TREATMENT FOR PAIN AND COMPLICATIONS AFTER EPIDURAL INJECTIONS AND SPINAL PUNCTURES:

A puncture, crack, or fissure for any purpose that allows spinal fluid or a contaminant into the interior of the spinal canal cover (dura/arachnoid) tissue may begin a cascade of inflammation in the lower spinal canal that may end in adhesive arachnoiditis. This document describes the process after a spinal puncture or epidural injection damages the surface of the arachnoid membrane.

The Inflammation Process: Inflammation at the tissue damage site initiates inflammation that can spread to multiple tissues throughout the spinal canal. This is akin to a cut on the hand that becomes inflamed and causes cellulitis to spread up the arm. The name for the inflammation process can arguably be called "spinal canal inflammatory disease." Inflammation that originates at the damage site can spread to these tissues: cauda equina nerve roots, canal cover (dura), arachnoid membrane, ligamentum flavum, and intervertebral discs.

Symptoms: Once inflammation starts, pain in the back becomes persistent and unrelenting. Depending on which tissues become inflamed pain may radiate into the buttocks, thighs, lower legs, and feet. A change in position may cause the pain to get better or worse. Sitting usually causes increased pain. Headache, dizziness, vertigo, blurred vision, and tingling sensations in the upper extremities are common primarily due to toxic, inflammatory waste and/or impairment of spinal flid flow.

Pain may begin immediately after the puncture wound or start within 72 hours. A longer delay may occasionally occur.

Specific Pathologic Conditions: As the inflammation spreads throughout the spinal canal, the following conditions may occur:

1. Spinal fluid leakage
2. Non-adhesive arachnoiditis
3. Epidural fibrosis
4. Cauda equina symptoms like skin sensation, burning feet, saddle numbness, stabbing pains
5. Urinary or bowel dysfunction
6. Degenerated discs that protrude (bulge)
7. Adhesive arachnoiditis

Blood Test Confirmation: To help confirm the presence of spinal canal inflammation, elevation of standard inflammatory markers of inflammation (WBC, ESR, CRP) may be present. The best diagnostic marker is a cytokine panel. We have found that about 70% of cases show one or more leukotriene elevations.

Treatment: If pain persists immediately after the damage and remains for 24 hours, we recommend a 6-day Medrol Dose Pak. If the pain persists for longer than 72 hours, one of these treatments is recommended:

1. Methylprednisolone 6-day (Medrol®) Dose Pak, ketorolac 30 mg IM for 3 days, progesterone 100-200 mg twice a day

2. Methylprednisolone 100 to 500 mg IV daily for 5 days

If pain and symptoms are not suppressed (hopefully eliminated) within 3 to 4 weeks, it is recommended that the outpatient protocol treatment for adhesive arachnoiditis be implemented. (Available on request.)

MRI Findings: MRI findings will usually reflect the stage of the inflammatory cascade. For at least 2 to 3 weeks after the initial tissue injury the only MRI signs may be thickening or enlargement of the spinal canal cover or cauda equina nerve roots due to inflammation and edema. Nerve roots may coalesce into small groups or clumps after 2 to 3 weeks and may singularly or in small groups begin to attach to the arachnoid. Spinal fluid leaks may start within 24 to 72 hours if inflammation erodes through the canal cover at the injury site.

Disc protrusions and evidence of adhesive arachnoiditis will not usually appear on an MRI for at least 6 to 8 weeks post injury. Given the delay in MRI evidence of inflammation, anti-inflammatory treatment should be based on symptoms and not specifically on MRI findings.

Summary: A spinal puncture or epidural injection may rarely produce damage to the exterior surface of the arachnoid membrane. If this occurs, inflammation at the damage site may spread to multiple tissues throughout the lower spinal canal. Anti-inflammatory treatment should be started if persistent unrelenting pain begins immediately after or within 72 hours of the injury.