Interventional procedures for the relief of pain are done everyday all over the world. These include simple injections to very complex surgical procedures. Sophisticated procedures in the spine are done using endoscopy. Ultrasound guided procedures have become popular and practical. Several percutaneous techniques have come into practice for management of pain. Most of these procedures in the spine require the patient to be in the prone position, sometimes for extended periods of time. Quite often patients are under sedation or general anesthesia.

Though acute major complications are not common, when they occur you have a unique clinical situation where it is difficult to resuscitate patients in the prone position. More and more interventional procedures are being done outside the operating rooms and sometimes in freestanding pain clinics. It is important to have a plan and protocol to deal with emergency situations.

During this talk we shall discuss some of the potential complications during procedures in the prone position.

**Topics for Discussion**

**Mechanical issues**
- Direct Compressions
- Bite Injury
- Pressure sores
- Peripheral Nerve Injuries

**Cardiovascular and Respiratory Systems**
- Respiration and V/Q changes
- Cardiovascular Changes
- Allergic/Anaphylactic reactions
- Consequences of sedation/Anesthesia
- Vasovagal Reactions
- Vasovagal reactions can be dramatic and can happen at anytime in an awake patient. Patients with history of vasovagal reactions are likely to have it again.

**Local anesthetic toxicity**
- Systemic toxicity due to local anesthetics can be life threatening and needs anticipation and preparedness. LAST can happen even with very small doses if injected in the wrong place. Vertebral artery injection is a classic example.

**Vision**
- Postoperative visual loss, Ischemic Optic Neuropathy AION and PION
- Postoperative visual loss has been studied and discussed extensively in the literature. Most of the cases are associated with long surgical procedures and blood loss. But the common pathophysiology is poor perfusion.
- As the scope and extent of interventional pain procedures increase ION has to be kept in mind especially in high-risk patients.
- Intraocular Pressure and prone position
- Acute angle closure Glaucoma
- Venous congestion/stasis and consequences

**Special situations**
- Patients with Coronary Bypass with venous grafts
- Pregnant patient.
- Pregnant patient pose unique problems in positioning prone. Monitoring the mother and fetus (when appropriate) become important.
Patients with pacemakers and ICD
Pacemakers and ICD are usually found in the infra-clavicular region and we have found this to be a problem while positioning prone in thin patients. It becomes even more difficult if one has to place a magnet during the procedure.

**Examples of Reported complications in specific procedures**
Intraocular hemorrhage with endoscopic spine surgery
Acute Bilateral Visual loss with Retinal hemorrhages Following Epiduroscopy
Bilateral Scotomas associated with Retinal hemorrhages following endoscopic spine surgery

**Simulation Training**
Realistic High fidelity simulation may have a very important role in training the staff to deal with emergency situation. This becomes more important as more procedures are done away from the operating rooms. Simulation training can help everyone involved to understand the principles of crisis management and be aware of utilizing the available resources in the institution.
In the US several pain specialists are not anesthesiologists. We have doctors from Emergency Medicine, Neurology, Rehabilitation Medicine, Radiology, Neurosurgery, Orthopedic/Spine surgery etc., practice pain management. As one can imagine each one of them bring a different perspective and different skills dealing with emergency management. Simulation training can bring everyone together to have comprehensive practical policy for crisis management.

**References**


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