

Neck, Upper Back, Shoulder, & Arm Pain

*What It Is
and
How It Is Treated*



by
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Neck, Upper Back, Shoulder & Arm Pain: What It Is and How It Is Treated

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Dear Patient:

Your condition and its care are described on page(s) _____. Please read it carefully. Have your spouse or a friend read it also to help you in your care and recovery.

Diagnosis

It is important to properly diagnose the cause of the pain immediately. The chiropractic physician uses the neurological and orthopedic tests to determine the nerve involved and the extent of the involvement. X-rays will tell the doctor of any other bone disease that could be causing the pain and will also allow determination of vertebral misalignment, disc conditions, or the other causes of pain.

Referral Indications

If a patient does not show at least 50% relief of the symptoms of neck, shoulder, or arm pain within 3 to 4 weeks of chiropractic care, further diagnostic procedures will be instituted and neurosurgical consultation may be made. MRI is not done immediately in most cases of neck and arm pain unless advanced neurological findings are present. Many neck and arm pain patients will gain relief without the use of MRI or like testing.

Neck, Upper Back, Shoulder and Arm Pain

Introduction & Facts

This book is written to aid you, the patient, in understanding your spinal pain problem. Various diagnostic problems of the neck and upper spine are presented with their explanations and treatment. The doctor will mark the condition(s) s/he has found to be your problem so that you can understand and assist in your care and rehabilitation. Some facts about neck and upper back pain follow.

Whiplash Must Be Treated Correctly

Only 12% of cervical spine whiplash (neck pain) injuries are well at 10.8 year follow-up study. Treatment must be given soon after injury, within 2 years, since symptoms are not changed after that. [Gargan MP: Long term prognosis of soft tissue injuries of the neck. *JBJS* Sept. 1990;72B(5):901]

Dizziness or vertigo can result from damage to the nerve receptors in the neck from whiplash injury. Chiropractic was able to alleviate 90.2% of the symptoms after 18 treatments when the dizziness was due to neck induced dizziness. [Fitz-Ritson D: Assessment of cervicogenic vertigo. *J of Manipulative and Physiological Therapeutics* 1991;14(3):193]

Rear-end collisions place 12 to 16 g's of force on the neck. Headrests do not protect the neck unless they contact the head. The brain hemorrhages in whiplash injury. Concussion of the brain has been shown experimentally in whiplash. 40-50% of whiplash patients show abnormal brain wave tests.

Patients with neck pain show significantly less strength of the neck muscles than normal individuals. [Silverman JL: Quantitative cervical flexor strength in healthy subjects with mechanical neck pain. *Arch Phys Med Rehab* 1991;72:679]

HEADACHE AND NECK PAIN ARE THE MOST COMMON SYMPTOMS OF WHIPLASH INJURY – Whiplash to the neck results in chronic symptoms of headache, neck pain in up to 40% of people, hearing loss, and visual changes also. Tearing of the discs at the C4-5, C5-6, and C6-7 levels are common as well as C2-3 joint damage to cause pain and headaches.

Self manipulation leads to stroke. [Neurology 1991;41:1695]

Stenosis Of Neck Treated Successfully With Chiropractic Manipulation

Cervical spine stenosis causing neck and left shoulder and arm pain and weakness was relieved using Cox® Flexion Distraction Cervical Spine Manipulation. [Krase RA, Gregerson D: Cervical spine stenosis resulting in radiculopathy treated with flexion distraction manipulation: a case study. *Journal of the Neuromusculoskeletal System* 2002; 10(4)]

Disc Herniation Is Best Treated Non-Surgically (Chiropractic)

Conservatively treated cervical disc herniations without myelopathy respond better than surgically treated disc herniations with regards to reflex, motor weakness, pain, occupational capacity loss, disability feeling in everyday life. [Heckmann JG et al: Herniated cervical intervertebral discs with radiculopathy: An outcome study of conservatively or surgically treated patients. *Journal of Spinal Disorders* 1999;12(5):396-401]

CERVICAL SPINE DISC HERNIATIONS TREATED SUCCESSFULLY WITHOUT SURGERY, USING COX® MANIPULATION – A large C5-C6 disc herniation causing neck and arm pain was treated with Cox® flexion distraction manipulation and adjunctive therapies. Complete resolution of the complaints was achieved. [Krase et al: *Journal of Manipulative and Physiological Therapeutics* 24(3)]

TRACTION OF CERVICAL SPINE RELIEVES NECK AND ARM PAIN – 15 patients with arm pain were treated with intermittent traction of the neck and 8 showed complete pain resolution and 3 of the other 4 had less symptoms. [Moeti: *Journal of Orthopedic-Sports Physical Therapy* 2001; 31(4)]

75% of patients with arm pain, muscle weakness, and reflex loss will respond to traction of the neck. [Olivero: *Neurosurgical Focus* 2002;12(2)]

NON SURGICAL CARE OF NECK DEGENERATION IS EQUALLY GOOD AS SURGERY – 68 patients with mild to moderate spondylotic cervical myelopathy were treated with manipulation, medicine, rest, and flexion of the neck OR surgery. No significant difference in deterioration or superior outcome between the two therapies was reported. [Kadanke et al: Approaches to spondylotic cervical myelopathy: conservative versus surgical results in a 3 year follow up study. *Spine* 2002; 27(20)]

THE CERVICAL SPINE

Normal Disc

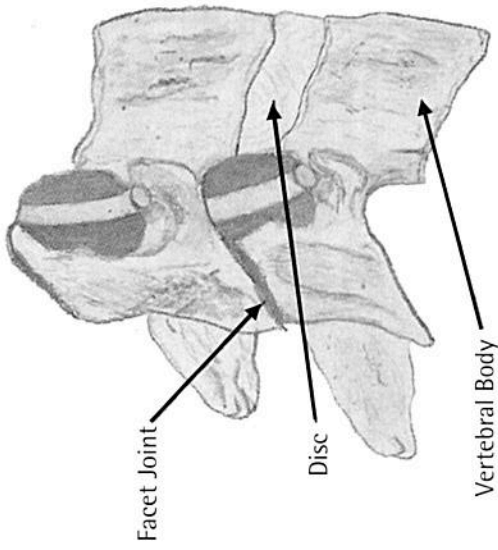


Figure 1

Figure 1 shows the normal disc in the neck.

