



DEFINITION

- Occurs when IV drugs are inadvertently administered into the perivascular space instead of the vein
- Can result in reactions ranging from local irritation to severe tissue loss
- Injury severity depends on the drug, the site affected, and size of the patient

RISK FACTORS

Patient-Related

- Small and fragile veins
- Hardened vessels due to frequent venipuncture
- Obesity
- Agitated or moving patients

Procedure-Related

- Multiple puncture attempts
- High-flow pressure
- Inappropriate equipment use

MECHANISMS

Vesicant Substances

- Tissue necrotizing quality
- Overly acidic or basic compounds
- Ex. vasopressors, chemo agents

Irritant Substances

- Potential tissue irritating quality
- Higher osm fluids
- Ex. TPN

Non-vesicant Substances

- No primary toxic quality
- Ex. Crystalloids (NS, Ringer's, etc)

Mass Effects

- Osmotic pressure gradients
- Mechanical compression

CLINICAL PRESENTATIONS

Mild

- Minimal or no pain
- Cool extremity
- Skin blanching and discoloration without edema



Moderate

- Moderate pain
- Cool, edematous extremity
- Blisters but no NV deficit
- Ex. no paresthesias and capillary refill is appropriate



Severe

- Severe pain
- Gross edema, blisters, ulceration
- Reddish/purple discoloration
- NV compromise or acute compartment syndrome
- Ex. paresthesias, delayed capillary refill, pain on passive stretch



MANAGEMENT

Immediate Management: discontinue infusion, aspirate volume through IV line if possible

- Urgent plastics consultation if:
 - Vesicant or irritant substance, and/or if moderate or severe

Conservative Management: If not vesicant or irritant substance

- Goals: pain relief, reduce swelling, and avoid mechanical compression
 - Elevation, cold/warm packs, elastic bandaging, local dressings, and manual lymphatic drainage

Pharmacological and/or Surgical Management per Plastic Surgery Recommendation:

- Hyaluronidase: first-line, increases tissue permeability
- Vasodilators: phentolamine injection or topical nitroglycerin
- Saline flush-out with possible surgical debridement if frank necrosis develops

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