Chapter 6
Routine Plain Film Radiography is the Standard of Practice in Chiropractic

Introduction

In 1910, Dr. BJ Palmer obtained the first spinal x-rays in the United States at the Palmer Chiropractic College in Davenport, Iowa. Since that time, Chiropractic Techniques have utilized spinal radiology to detect and measure (obtain spinal listings) the spinal subluxation. For examples of Chiropractic Techniques that utilize routine plain film radiography to detect subluxation consider the following: BJ Palmer's HIO, Wernsing's Atlas Specific, Grostic, NUCCA, Pettibon, Sweat's Atlas Orthogonality, Harrison's CBP, Gonstead, Pierce-Stillwagon, Toftnes, Diversified, Zimmerman's Specific Adjusting, Logan Basic, Mears, Jones' Life Cervical, Blair, Pierce-Stillwagon, Orthospinology, Barge's Tortipelvis and Torticollis, Aragona's ASBE, Stucky Integrated Methods, and NUCCA.[1-37]

This use of routine spinal radiography to detect spinal subluxation enabled Chiropractors to obtain broad radiological Practice Rights in all States of the USA, Canadian Provinces, and several countries around the world. Some of the countries in which Chiropractors have radiographic privileges include the United States, Canada, Great Britain, Ireland, Norway, Sweden, Russia, Israel, Ukraine, France, Italy, Australia, South Africa, and New Zealand. Because Chiropractic Colleges in these countries teach x-ray physics, x-ray safety, x-ray positioning, x-ray diagnosis, and x-ray line drawing analysis, these privileges are secured by State, Provincial, Federal, and Commonwealth Law. The International Chiropractors Association (ICA) has members in all these afore mentioned countries and many more countries around the globe.

Recently, since 1990, there have been attempts by a small minority group, but quite vocal, of Chiropractic College faculty, Diplomats of the American Chiropractic Board of Radiology (DACBR), and some insurance claims review Chiropractors (IMEs) to diminish the utilization of plain film radiography in chiropractic practice.[38-63] Among other topics, this small minority has claimed that (1) there is no scientific definition of spinal subluxation, (2) there is no reliability for geometric line drawing methods on spinal radiographs, (3) there is no repeatability of x-ray positioning, (4) there are no indications for routine plain film radiography, (4) plain film radiography increases the risks of cancer while having no benefits, and (5) there is no efficacy (proof that routine spinal radiography improves patient outcomes) for routine plain film radiography.

To protect the rights of ICA members around the world, ICA members originated the Practicing Chiropractors' Committee on Radiology Protocols (PCCRP) and originated the document entitled "PCCRP's Biomechanical Assessment of Spinal Subluxation in Chiropractic Clinical Practice"**,** which can be accessed at **www.pccrp.org.** This Chapter VI is not meant to repeat PCCRP's exhaustive document, but rather to briefly review its contents and to refer the reader to this PCCRP document where the well referenced topics can be found. The PCCRP document completely rebuts the above five claims of the small minority with approximately 2,000 references. As of November 2013, the ICA's Guidelines Committee has been concurrently working on updating the PCCRP guidelines for resubmission to the National Guideline Clearinghouse (NGC) in 2014.

From PCCRP, Section V is a very scientific biomechanical description of spinal subluxation, Section VIII reviews more than 160 publications on geometric line drawing analyses on spinal radiographs showing high reliability, Section IX reviews more than 60 publications showing a high repeatability of radiographic positioning, Section VII reviews the literature on radiographic safety, indicating that there is zero risk of cancer from medical x-rays, and Section X reviews hundreds of publications on the efficacy of chiropractic technique uses of routine plain film radiography.

Section II of PCCRP provides 27 indications for routine plain film radiography in chiropractic practice. Importantly, 13 out of these 27 indications were directly taken from the web site www.acr.org,

which are the recommendations of the USA's 30,000+ medical radiologists. These medical radiology guidelines are in direct conflict with the claims of the small minority of chiropractic DACBRs, and in fact, all DACBRs (approximately 180) compared to 30,000+ medical radiologists are less than 1% (180/30,000 = 3/500 = 0.6%) of the radiologists in the United States.