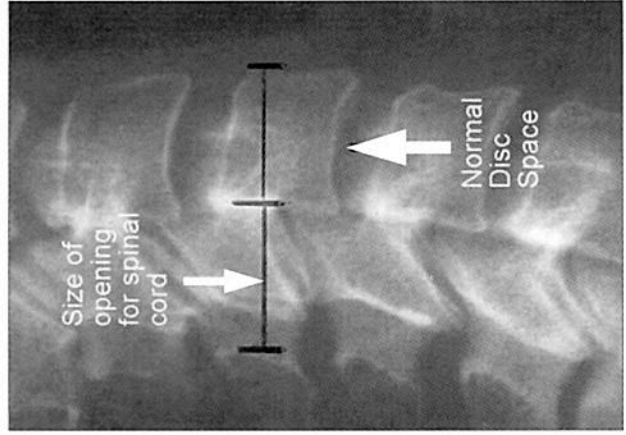


Figure 2

Figure 2 is an x-ray of a normal cervical spine. Note the smooth margins of the vertebra and the wide disc spaces between the vertebrae. The

arrowed lines show the equal diameter between vertebral bodies and the openings behind the vertebral bodies through which the spinal cord passes. This diameter size is important to the chiropractic doctor to determine stenosis (narrowing of the space available for the spinal cord) when manipulation is performed on the neck.

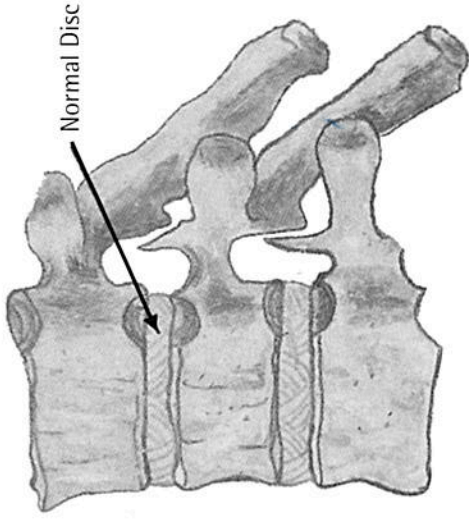


Figure 3

Figure 3 is a schematic of a normal disc in the thoracic spine.

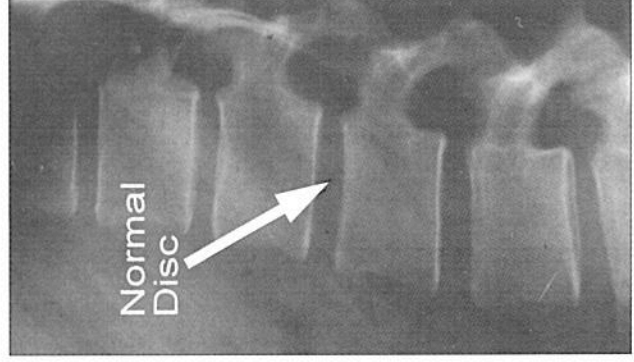


Figure 4

Figure 4 is an x-ray of a normal thoracic spine disc. Note again the disc space and clean, smooth vertebral borders.

DEGENERATED DISC (Arthritis)

Figure 5 is a schematic drawing of a degenerated arthritic disc space and joints of the neck. (a) Note that the disc space is thinned with (b) spur formations at the front and back of the vertebral body. (c) Note how the facet joints are misaligned (d) and the nerve opening is greatly reduced in size (e) so as to compress the nerve that passes through it. Compare the degenerated disc (a) with the (f) normal disc space and nerve opening.

The disc, facet joints, and nerve root are pain producing structures.

