

Contraindications and Complications

Chapter Outline

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I. OVERVIEW

While chiropractic procedures have been demonstrated to be comparatively safe, special caution is warranted with certain conditions. Prevention of complications from chiropractic care is facilitated when good professional judgment is exercised and quality care is provided. Elements common to all primary care practitioners include sufficient history taking and record keeping, thorough examination, timely re-evaluation procedures throughout the course of case management, good communication with the patient and appropriate response in the event that an unexpected incident does occur. If a significant adverse result from a procedure is apparent, it is of critical importance that the intervention or procedure associated with the onset of the complication not be repeated.

The evidence of low incidence of injury or complications from adjustments is promoted by quality care which follows professional judgment consistent with the objectives of chiropractic care.

Chiropractic professional judgment includes, without limitation, appropriate response to unexpected findings and reevaluation of the suitability of a particular technique or procedure associated with the discovery of a complication. The chiropractor should be alert to the possibility of encountering unusual findings in any phase of care.

Patient safety can be further enhanced by the chiropractic profession's commitment to quality assurance.

When assessing the safety and efficacy of chiropractic care, two factors should always be considered: the type of technique being utilized and the integrity of the area of the spinal column/or articulation being addressed. These two factors assist in evaluating any risk that may be associated with the application of chiropractic care.

The primary focus of the chiropractic management of complications is the recognition of unusual findings that may require modification of the plan of care when the unusual finding is observed.

II. LIST OF SUBTOPICS

To assist in understanding the patient evaluation process in the context of possible complications or special circumstances where procedures may need to be modified to meet the needs of a particular patient, the following list of conditions is provided. This list is not a list of conditions for which chiropractic procedures are contraindicated. Conditions selected have come from a review of the chiropractic, scientific and medical/legal literature as well as insurance claim information. The appropriate chiropractic management of patients with these and related conditions is described in this chapter.

- A. Articular Derangements
 - 1. Arthritides
 - a. Acute arthropathies
 - b. Subacute and chronic ankylosing spondylitis
 - c. Degenerative joint disease
 - d. Spondylolysis and spondylolisthesis
 - 2. Dislocation, fractures, instability
 - 3. Os Odontoideum
 - 4. Articular hypermobility

5. Postsurgical joint
 6. Acute joint injury
 7. Scoliosis
- B. Bone Weakening and Destructive Disorders
1. Juvenile osteochondroses
 2. Osteoporosis, osteomalacia
 3. Bone tumors
 4. Malignancy
 5. Infection of bone and joint
- C. Circulatory and Cardiovascular Disorders
1. Vertebrobasilar, etc.
 2. Aneurysm
 3. Bleeding disorders
- D. Neurological Disorders
1. Myelopathy, cauda equina syndrome

III. LITERATURE REVIEW

The literature on chiropractic safety is perhaps the single most impressive component of the outcomes record of the profession. Since its inception as a separate and distinct health care profession, chiropractic has established itself as the safest primary care profession by far. Despite the high volume of patients and the great diversity of conditions with which they present, chiropractic can claim the lowest complication rate, the lowest malpractice insurance rates and the highest rates of patient satisfaction of any doctor level provider.

The Government of New Zealand, while studying the possibility of inclusion of chiropractic services in that nation's public health care programs, conducted one of the most exhaustive studies of chiropractic safety ever conducted. Their findings were emphatic:

The conspicuous lack of evidence that chiropractors cause harm or allow harm to occur through neglect of medical referral can be taken to mean only one thing: that chiropractors have on the whole an impressive safety record.

Over the past two decades there has been an interesting growth of literature on general manipulation-induced accidents or injuries. This body of information clearly distinguishes the safety record of chiropractic because the vast majority of recorded injuries are found to be at the hands of non-chiropractic providers attempting to apply chiropractic like procedures, without the highly developed skill and experience of the doctor of chiropractic. (Dvorak, 1991; Patjin, 1991; Schmitt, 1991; Terrett, 1990, 1987; Grieve, 1986; Gotlib and Thiel, 1985; Schmidely and Koch, 1984; Gutmann, 1983; Dvorak and Orelli, 1982; Ladermann, 1981; Gatterman, 1981; Jaskoviak, 1980; Kleynhans, 1980; Livingston, 1974, 1971).

