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## Managing Headaches Resulting from Dural Puncture: Diagnosis and Treatment

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### DESCRIPTION

Post-Dural Puncture Headache (PDPH) is a common complication of neuraxial anesthesia, such as spinal or epidural anesthesia that occurs after a dural puncture procedure. It occurs when there is a breach in the dura mater, leading to Cerebrospinal Fluid (CSF) leakage and subsequent intracranial hypotension. It is usually characterized by a severe headache that is associated with changes in posture, typically worsening when the patient is upright and improving when the patient is recumbent. The headache is typically bilateral, occipital or frontal, and can be severe in intensity. It is worsened by upright posture and improved by lying flat. This study provides an overview on the recognition and treatment of post-dural puncture headache.

The diagnosis of PDPH is primarily based on the patient's clinical presentation. The hallmark of PDPH is a headache that develops within 24-48 hours after the dural puncture, and is usually accompanied by neck stiffness, tinnitus, photophobia, and nausea or vomiting. The headache is typically moderate to severe in intensity and is worsened by upright posture. In contrast, the headache is typically relieved by lying flat. Other conditions that should be considered in the differential diagnosis of PDPH include meningitis, subarachnoid hemorrhage, cerebral venous thrombosis, and migraine headache. The presence of fever, nuchal rigidity, altered mental status, or focal neurologic deficits should raise suspicion for these alternative diagnoses. The diagnosis of PDPH is primarily clinical, but diagnostic tests can be useful in certain situations. Magnetic Resonance Imaging (MRI) can be used to confirm the diagnosis of PDPH by demonstrating meningeal enhancement or brain sagging due to intracranial hypotension. However, MRI is not routinely required for the diagnosis of PDPH.

A diagnostic lumbar puncture can be useful in certain situations, such as when the diagnosis is unclear or when the patient does not respond to the conservative management. The CSF opening pressure is typically low in patients suffering from the PDPH. However, the diagnostic value of lumbar puncture in PDPH is limited, as a normal opening pressure does not exclude the diagnosis, and a low opening pressure can

be seen in other conditions. The initial management of PDPH should be conservative. This includes bed rest, hydration, and analgesia. Patients should be advised to avoid upright posture and to lie flat as much as possible. Hydration is important to maintain intravascular volume and CSF production. Oral analgesics, such as Nonsteroidal Anti-Inflammatory Drugs (NSAIDs) or acetaminophen, can be used for mild to moderate headache. Opioid analgesics should be used with caution, as they can exacerbate nausea and vomiting.

Caffeine is a central nervous system stimulant that has been shown to be effective in the treatment of PDPH. Caffeine is thought to work by reducing cerebral blood flow and increasing CSF production, leading to a reduction in intracranial pressure. The recommended dose of caffeine is 100-200 mg orally, or 500-1000 mg intravenously. Intravenous caffeine should be administered slowly over 30 minutes to avoid adverse effects, such as tachycardia and hypertension.

An epidural blood patch is the definitive treatment for PDPH. It involves injecting the patient's own blood into the epidural space at the site of the dural puncture, creating a tamponade effect that seals the dural hole and stops the CSF leakage. The success rate of epidural blood patch is approximately 80-90%, and the procedure can be repeated if necessary. Overall, the recognition and treatment of PDPH requires a multidisciplinary approach that involves close collaboration between anesthesiologists, neurologists, and other healthcare professionals. By effectively managing PDPH, patients can experience relief from their symptoms and avoid potential complications.