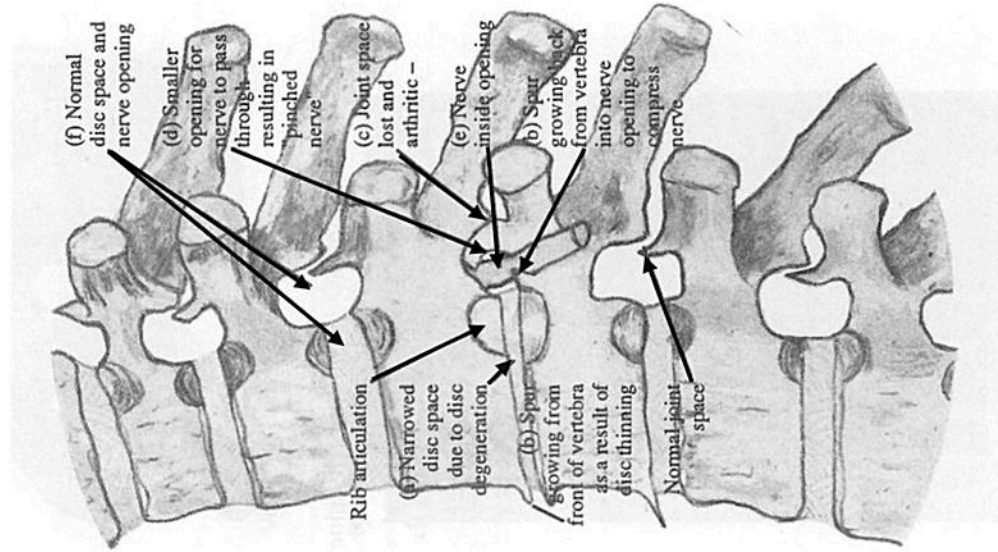


Figure 5

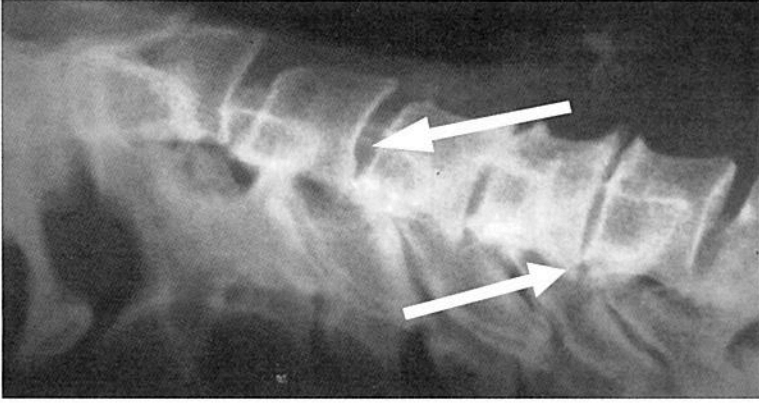


Figure 6a

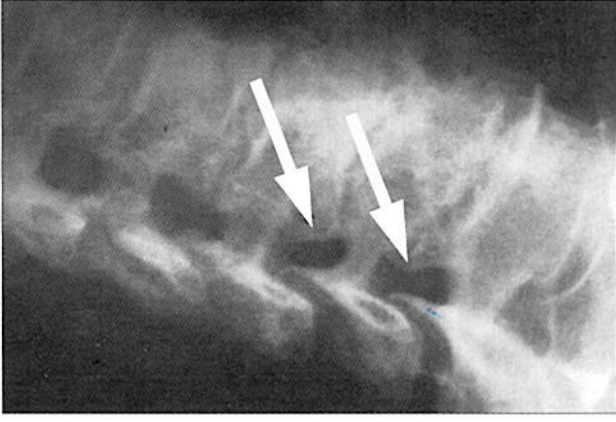


Figure 6b

Figure 6 shows two x-rays of degenerated discs showing the narrowed disc space, reduced nerve opening, and spur formation at the margins of the vertebrae (see arrows). These spur formations can grow back into the nerve opening to compress the nerve passing through. The disc and margins of the bone where the spurs are seen are pain sensitive tissues and cause pain when irritated.

Disc degeneration is the loss of disc height and the resulting misalignment of the articulations called subluxation. Arthritis is a term often given to disc degeneration, but it is not a proper term to be applied to disc degeneration. Arthritis is not always a cause of pain, and it is wrong to say the only reason for a person's neck or shoulder pain is arthritis. Arthritis of bone is a natural part of aging to a degree. Chiropractic can often relieve the pain of arthritis. Only a small percent of arthritis is crippling.

SLIPPED DISC

(a.k.a. protruded, herniated, ruptured)

Each disc in the neck will compress a specific nerve if it slips out of position from between the vertebrae to compress the nerve root which occupies the canal behind it (Figure 9).

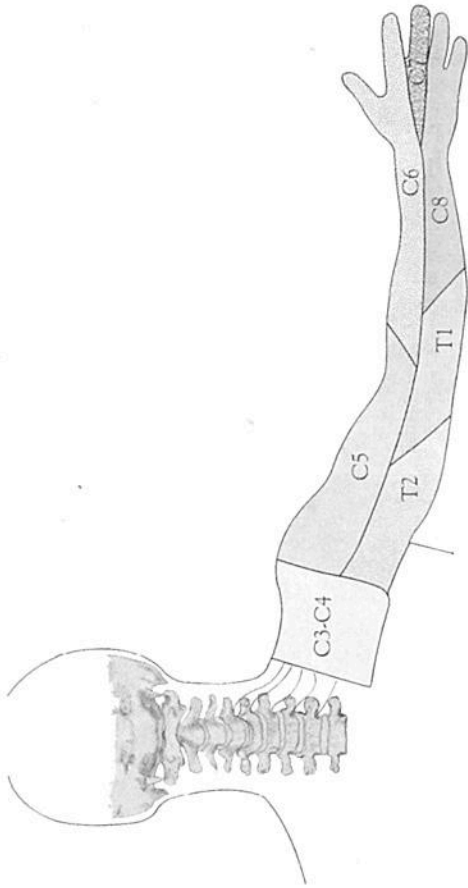


Figure 7

Figure 7 shows the distribution of pain into the arm and the individual disc protrusions that compress each nerve to result in arm pain of a specific area.

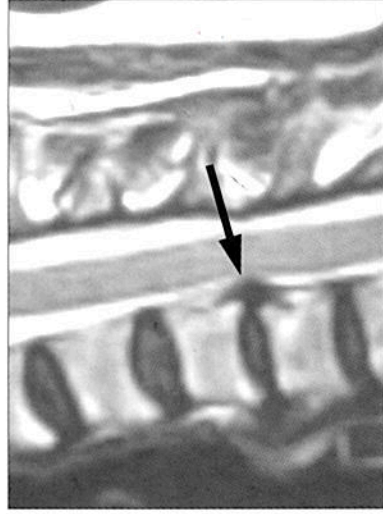


Figure 8

Figure 8 is an MRI scan of the cervical spine. Note the bulging, protruded disc at the arrow as compared to the smooth margins at the back of the disc spaces above and below this level where normal discs are seen. The level of protrusion will determine the exact distribution of pain into the arm as shown in Figure 7.