There can be little doubt that the elevated level of reporting arises from a general increase in awareness of complications by all professionals interested in spinal manipulative therapy, and an increased incidence of the use of manual procedures by professionals not thoroughly trained in the arts of manipulation or adjustment. As well, since many alleged "consequences" are consistent with the natural history of a condition, anecdotal or polemic reports must be distinguished from those that

provide objective evidence of true manipulation-induced injuries. Many case reports of injury have proven to be unfounded upon further unbiased inquiry.

With respect to the frequency of possibly genuine complications, Ladermann (1980) identified 135 case reports of serious complications over a 30 year period from 1950-1980, a time period during which tens of millions of adjustments were administered by a variety of practitioners. Kleynhans (1980), analyzing some of these case studies, outlined a number of likely practitioner-related causes of adverse reactions and suggested three main factors: lack of knowledge or diagnostic error; lack of technique skill; and lack of rational clinical attitude in case management. These causes could well account for a number of iatrogenic injuries reported in the literature, e.g., pathological fractures (Austin, 1985; Holta, 1942), ruptured abdominal aneurysms (Kornberge, 1988), electrotherapy burns and injuries, etc.

Jasoviak (1981) and Terrett (1987) specifically dealt with case reviews on the adverse effect of cervical adjustment where vertebrobasilar insufficiency was evident. Gutmann (1984), Terrett (1987), Theil (1991) and Schmitt (1991) have recently described or studied the biomechanical effects of head and neck movement and cervical adjustment in association with vertebral artery injury. Adjustment has been identified as only one of many activities or health care procedures that may result in damage to the vertebral artery. However, it has been the one most extensively reviewed and discussed. (Pratt-Thomas and Berger, 1947; Gutmann 1957, 1962, 1971, 1984; Smith and Estridge, 1962; Maigne, 1969; Houle, 1972; Lewit, 1972; Giles, 1977; Henderson, 1979, 1991; George et al., 1981; Terrett, 1982, 1983, 1987; Hulse, 1983; Gast et al., 1987; Henderson and Cassidy, 1988; Martienssen and Nilsoon, 1989; Raskind and North, 1990).

Rare case reports of adverse events following spinal adjustment exist in the literature. In the case of strokes purportedly associated with adjustment, significant shortcomings in the literature were noted.

In a letter to the editor of *JMPT*, Myler wrote: "I was curious how the risk of fatal stroke after cervical adjustment, placed at 0.00025% compared with the risk of (fatal) stroke in the general population of the United States. According to data obtained from the National Center for Health Statistics, the mortality rate from stroke was calculated to be 0.00057%. If this data was accurate, the risk of death from stroke after cervical adjustment is less than half the risk of fatal stroke in the general population!"

Jaskoviak reported that not a single case of vertebral artery stroke occurred in approximately 5 million cervical adjustments at The National College of Chiropractic Clinic from 1965 to 1980.

LeBoeuf-Yde et al suggested that there may be an over-reporting of spinal adjustive related injuries. The authors reported cases involving two fatal strokes, a heart attack, a bleeding basilar aneurysm, paresis of an arm and a leg, and cauda equina syndrome which occurred in individuals who were considering chiropractic care, yet because of chance, did not receive it. Had these events been temporally related to a chiropractic office visit, it is likely that they would have been inappropriately attributed to the chiropractic care.

In many cases of strokes attributed to chiropractic care where the operator was not a chiropractor at all. Terrett observed that manipulations administered by a Kung Fu practitioner, GPs, osteopaths, physiotherapists, a wife, a blind masseur, and an Indian barber were incorrectly attributed to chiropractors. As Terrett wrote, "The words chiropractic and chiropractor have been incorrectly used in numerous publications dealing with SMT injury by medical authors, respected medical journals and medical organizations. In many cases, this is not accidental; the authors had access to original reports that identified the practitioner involved as a non-chiropractor. The true incidence of such reporting cannot be determined. Such reporting adversely affects the reader's opinion of chiropractic

and chiropractors.”

