An intraosseous blood transfusion in a critically ill child

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E. Chansa, Mpongwe District Health Office, Mpongwe, Copperbelt, Zambia,

Hansen K, Department of Infectious Diseases, Skane University Hospital, Malmo¨, Sweden,

Gustafsson B, Astrid Lindgren Children's Hospital and Karolinska University Hospital-Huddinge, Department of Clinical Science, Intervention and Technology, CLINTEC, Karolinska Institutet, Stockholm

.....intraosseous infusions

- Safe and simple method to administer fluid in an emergency situation
- Gains rapid vascular access in a critically ill child.
- Fluids and drugs can be infused as well as
- Blood boluses, but very few cases describe the infusion of blood products.

Case report

- A successful transfusion of fluid and blood by IO
- 31 months old child, suffered severe epistaxis for 12 hours.
- The child was unconscious at time of admission
- The hemoglobin (Hb) level was measured to 3.6g/dl.
- Through an IO in the proximal tibia, 300 ml of fluid was first infused,
- Followed by 200 ml of blood.

.....case report

- The child was playing and drinking fluid 3 hours after the blood transfusion was stopped
- The child was supplied with folic acid and iron supplements
- 3 days later the Hb was 6.0 g/dl
- 3 months later the Hb was 9.4 g/dl.



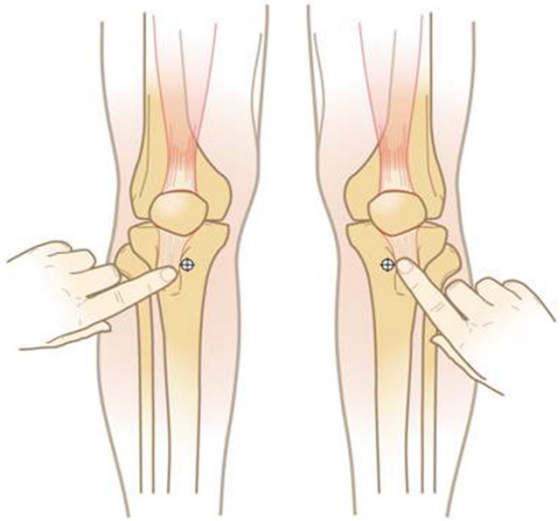
History

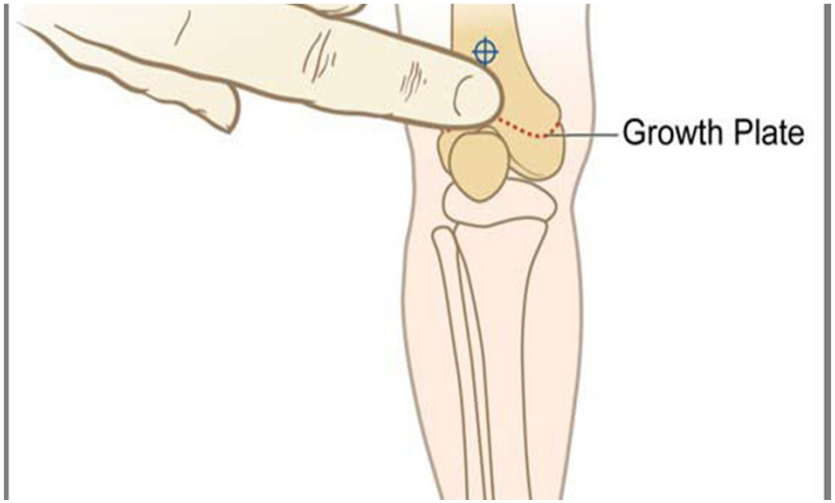
- Widely used in World War II and then re-emerged as an option for fluid and drug resuscitation
- Critically ill child in the 1980's, following the famous editorial by JP Orlowski "My kingdom for an intravenous line"

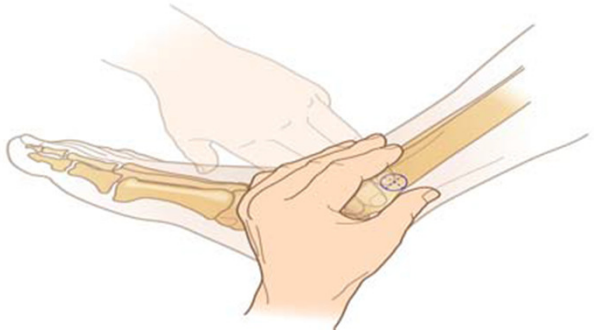
……..intraosseous transfusions

- The most common site used in children is the anteromedial surface of the proximal tibia.
- The technique of insertion can easily be taught.
- The goal is to remove the IO needle within 3-4 hours, but as soon as an iv access is established it should be removed.
- The risk of infection increases after 72-96 hours .