HOW THE SLIPPED DISC IS TREATED

Figures 9 and 10 illustrate the desired effect of distraction treatment. The disc may return to its more normal position under distraction as shown in Figure 10.

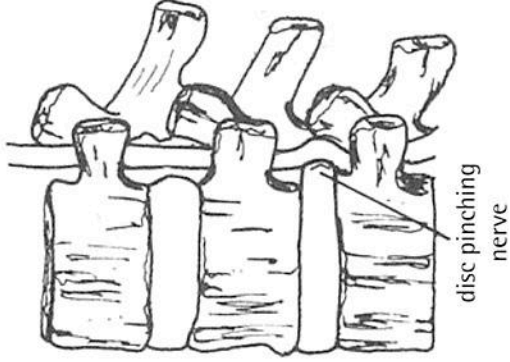


Figure 9

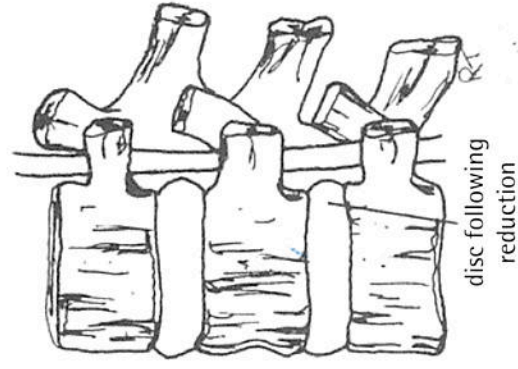


Figure 10

Traction manipulation is applied to the cervical spine, as shown in Figure 11, to bring about the change shown in Figures 9 and 10.

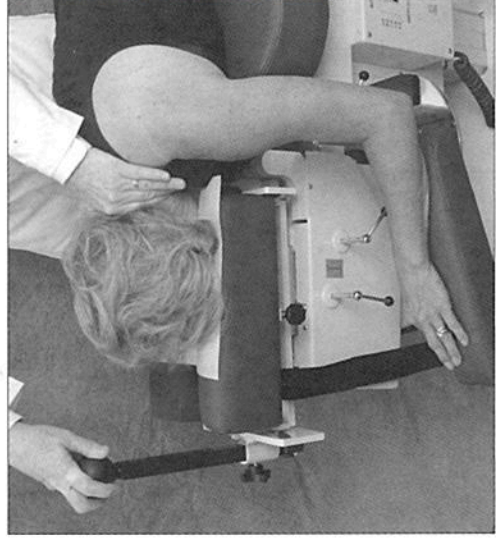


Figure 11

This non-surgical care is commonly used in treating disc problems before involved techniques such as surgery. Disc problems are probably the most challenging conditions seen in chiropractic practice. In the beginning of treatment for them, you may be treated more than one time daily as this allows healing to proceed more effectively and quickly.

Treatment of the cervical disc protrusion includes distraction manipulation, physical therapy in the form of electrical therapy, hot and cold packs, acupuncture, soft collar support, home exercises, and nutritional suggestions to aid healing. The home instructions shown on pages 24-25 must be followed.

SUBLUXATION

A subluxation is a condition in which one vertebra is out of alignment with the adjacent one.

Figure 12 is a schematic of a subluxation of the second cervical vertebra. Any cervical or thoracic vertebra can subluxate to cause pain and nerve root pressure. The case shown in Figure 12 can result in headache or neck pain. Headache is most commonly caused by nerve root and muscle irritation at the base of the neck.

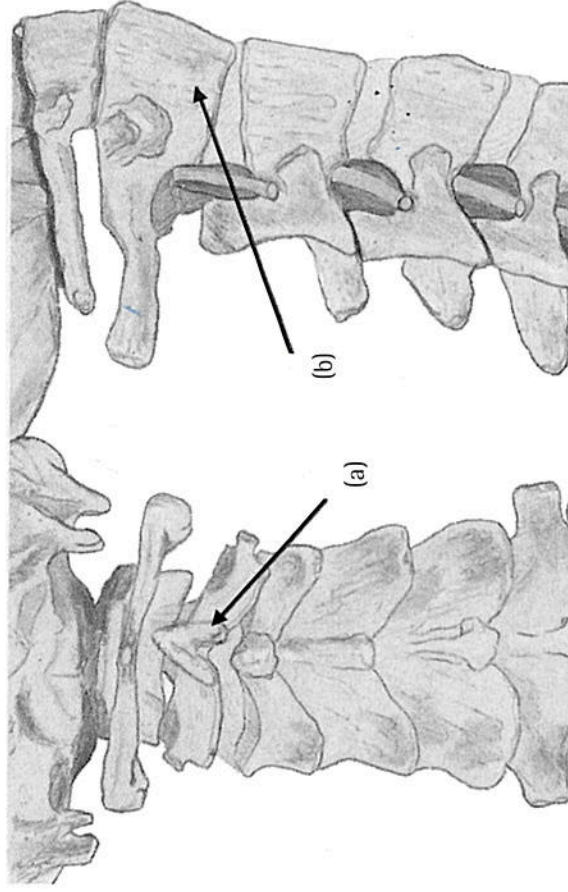


Figure 12

Figure 12 – Line (a) shows the vertebra rotated from the midline. Vertebra subluxated in lateral position. Note how it is not in line with the vertebra below it. Line (b) shows the vertebra flexed in relation to the adjacent vertebra and incapable of normal motion.

The 50% Rule for Care and Referral

At 50% improvement, the frequency of treatments is reduced by 50%. If you do not attain 50% improvement and relief of pain within a month of care, further tests like MRI may be ordered to study your spine in more detail. Depending on these tests' outcomes, surgery may be considered. If at any time signs of progression of the condition are noted, a referral will be made.