No reliable screening tests were identified which enable a chiropractor to predict patients at risk for stroke. After examining twelve patients with dizziness reproduced by extension-rotation and twenty healthy controls with Doppler ultrasound of the vertebral arteries, Cote et al concluded, “ We were unable to demonstrate that the extension-rotation test is a valid clinical screening procedure to detect decreased blood flow in the vertebral artery. The value of this test for screening patients at risk of stroke after cervical adjustment is questionable.” Terrett noted, There is also no evidence which suggests that positive tests have any correlation to future VBS (vertebrobasilar stroke) and SMT (spinal manipulative therapy).

It is thought that cervical rotation combined with extension and traction may have some obstructive effect on perfusion of the vertebral artery on the contralateral side of rotation. If the ipsilateral artery is diseased or hypoplastic, symptoms of hind brain ischemia may occur because the dominant healthy artery is under partial physiological compression, resulting in a loss of sufficient or compensatory blood flow. If trauma to the arterial wall does occur, thrombus formation may be the result. Further, this may lead to stroke or stroke-like complications in susceptible patients. While incidence figures vary, it is generally agreed that the risk of serious neurological complications is extremely low, and is approximately one or two per million cervical adjustments. Structural abnormalities, particularly where mechanical instability pathological bone disorders, dislocations and fractures of the cervical spine are present may also lead to mechanical strain of the vertebral arteries (Terrett, 1987; Jaskoviak, 1981; Ladermann, 1981).

Other cervical complications, which are rare but have either been reported or described in the literature, include Horner's syndrome, diaphragmatic paralysis, cervical myelopathy secondary to meningeal hemorrhage, pathological fracture of a cervical vertebra and cervical disc protrusions (Dabert et al., 1970; Rinsky et al., 1976; Krewalramani, 1982; Hefner, 1985; Grayson, 1987; Gatterman, 1991). Dislocation in the upper cervical spine due to inflammatory or traumatic rupture of the transverse atlantal or alar ligaments warrants particular caution (Yochum and Rowe, 1980, 1987; Jeffreys, 1980; Sandman, 1981; Redlund-Johnell, 1984).

Though rarely reported in literature, empirically the most common complaint of adjustment of the thoracic region occurs when forceful or poorly applied manipulations cause costovertebral strains, rib fractures and costochondral separations (Grieve, 1986). Excessive thoracolumbar torque in the side posture position as well as inappropriately applied posterior to anterior techniques may cause thoracic cage injuries particularly in the elderly.

Lower back injury alleged to have occurred following spinal adjustment therapy has been reported in patients with pre-existing disc herniation or prolapse (CCPA Claim Review, 1990; Bromley, 1989; Gallinaro and Cartesgna, 1983). While it is suggested that the forces required to cause a disruption of the annular fibers of the healthy intervertebral disc well exceed that of a rotational adjustive thrust (Adams and Hutton, 1981, 1983; Farfan, 1983; Gilmore, 1986; Triano, 1991), some disc herniation/protrusion may certainly be aggravated by an inappropriately applied adjustive maneuver, as it may be by the other simple activities of daily living such as bending, sneezing, lifting. The most frequently described severe complication is compression of the cauda equina by massive midline nuclear herniation at the level of third, fourth or fifth intervertebral disc (Lehmann et al., 1991; Malmivivaara and Pohjola, 1982; Kleynhans, 1980; Hooper, 1973).

Of the thirty cauda equina complications associated with adjustment reported in the French, German and English literature over an 80 year period, only eight were allegedly related to chiropractic care (Ladermann, 1980). Had these patients not been manipulated, the outcome may have been the same with menial effort or impulsive strain replacing the rupturing effect alleged to arise from the adjustment. However, this clinical outcome does stress the need for particular care in this susceptible

subgroup of patients. However, given the frequency of lumbar adjustment and the few reported complications over a long period of time, it does not appear that there is any risk associated with appropriately applied adjustment techniques including those utilizing high velocity thrust. To sum it up, it appears that lumbar roll type techniques, whether done with (Christman et al. Groh), or without (Ewer, Mensor) narcosis and hyperextension techniques without narcosis are safe compared to the lumbar hyperextension (Durchang of the German authors) under narcosis.

