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Answer: Osteomyelitis of the tibia following intraosseous infusion

In critically ill or injured paediatric patients, intraosseous infusion (IO) provides rapid access to the systemic venous circulation. This has replaced venous cut-down and central line insertion in emergency situations, being included in standard protocols and training procedures recommended by most specialty associations and societies.

The tibia is the most common site for safe IO infusion with complications reported in only one percent of cases. Technical complications include needle dislodgement and breakage leading to subcutaneous extravasation or failure to insert IO catheters. These are due to use of inappropriate landmarks, bending of needle, dense marrow within a small cavity or replacement of marrow by fat or fibrous tissue. Other complications include iatrogenic fracture, growth plate injury (with subsequent leg length discrepancy), fat embolism, compartment syndrome and osteomyelitis.

The incidence of osteomyelitis is 0.6% and is associated with inadequate control of sterility, infusion of hypertonic saline, use of strongly alkaline agent or use of adrenaline in high concentrations. The radiological changes of osteomyelitis are evident only after about two weeks (**Panel:** lateral view). Early changes include periosteal reac-

tion (white arrow) and lytic lesions at the site of needle insertion or focus of infection (square). Late changes include diffuse periosteal reaction and formation of involucrum (*Refer to supplementary text for magnified image*).



IO infusion is contraindicated in bone diseases like osteogenesis imperfecta, osteopetrosis, infection, thermal injury to the overlying skin and presence of a fracture.

In the early stages, the signs of compartment syndrome and osteomyelitis may overlap. Use of proper technique with monitoring for complications is recommended. The child presented here is being successfully treated with six weeks course of antibiotics.

REFERENCES

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