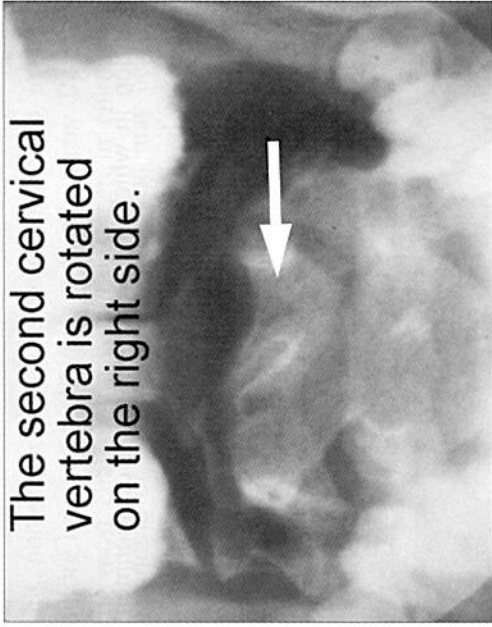


Figure 15 shows a normal cervical curve when looking at the neck from the side, and Figure 16 is a reversed curve that is often the result of muscle spasm, subluxation, injury, or developmental disorder. The condition shown in Figure 16, if found to occur in a person who normally has a curve as shown in Figure 15, is very painful and incapacitating, requiring chiropractic care.

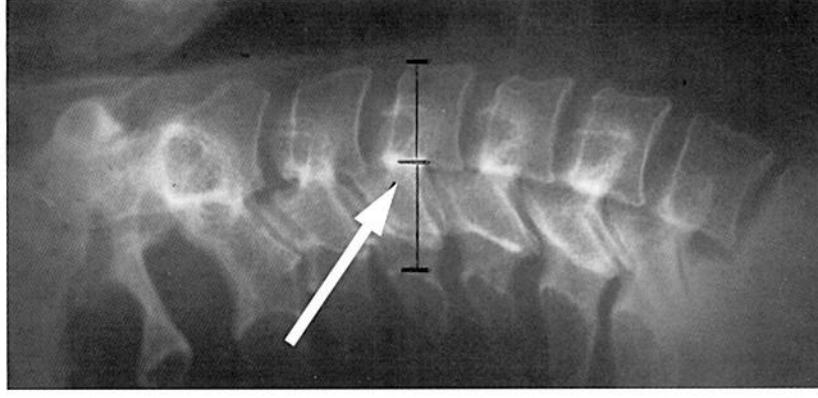


Figure 15
Arrow shows a normal forward curve

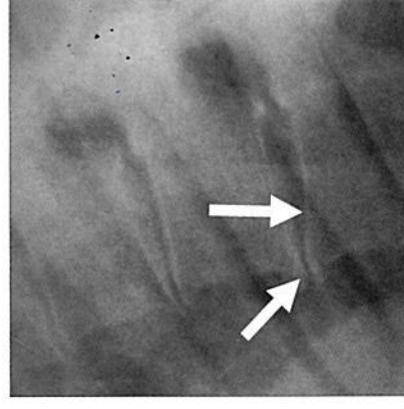


Figure 16
Reversed abnormal curve

Figure 13
Figure 13 is an x-ray of a subluxation of the second cervical vertebra as shown in Figure 12.

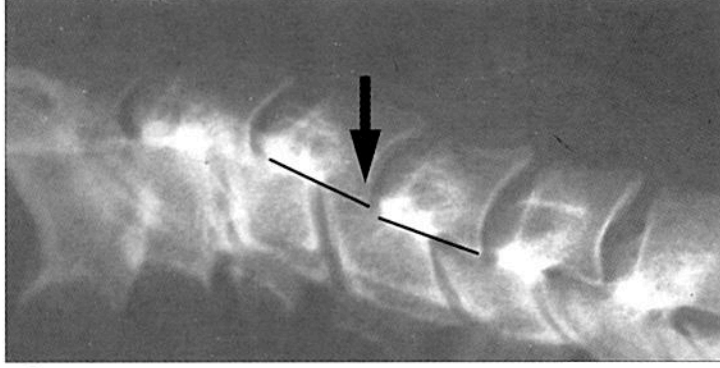


Figure 14
Figure 14 is another example of subluxation of the fourth cervical vertebra on the vertebra below. Note that the line drawn along the back of the vertebra shows the one above to be forward to the one below (see arrow). This is a "forward" or "flexion subluxation" of the C4 vertebra on the C5 vertebra below.

Subluxations of the cervical spine can irritate the nerves of the disc, facet joints and nerves leaving the spine to cause pain in the shoulders, neck, arm, and head (headache).

THORACIC SPINE

Degenerative Disc Disease

Degenerated discs cause painful movement of the spine and can cause referred pain into the shoulders and can even cause pain to follow the ribs around the body to the front of the chest, mimicking heart problems. Sometimes, they can cause a burning pain or a pain like a hot poker in the spine between the shoulders.

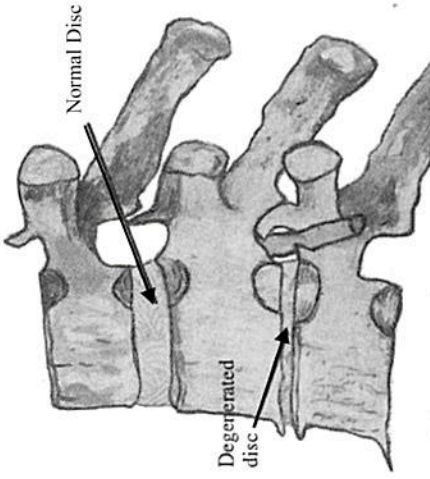


Figure 17

Figure 17 shows normal and degenerated discs of the thoracic spine.