Psychological factors including pain intolerance, hysteria conversion reactions, hypochondriasis, malingering, etc., require special consideration, since the presence of spine related symptoms may be of secondary importance. Aside from the risk of creating a dependency for care that may or may not be indicated, chiropractic care itself may aggravate or contribute to real or imagined harm.

It is important to note that the scientific literature as well as the judicial record clearly illustrates that most serious adverse effects with manual or "spinal manipulative therapy (SMT) have not been the result of procedures performed by doctors of chiropractic. It is important, therefore, to protect the public and insure quality and safety of care, that throughout all the professions a standard minimum training greater than or equal to that of a doctor of chiropractic in adjustive/manual procedures be required prior to performance of manual procedures to the human spine.

IV. ASSESSMENT CRITERIA

The main focus for the prevention of complications is the recognition of well known and established indicators or "red flag" signs and symptoms, which may require careful assessment and reassessment, changes in chiropractic care plan, or other appropriate action such as emergency care or referral to another health care specialist. Ignoring these "red flag" indicators increases the likelihood of patient harm.

The literature and clinical experience show that the most common therapeutic procedure in chiropractic practice, and the one most likely to result in complications, is the adjustment or high-velocity manipulative thrust. The following assessment criteria and recommendations relate to this procedure applied to, or adjacent to, the anatomical site of pathology.

Assessment criteria developed and used in this chapter relate to:

- A) Rating of conditions
- B) Severity of complication
- C) Quality of evidence
- D) Level of identifiable contraindication: based on the above factors and the probability of complication

A. Rating of Conditions:

Type I: A condition for which high-velocity thrust procedures have been shown to be comparatively safe and effective so long as an adequate patient assessment has been made and an intervention trial is rationally applied (e.g., upper cervical dysfunction/subluxation associated with tension headaches).

Type II: A Type I condition is present but may be coincident with another related or unrelated condition requiring modification of procedures and/or further diagnostic assessment

(e.g., upper cervical joint dysfunction/subluxation accompanied by widening of the atlantodental interval or inflammatory causes affecting the area). Careful clinical judgment is required as high-velocity thrust procedures may require modification or be inappropriate.

Type III: Type I or II conditions are present but considered negligible compared with clinical evidence of another pathological problem requiring further patient assessment and referral to another health care professional.

B. Severity of Complications:

Minimal Level:

Any complications of high-velocity thrust procedures may be considered minimal, with slight objective evidence of worsened signs usually lasting a maximum of several days. (Reactions such as short term pain and stiffness or, infrequently, a mild chronic pain disorder alleged to arise from aggravation of a pre-existing problem). These reactions are rarely reported in the literature/claim reviews, given the brief duration of mild symptoms experienced by patients and the superimposed natural history of the presenting complaint. High-velocity thrust procedures are not generally contraindicated. Chiropractic care modifications may have to be anticipated in exceptional cases.

Moderate Level:

Level of harm is generally moderate, characterized by more-or-less serious but usually reversible harm lasting weeks to months. Effects are temporary and/or residual in nature (e.g., broken rib, uncomplicated disc herniation, radiculopathy, foot drop). Depending on all factors (e.g., frequency of complications, benefits) high-velocity thrust procedures may require modification or be inappropriate.

High Level:

Evidence suggests possible risk and the need for a high level of clinical caution. The complication or accident may be serious and/or permanent, particularly in susceptible patients (e.g., stroke, cauda equina syndrome). High-velocity thrust procedures may require careful modification or be inappropriate, or be identifiably inappropriate, given patient history, diagnostic tests and/or other information obtained during a trial of therapy.