Where to make your puncture

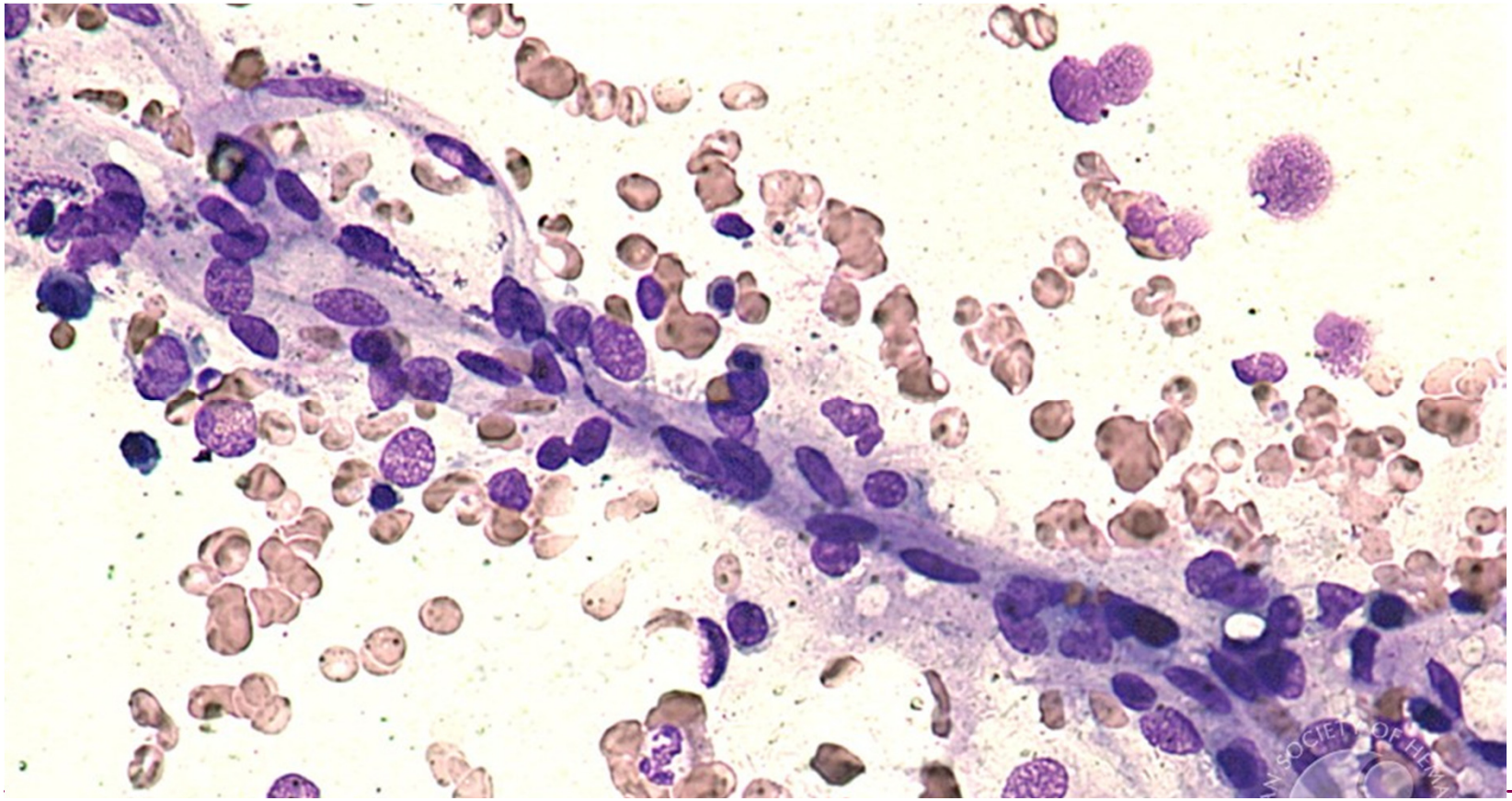






- The bone marrow consists of a network of vessels
- Empties into a central vein, functions as a non-collapsible vein during hypovolemia or shock.
- Any intravenous fluid, blood products or routine resuscitation drugs can be administered through the IO route.
- Complications for short term use are scarce

The bone marrow consists of a network of vessels



Complications

- Extravasation of fluid, avoid too much movement during insertion: hold the leg straight throughout the procedure.
- Bone marrow and fat emboli in the venous circulation and the lungs due to the open blood vessels in the medullary cavity, have been described, but no pediatric cases reported .
- Intravascular gas after intraosseous infusion was observed in a 4-month-old boy who died from Sudden Infant Death Syndrome (SIDS); this complication can be avoided by ensuring that intraosseous needles are never disconnected.
- Compartment syndrome:use proper technique, ensuring the needle remains in the marrow and does not pass through the other cortex as well as only making one attempt at insertion per bone.

.....complications

- Extravasation of hypertonic or specific medications can result in necrosis of the muscle.
- Infection and osteomyelitis, rare complications but can occur if an aseptic technique is not followed during insertion.
- Injuries to the growth plate is a possible complication correlated with incorrect placement of the needle.

Transports and communication……



Conclusion

- Our patient was admitted unconscious to the Mission hospital, where the cannulation of both a peripheral and central vein failed due to vascular circulation collapse.
- The primary infusion of Ringer lactate stabilized the circulation, but there was still no possibility to infuse the blood through the veins.
- Intraosseous blood transfusion was the only option in this very urgent situation.
- We conclude that performing an intraosseous blood transfusion should be the immediate intervention in a life-threatening situation



Thank you for your attention!