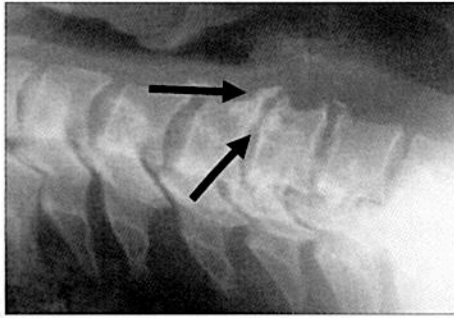


Figure 18

Figure 18 is an x-ray of the *degenerated disc* shown in Figure 17. Note the narrowed disc space height and the spur formation at the front of the vertebra (see arrows). Sometimes these spurs will join together and create loss of normal motion in the spine.

Subluxation of the Thoracic Spine

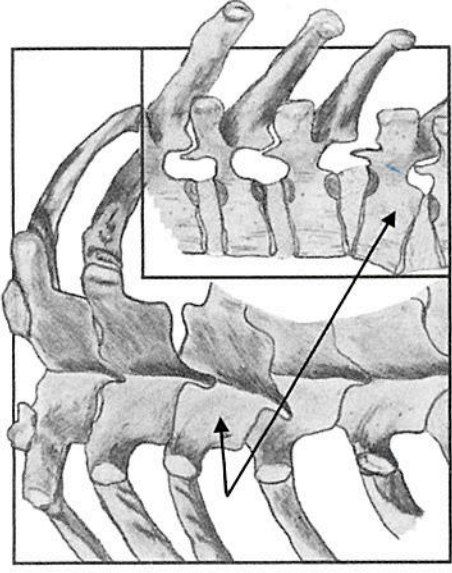


Figure 19

Figure 19 is a schematic of a *subluxated vertebra* in the thoracic spine. Note the vertebra marked by the lines is not aligned with these shown above and below. Such a subluxation results in abnormal mobility of the spine and irritation of the disc, facet joints, and soft tissues around the spine to cause both limited movement and pain.

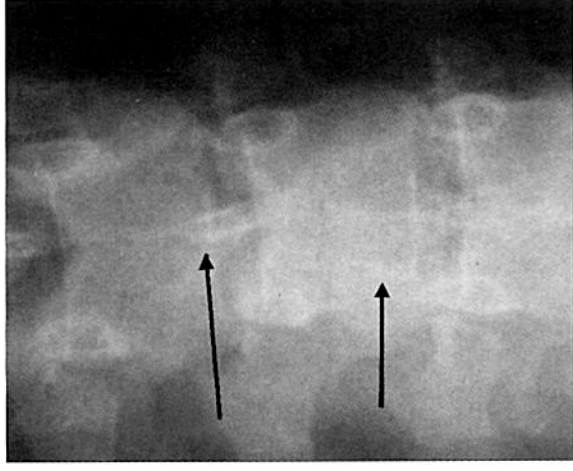


Figure 20

In Figure 20, the arrow shows a subluxated vertebra as depicted in Figure 19.

Rib Subluxation

Ribs move constantly in breathing and moving of the body. Figure 21 is a schematic drawing of a rib subluxation.

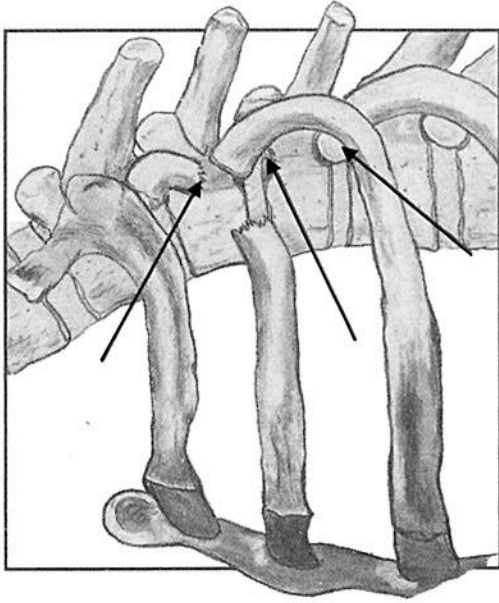


Figure 21

*Rib has subluxated (partially dislocated) from its joint articulation with the vertebra. The nerves of the rib - vertebra joint are irritated and painful on movement, breathing or palpation.

Disc Herniation

(a.k.a. slipped, ruptured disc)

Although much less common in the thoracic spine than in the neck or low back, thoracic disc herniations do occur in about 2% of all discs seen.

Figure 22 is a schematic drawing of a herniated thoracic disc. The symptoms of a herniated thoracic disc are severe, deep, aching pain that often radiates into the lateral chest wall and forward into the chest. The pain may be deep, gripping pain in the spine.

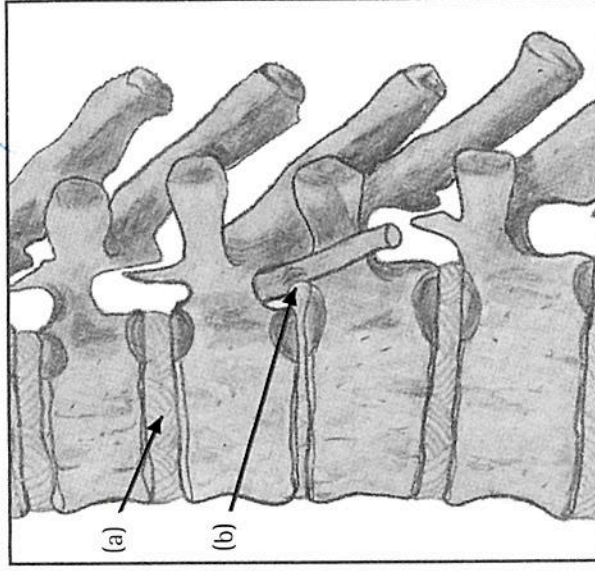


Figure 22

(a) Normal Disc;

(b) Disc protrusion compresses the nerve root.