C. Quality of Evidence:

Evidence on the risk of complication arising from chiropractic care and particularly high-velocity thrust procedures comes from case reports, surveys, literature reviews, and insurance and legal claims records. There needs to be further systematic study of the incidence, severity and management of complications. Present classification of quality of evidence is:

Class I:

Evidence provided by surveys, systematic studies, literature reviews, and detailed clinical case reports published in refereed journals.

Class II:

Evidence provided by other case studies or reviews, or consensus expert opinion from legitimate consensus-building efforts.

Class III:

Evidence provided by expert opinion and one or more case reports.

D. Level of Contraindication:

Having regard to all the individual assessment criteria already discussed, the following overall ratings are used:

No Identifiable Contraindication: No known clinical rationale can be identified which would preclude the application of chiropractic adjustments or require the adaptation or modification of adjusting techniques

Special Circumstances: Situations in which clinical findings indicate the need for additional examination procedures to determine the best course of care and/or in which high-velocity thrust procedures may be used but with appropriate care and/or modification.

Special Circumstances to Identifiable Contraindication: Careful clinical judgment dictates whether any identifiable contraindication is present or special care is needed with each specific patient.

Identifiable Contraindication: Situations in which clinical indicators identify anatomical sites where certain adjusting procedures should be restricted or modified.

The diversity and sophistication of chiropractic adjusting techniques provides the doctor of chiropractic with an impressive array of approaches to patient care. This body of techniques means that no absolute contraindication exists to the adjustment process.

Example: As an example of the complete rating system:

Non-complicated Low-Back Pain:

No identifiable contraindication to high-velocity thrust procedures.

Risk-of-Complication Rating:

Severity (if harm did occur):	Minimal
Rating of Condition:	Type I
Quality of Evidence:	Class I

This rating system assumes no negligence or error on the part of the practitioner. Tolerance to chiropractic care may sometimes, but not always, be estimated by provocative or pre-adjustment testing.

RATING SYSTEM

A. Types:

1. Strong positive recommendation. The chiropractor under most circumstances would employ the procedure.
2. Positive recommendation. The chiropractor under many circumstances would employ the procedure.

3. Discretionary. The chiropractor under some circumstances would employ the procedure.
4. No recommendation. The circumstance within which this procedure would be appropriate have not been determined.

B. Support Categories:

1. E: Based on available expert opinion, clinical experience or effectiveness.
2. L: Based on available refereed literature or published monographs, legal decisions and/or authority.
3. C: Based on available controlled clinical studies.

V. **RECOMMENDATIONS**

A.1. Upon discovery of an unusual finding, the chiropractor should disclose the finding to the patient, note the finding in the record and reassess the plan of care.

17.1.1 **Rating:** Strong Positive Recommendation
 Evidence: E, L

2. The modified plan of care should be reassessed when the unusual finding is no longer observed.

17.1.2 **Rating:** Strong Positive Recommendation
 Evidence: E, L

Note: General health problems which have been described in the literature as either contraindications to or complications of high-velocity thrust procedures include the following conditions. It should be understood that the listed conditions are not necessarily those for which high-velocity thrust procedures are intended. Rather they may be coincidentally present in a patient undergoing chiropractic care. The fundamental object of chiropractic care is a subluxation (joint lesion, dysfunction, blockage).

B. Articular Derangements:

1. Acute rheumatoid, rheumatoidlike and nonspecific arthropathies including acute ankylosing spondylitis characterized by episodes of acute inflammation, demineralization, ligamentous laxity with anatomic subluxation or dislocation, represent a **special circumstances situation** in which additional examination procedures (such as videofluoroscopy or computerized x-ray digital analysis) may be necessary to determine the best course of care and/or modifications may be required to high-velocity thrust procedures in anatomical regions of involvement.

17.2.1 **Risk-of-Complication Rating:**
Severity: Moderate to High
Condition Rating: Type III
Quality of Evidence: Class II, III

2. Sub-acute and/or chronic ankylosing spondylitis and other chronic arthropathies in which there are no signs of ligamentous laxity, anatomic subluxation or ankylosis are **not contraindications** to high-velocity thrust procedures applied to the area of pathology.

