

Table 1 GENERAL HEALTH PROBLEMS WHICH EITHER CONTRAINDICATE OR REQUIRE MODIFICATION OF SPINAL MANIPULATION

| Condition | Potential Complications of Manipulation | Method of Detection | Modification of Patient Management |
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| Vascular complication | | | |
| 1. Vertebral-basilar insufficiency | Vertebral-basilar infarction | Predisposition detected by cervical extension-rotation test, Doppler angiography | Cervical manipulation contraindicated in extension and rotation, use of soft tissue and mobilizing techniques, refer to vascular surgeon for evaluation |
| 2. Atherosclerosis of major blood vessels | Blood vessel rupture (hemorrhage), dislodged thrombi | Palpation, auscultation, x-ray visualization, Doppler | Soft tissue and mobilizing techniques with light adjustments, refer to vascular surgeon |
| 3. Aneurysm | Rupture and hemorrhage | Irregular pulse, abdominal palpation, auscultation, x-ray | Refer to vascular surgeon |
| Tumors | | | |
| 1. Lung | Metastasis to spine, ribs | Auscultation, lab findings, x-ray, MRI | Referral |
| 2. Thyroid | Metastasis to spine | Palpation, x-ray, and lab findings, MRI | Referral |
| 3. Prostate | Metastasis to spine | Palpation, MRI, x-ray and lab findings, rectal exam | Referral |
| 4. Breast | Metastasis to spine | Palpation, MRI x-ray and lab findings | Referral |
| 5. Bone | Pathologic fractures | X-ray and lab findings | Referral |
| Bone infections | | | |
| 1. Tuberculosis | Pathologic fracture | Biopsy x-ray and lab findings | Referral |
| 2. Bacterial infection (osteomyelitis) | Pathologic fracture | Biopsy x-ray and lab findings | Referral |
| Traumatic injuries | | | |
| 1. Fractures | Increased instability, delayed-healing, fracture | X-ray findings including CT | Referral |
| 2. Joint instability or hypermobility | Increased instability | Stress x-ray views, palpation, stress ROM | Manipulation of area fixation, immobilization or avoidance of area of instability; if severe, refer for surgery |
| 3. Severe sprains or strains | Increased instability | Stress ROM, stress x-ray views, motion palpation | If severe, refer for surgery, manipulate area of fixation |
| 4. Unstable spondylolisthesis | Increased instability | Stress x-ray, motion palpation | Avoid areas of slippage, specific manipulation to levels above and below |
| Arthritis | | | |
| 1. Rheumatoid arthritis | Transverse ligament rupture, increased inflammation | X-ray and lab findings | Forceful manipulation of the cervical spine contraindicated, use soft tissue and mobilizing techniques with light adjustments |
| 2. Ankylosing spondylitis | Increased inflammation | X-ray and lab findings | In the acute stage mobilizing techniques and exercise contraindicated, bed rest; mobilizing technique useful later |
| 3. Psoriatic arthritis | Transverse ligament rupture | X-ray findings, skin lesions | Forceful manipulation contraindicated, use soft tissue mobilizing technique |
| 4. Osteoarthritis (unstable stage) | Increased instability | Pain and stiffness of joint, stress x-ray findings | Immobilization of area if severe |
| 5. Osteoarthritis (late stage) | Neurologic compromise | X-ray findings | Mobilization, gentle manipulation |
| 6. Uncoarthrosis | Vertebral artery compromise | X-ray findings | Gentle traction, mobilizing and soft tissue techniques |
| Psychological consideration | | | |
| 1. Malingering | Secondary gain syndrome | Exaggerated response, inconsistencies in signs and symptoms | Release of patient |
| 2. Hysteria | Prolonged treatment | Exaggerated response, inconsistencies in signs and symptoms | Refer for psychological evaluation |
| 3. Hypochondriasis (dependent personality) | Dependency on chiropractic | Delayed healing time | Reevaluate patient, wean with reassurance |
| 4. Pain intolerance | Unnecessary pain | Patient communication, excessive tension on palpation | Gentle maneuvers and reassurance |
| Metabolic disorders | | | |
| 1. Clotting disorders | Spinal hematoma | History of anticoagulant therapy, pulse, bruises | Forceful manipulation contraindicated |
| 2. Osteopenia (osteoporosis, osteomalacia) | Pathological fractures | History of long-standing steroid therapy, and post menopausal female, anticonvulsive medication, and malabsorption syndrome and nutritional deficiencies, x-ray findings | Forceful manipulation contraindicated, use mobilizing technique with light adjustment |
| Neurologic complication | | | |
| 1. Sacral nerve root involvement from medial or massive disc protrusion | Permanent neurological deficits | Neurological and orthopaedic tests, CT scan and myelography | Refer patient |
| 2. Disc lesions (advancing neurological deficits) | Permanent neurological deficits | Neurological and orthopaedic tests, CT scan and myelography | Refer patient |
| 3. Space-occupying lesions | Permanent neurological deficits | MRI, CT scan, myelography | Refer patient |