SCOLIOSIS

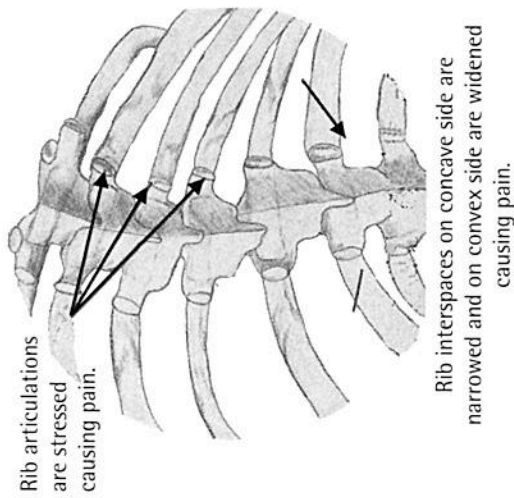


Figure 23
a schematic drawing of a scoliosis condition

Scoliosis is a lifetime condition, and once developed, it continues throughout life and can cause more instance and severity of back pain. Scoliosis is a lateral deviation of a spinal curve producing differing degrees of body disfigurement. No specific cause is known for it and is, therefore, called idiopathic scoliosis, meaning no one knows why it exists. After the growth years, the late teenage years of life, the curve is permanent and probably will not progress unless it was of significant degrees before growth ceased for the individual. Persons with scoliosis often demand a specific type of distraction manipulation to aid in their relief. This manipulation will be shown later in this book. It is helpful to maintain motion in scoliosis since age finds limited mobility of the spine in scoliotics. Chiropractic manipulation allows greater freedom of motion and relief of pain in this condition.

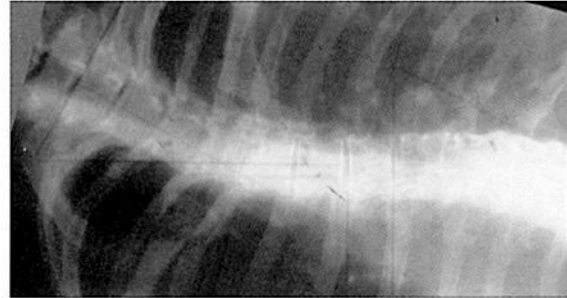


Figure 24
an x-ray of a scoliotic spine

COMPRESSION FRACTURE

Due to osteoporosis and/or compression injury, thoracic vertebrae often compress to produce the type of compression fracture shown in Figure 25 (see arrow).

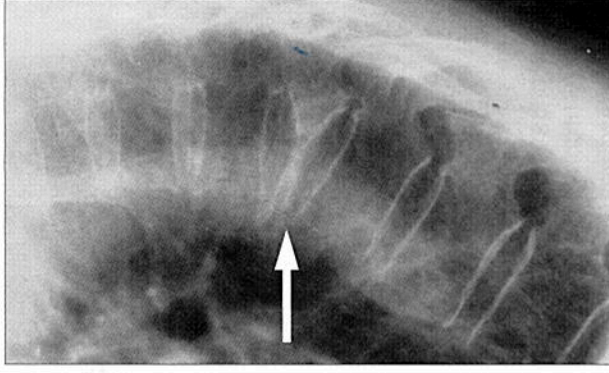


Figure 25

The treatment of compression defects (Figure 25) may include extension manipulation (Figure 26).



Figure 26

TREATMENT *

Figures 27 to 31 show the distraction manipulation used in the care of the cervical and thoracic spines: the conditions shown in this book.

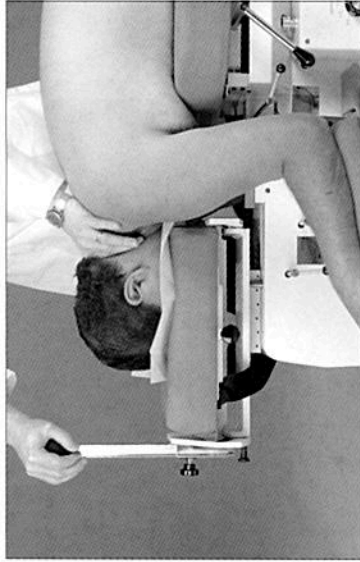


Figure 27

Figure 27 shows distraction being applied to the patient's cervical spine. This allows lengthening of the neck so as to open the disc and facet joints to allow a larger opening for the nerve to exit the spine. This can relieve the "pinched nerve" between the vertebrae. Because of the disc degeneration as shown on page 6, the vertebrae come closer together, and the nerve opening gets smaller. Distraction is like anti-gravity in countering this often painful problem. Some patients say that they think it would feel good to be "pulled apart." That is actually what is being done, only in a very controlled manner.

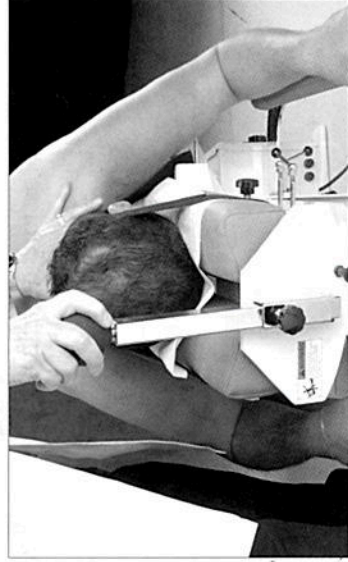


Figure 28

Here the spine is being placed into lateral flexion. This is a natural motion of the neck, often lost in subluxation, degenerative disc disease, scoliosis, disc herniation, arthritis, or rib subluxation.