17.2.2 **Risk-of-Complication Rating:**

Severity: Minimal
Condition Rating: Type I, II
Quality of Evidence: Class II, III

3. Degenerative joint disease, osteoarthritis, degenerative discopathy and spondyloarthritis are **not contraindications** to high-velocity thrust procedures to the area of pathology but chiropractic care modification may be warranted during active inflammatory phases.

17.2.3 **Risk-of-Complication Rating:**

Severity: Minimal
Condition Rating: Type I, II
Quality of Evidence: Class II

4. In patients with spondylolysis and spondylolisthesis caution is warranted when high-velocity thrust procedures are used. These conditions are **not contraindications**, but with progressive slippage they may represent a special circumstances situation in which additional examination may be necessary and/or modifications to high-velocity thrust procedures may be indicated.

17.2.4 **Risk-of-Complication Rating:**

Severity: Minimal to Moderate
Condition Rating: Type I, II
Quality of Evidence: Class II

5. Acute fractures and dislocations with signs of ligamentous rupture other than the disc represent a **contraindication** to high-velocity thrust procedures applied to the anatomical site or region.

17.2.5 **Risk-of-Complication Rating:**

Severity: High
Condition Rating: Type III
Quality of Evidence: Class III

6. Healed fractures and dislocations with signs of ligamentous rupture other than the disc represent a special circumstances situation in which additional examination is necessary to determine the best course of care and/or if modifications are necessary to high-velocity thrust procedures applied to the anatomical site or region.

17.2.6 **Risk-of-Complication Rating:**

Severity: Minimal to Moderate
Condition Rating: Type III
Quality of Evidence: Class III

7. Articular hypermobility, and circumstances where the stability of a joint is uncertain, do not represent a **contraindication**, but may represent a **special circumstances situation in which additional examination is necessary to determine the best course of care and/or if modification is necessary** to high-velocity thrust procedures to the area of pathology.

17.2.7 **Risk-of-Complication Rating:**

Severity: Minimal
Condition Rating: Type I, II
Quality of Evidence: Class II, III

8. Post-surgical joints or segments with no evidence of instability are **not a contraindication** to high-velocity thrust procedures but may represent a **special circumstances situation in which additional examination is necessary to determine the best course of care, or if a contraindication present**, depending on clinical signs (e.g., response, pretest tolerance or degree of healing).

17.2.8 **Risk-of-Complication Rating:**

Severity: Minimal
Condition Rating: Type II
Quality of Evidence: Class III

9. Acute injuries of osseous and soft tissues may require modification of chiropractic care. In most cases, high-velocity thrust procedures to the area of pathology are **not contraindicated**.

17.2.9 **Risk-of-Complication Rating:**

Severity: Minimal to moderate
Condition Rating: Type I, II
Quality of Evidence: Class I, II

10. The presence of scoliosis is **not a contraindication** to high-velocity thrust procedure.

17.2.10 **Risk-of-Complication Rating:**

Severity: Minimal
Condition Rating: Type I, II
Quality of Evidence: Class II, III

C. Bone Weakening and Destructive Disorders

1. Active juvenile avascular necrosis, specifically of the weight bearing joints (e.g., Perthes' disease) represents a **contraindication** to high-velocity thrust procedures to the area of pathology.

17.3.1 **Risk-of-Complication Rating:**

Severity: High
Condition Rating: Type III
Quality of Evidence: Class III

2. Demineralization of bone warrants caution with the use of high-velocity thrust procedures. This represents a **special circumstances situation in which additional examination may be necessary to determine the best course of care and/or**

modifications may be necessary to high-velocity thrust procedures to the area of pathology.

17.2.1 **Risk-of-Complication Rating:**
Severity: Minimal to Moderate
Condition Rating: Type II
Quality of Evidence: Class II, III

3. Benign bone tumors may result in pathological fractures and therefore represent a **special circumstances situation in which additional examination may be necessary to determine the best course of care and/or modification** to high-velocity thrust procedures to the area of pathology.

