infusion Tube is mounted on a stylet inside Introducer
- Stabilizer Point/Bone Probe (not shown) ensures depth control only, it does not penetrate the bone



*FASTx*TM Explained

- Relies on operator force only – it is not spring-loaded, battery dependent, or pneumatic
- Downward force on Introducer pushes steel Infusion Tube tip through soft tissue, into bone
- When steel tip is just inside marrow space, Infusion Tube automatically separates from Introducer
- Stabilizer Point/Bone Probe ensures proper deployment only – it does not enter the bone

*FASTx*TM Explained

- Depth control mechanism prevents over-penetration
- Infusion Tube flexes with movement of patient's skin preventing dislodgements, unlike other IO products which use rigid infusion needles
- Strain-relief mechanism, Target Foot and plastic dome provide additional protection

Insertion Procedure

1. Expose sternum and locate the sternal notch
2. Clean insertion site



Insertion Procedure

3. Remove the Adhesive Liner with the Locking Pin
4. Stand/kneel at head or side of patient, or as comfortable
5. Align the Target Foot notch with the patient's sternal notch and the Introducer (device handle) perpendicular to the manubrium



Insertion Procedure

- **CRITICAL**: For safe and effective use of the **FASTx™** verify Target Foot placement at sternal notch.

Insertion Procedure

6. Push the FASTx™ Sternal down completely to deploy the Infusion Tube
7. Withdraw the FASTx™ Sternal straight back while holding down the Target Foot. Support comes out with the Infusion Tube



Insertion Procedure

8. Discard the FASTx™ Sternal following local contaminated sharps protocols
9. Connect the IV line directly to the luer, and clip the Strain Relief Hook to the Target Foot



Insertion Procedure

10. Optional (refer to your protocol):

- Flush with fluid to clear
- Confirm placement by aspiration

11. Optional: Remove the liner from the Protective Dome and apply the Dome over the Target Foot infusion site



Flow Rates

Fluids have been infused into sternum:

- Gravity= 30-80 ml/min
- Pressure infuser= 120 ml/min
- Syringe= 250 ml/min

Removal of FASTx™

1. Remove Protective Dome from the Target Foot
2. Turn off the source of fluid and disconnect
3. Grasp Infusion Tube with fingers or clamp and pull perpendicular to manubrium until entire Infusion Tube emerges from the patient's chest; Pull in one continuous motion (do not start/stop) until removed. Use the tube to pull, not the luer connection. It is normal for the tubing to stretch.
4. Peel off the Target Foot and dress the site as per standard protocol
5. Discard Infusion Tube and Target Foot following local contaminated sharps protocol



Precautions/Warnings

- Trauma, infection, or burns at insertion site may preclude use
- Safety with very severe osteoporosis has not been proven
- Use in patients with recent sternotomy may prove less effective
- The function of the device may be affected by fracture of the sternum or vascular injury which may compromise the integrity of the manubrium or its vascularization

Precautions/Warnings

- Insertion in sites other than the manubrium may result in ineffective infusion and/or serious injury to the patient and are not approved.
- Reuse of the FASTx™ is not recommended due to the potential of cross-contamination, which may lead to serious injury or death. The FASTx™ is unlikely to function after use.

Troubleshooting

Fluid or medication does not flow through IV line to site:

Flush to clear. If fluid or medication does not flow even after flushing, infusion should be discontinued and an alternative method of vascular access should be used.

Leakage at Insertion Site (Extravasation):

If excessive, use alternative method of vascular access.

Troubleshooting

First attempt to place FASTx™ fails:

Double check insertion site, patient position, medic position, and try again with a new device. Be sure to save the device if the procedure/attempt with the FASTx™ was not successful (after protecting the sharps) for shipment back to Pyng for examination.

Troubleshooting

Removing entire Infusion Tube (including metal tip):

Pull in one continuous motion (do not start/stop) until removed. Use the tube to pull, not the luer connection. It is normal for the tubing to stretch.

Introducer does not release:

Pull Introducer back, if Infusion Tube remains in patient, verify placement by aspirating marrow, proceed with use.

If marrow cannot be withdrawn, remove tube and insert second FASTx™.

Troubleshooting

Introducer releases but Infusion Tube is not secured in patient:

Use new FASTx™.

Force is applied but Introducer does not release:

Without pulling back, ensure Introducer is perpendicular to manubrium and force is being applied directly along this line.

References

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- David L Johnson; Judy Findlay; Andrew J Macnab; Lark Susak: Cadaver testing to validate design criteria of an adult intraosseous infusion system. *Military Medicine*, March 2005; 170, 3; ProQuest Medical Library, 251-257.
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