**Although your physician may or may not use the specific treatment technique pictured and explained in this booklet, his/her goals remain the same: to help your understanding of your back condition, to guide you in controlling it, and to alleviate your pain.*



Figure 29

Rotation movement is being restored to the neck.



Figure 30

Extension is being applied to the neck. This assists in regaining the lost curve shown in Figure 16.

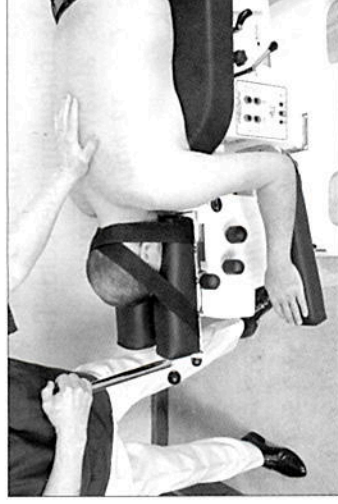


Figure 31

Treatment of thoracic spine problems.

Other treatment modalities will include acupuncture point therapy, electrical stimulation to relieve muscle spasm and swelling, ultrasound to stimulate healing and circulation, soft collar support, nutritional advice to help healing, exercise rehabilitation, and the home instructions shown next.

HOME CARE INSTRUCTIONS

Remember that authorities state it takes 8 weeks to regenerate torn damaged muscle and ligaments. Remodeling, or restructuring of the healed tissues, takes up to a year. This means that normal stresses and strains in daily life will allow strength and motion to return to the spine.

Those things that you must do at home to aid in your healing are checked as follows:

- 1. **Neck Brace.** If a neck brace is ordered or necessary, wear it; take it off only to apply hot and cold packs if they are ordered.
- 2. **Do not sleep on your stomach.** This requires sleeping with the neck turned sideways to breathe. This twisting of the neck aggravates healing and can cause disc irritation if the disc is torn or herniated.
- 3. **Hot/Cold Therapy.** Alternate hot and cold packs on the neck, shoulder, or thoracic spine as follows. Place 10 to 15 minutes of heat on the part affected followed by 10 to 15 minutes of cold via an ice pack. Repeat the hot again following the cold. This may be repeated up to 3 times, always beginning and ending with the heat.* In the first 72 hours following an injury, use only the ice pack.

Always place a moist towel between the skin and the ice pack so as to avoid skin irritation and to assist conduction of the cold.

*hot – cold – hot – cold – hot – cold – hot – cold – hot



4. **Exercises.** Perform only those prescribed for you and at the frequency and repetitions ordered. Your doctor will prescribe those that he/she feels are most appropriate for your condition.

5. **Nutritional advice.** *Discat Plus* contains glycosaminoglycan, a chemical found in the disc that is greatly reduced in degenerated or arthritic conditions. Your doctor may prescribe it, or a similar formula, to aid in your recovery. In *osteoporosis*, your doctor may also place you on additional calcium supplementation, like *Formula #2 Non-Phosphorous Calcium Citrate*, to aid in bone development. Additional vitamins or minerals, found in *Formula One Multiple*, may be prescribed depending on your general health and injury.

About the author ...

James M. Cox, D.C., D.A.C.B.R., is a graduate of the National University of Health Sciences (formerly the National College of Chiropractic) and a current member of its Post-Graduate Faculty. He is a Diplomate of the American Chiropractic Board of Radiology, a specialist in imaging diagnostics.

As an instructor, he lectures for chiropractic colleges and state chiropractic associations throughout the United States and the world on the cause and diagnosis of low back pain as well as its treatment with the innovative, established, well-researched approach to non-surgical care of low back pain called Cox® Technic (Cox® *flexion-distraction and decompression adjusting*).

As a research advocate, Dr. Cox is presently involved as a consulting clinician in research projects between the Palmer College of Chiropractic Research Department and Loyola University Stritch School of Medicine and other institutions regarding flexion-distraction adjusting. The first federally funded study explored the biomechanics of the treatment. The second study compares the outcomes of chiropractic flexion distraction care and medical care of low back pain. A third compares the outcomes of chiropractic flexion distraction care and medical conservative care for neck pain. Several others like cervical spine biomechanics and clinical outcomes are underway as well at institutions like National University of Health Sciences and University of Iowa in addition to the above named institutions.

As a clinical physician for over 50 years, Dr. Cox maintained his private practice in Fort Wayne, Indiana, with his son, James M. Cox, II, DC, of Cox® Chiropractic Medicine, a division of Chiropractic Associates, Inc. Today, he consults on patient cases as director of the Fort Wayne Chiropractic Radiological Center. He devotes his professional and research time to the causes and treatment of spine pain.

As an author, Dr. Cox has written two textbooks for healthcare professionals: *Low Back Pain: Mechanism, Diagnosis, Treatment*, 7th edition, published by Lippincott Williams & Wilkins (Baltimore MD) and *Neck, Shoulder and Arm Pain: Mechanism, Diagnosis, Treatment*, 4th edition.

It is hoped that this patient booklet will aid your understanding of the cause(s) of our back pain and the latest remedies for recovery from it.

***Thank you for consulting
your chiropractor,
a seven year trained
professional in the diagnosis and care
of spinal conditions.***



published by
Cox® Technic Resource Center, Inc.
429 E. Dupont Road #98
Fort Wayne, IN 46825
1-800-441-5571
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Eighth Edition

ISBN 0-9616488-3-X