17.3.3 **Risk-of-Complication Rating:**
Severity: Low to moderate
Condition Rating: Type II, III
Quality of Evidence: Class III

4. Malignancies represent conditions for which high-velocity thrust procedures to the area of pathology are special circumstance situations and/or situations in which additional examination will reveal that high velocity thrust procedures are **contraindicated**.

17.3.4 **Risk-of-Complication Rating:**
Severity: Minimal to High
Condition Rating: Type III
Quality of Evidence: Class II, III

5. Infection of bone and joint represents a special circumstances situation **to contraindication** to high-velocity thrust procedures to the area of pathology.

17.3.5 **Risk-of-Complication Rating:**
Severity: Minimal to high
Condition Rating: Type III
Quality of Evidence: Class II

D. Circulatory and Cardiovascular Disorders

1. Clinical manifestations of vertebrobasilar insufficiency syndrome are not a **contraindication** but may represent a **special circumstances situation in which additional examination may be necessary to determine the best course of care and/or modifications may be necessary** to cervical high-velocity thrust procedures to the region of pathology based on degree of insufficiency.

17.4.1 **Risk-of-Complication Rating:**
Severity: Minimal to high
Condition Rating: Type II, III
Quality of Evidence: Class I, II, III

2. When a diagnosis of a dissecting aneurysm involving a major blood vessel has been made, a **contraindication** may exist for high-velocity thrust procedures within the area of pathology.

17.4.2 **Risk-of-Complication Rating:**

Severity: High
Condition Rating: Type III
Quality of Evidence: Class III

3. Bleeding is a potential complication of anticoagulant therapy or certain blood dyscrasias. Patients with these disorders represent a **special circumstances situation to contraindication** to high-velocity thrust procedure, and require additional evaluation to determine the best course of care.

17.4.3 **Risk-of-Complication Rating:**
Severity: Minimal
Condition Rating: Type II
Quality of Evidence: Class III

E. Neurological Disorders

1. Signs and symptoms of acute myelopathy or acute cauda equina syndrome represent a **special circumstances situation in which additional examination may be necessary to determine the best course of care and/or modifications may be required, to strong contraindication** to high-velocity thrust procedures applied to the anatomic site of involvement.

17.5.1 **Risk-of-Complication Rating:**
Severity: Minimal to High
Condition Rating: Type II, III
Quality of Evidence: Class I, II

*Most dysfunctions or disease processes have variations or phases. Levels of severity and probability have been assigned on the basis that the condition displays usual and classical signs and symptoms. The difficulty in precisely detailing the degree or severity and probability of an individual patient's overall physical and psychological response both to the condition and any specific manual procedure (subtleties of force, amplitude, direction, patient positioning, etc.) is acknowledged. Nevertheless, ratings have been assigned based on the literature and the current state of clinical experience. These provide a starting point which will require ongoing review and refinement.

2. Discogenic lesions that have been clinically established (intact or fragmented) do not represent a **contraindication** to adjustive procedures to the area of involvement.

17.6.1. **Risk of Complication Rating**
Severity: Minimal
Condition Rating: Type I
Quality of Evidence: II, III

VI. COMMENTS

This chapter provides a general framework and interim guideline recommendations with respect to complications of and contraindications to chiropractic thrust procedures. At present, detailed systematic studies on this subject are lacking and the recommendations made are based on information from clinical reviews and case reports, as well as from expert opinion and consensus methods.

The recommendations made must be continuously re-evaluated in light of ongoing research and clinical experience. Cooperative intradisciplinary and interdisciplinary research will be necessary

to determine the true extent of the nature and occurrence of iatrogenic complications in chiropractic practice. The development of a central registry system capable of generating comprehensive research data would be valuable, and would facilitate the establishment of more detailed and refined guideline recommendations in the future. As well, the establishment of bodies of data that would allow consumers, policy-makers and other professionals to compare the relative safety of the various approaches to patient care, such as the chiropractic versus the standard medical management of a range of conditions, would be an invaluable asset in the pursuit of optimal health care strategies on all levels.

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