The recent so called Quebec "Red Flags Only X-ray Guidelines" originated in 2006 by Bussieres, Peterson, and Taylor[38] are in direct conflict with the x-ray guidelines of the American College of Radiology (www.acr.org) and the Practicing Chiropractors' Committee on Radiology Protocols (www.pccrp.org). While these "Quebec Red Flags Only X-ray Guidelines" have been applied to some Chiropractic College Clinics by accreditation teams before these X-ray Guidelines were published and used by Managed Care Organizations (MCO) while denying chiropractic claims,[63] there is no supporting evidence for their use (such as improved outcomes compared to the Standard of routine plain film radiography in chiropractic practice). The only supported item for the use of these "Quebec Red Flags Only X-ray Guidelines" is the increased profits of insurance companies and MCOs, which do not want to pay for chiropractic radiology claims.

Indications for Routine Plain Film Radiography

For completeness, we repeat the indications for chiropractic plain film radiography in children and adults from PCCRP:

1. Abnormal posture,
2. Spinal Subluxation (defined in this document),
3. Spinal deformity (scoliosis, hyper-kyphosis, hypo-kyphosis, etc…),
4. Trauma, especially trauma to the spine,
5. Birth Trauma (forceps),
6. Restricted or abnormal motion,
7. Abnormal gait,
8. Axial pain,
9. Radiating pain (upper extremity, intercostal, lower extremity),
10. Headache,
11. Suspected short leg,
12. Suspected spinal instability,
13. Follow-up for previous deformity, previous abnormal posture, previous spinal subluxation/displacement, previous spinal instability,
14. Suspected osteoporosis,
15. Facial pain,
16. Systemic health problems (skin diseases, asthma, auto-immune diseases, organ dysfunction),
17. Neurological conditions,
18. Delayed developmental conditions,
19. Eye and vision problems other than corrective lenses,
20. Hearing disorders (vertigo, tinnitus, etc…),
21. Spasm, inflammation, or tenderness,
22. Suspected abnormal pelvic morphology,
23. Post surgical evaluation,
24. Suspected spinal degeneration,
25. Suspected congenital anomaly,
26. Pain upon spinal movement,
27. Any "Red Flag Conditions" covered in previous guidelines.

Minimum Spine Radiographic Examination

The following is repeated from PCCRP for completeness. Since the spine is a contiguous structure, a radiographic examination of the spine may include an AP evaluation and a lateral evaluation of the entire spine. Additional views may be indicated in cases involving trauma. It is of some historical interest that the recommendations of Hildebrandt[1] in 1985 are repeated here. In his classic 1985 text Chiropractic Spinography, Hildebrandt[1] suggested that there are five projections that comprise a complete full spine analysis:

1. AP full spine
2. Lateral full spine
3. Femoral head view
4. Sacral base view
5. Upper cervical view.

The minimum requirement for spine radiography in most Upper Cervical Techniques would be:

1. Lateral cervical view
2. Nasium view
3. Base posterior or Vertex view

For children younger than 10 years old, some of the five projections may not be needed, and the Chiropractor may use clinical judgment to determine which views are needed. If we pause to understand the reasoning behind Hildebrandt's[1] suggested five views for a complete spine evaluation, we may be able to elaborate on his suggestions.

First, the lateral full spine view will provide an analysis of several possible spinal subluxations:

1. a global view of the sagittal balance of C1, T1, T12, and S1,
2. an evaluation of forward/backward head posture,
3. an evaluation of forward/backward ribcage posture,
4. an evaluation of sagittal posture (from the postural examination) and spinal coupling on the radiograph,
5. an evaluation of cervical lordosis,
6. an evaluation of thoracic kyphosis,
7. an evaluation of lumbar lordosis,
8. an evaluation of pelvic morphology,
9. an evaluation of any retro- or spondylo-listhesis and,
10. an evaluation of spinal degeneration (vertebrae, discs, spinal ligaments).

If the Chiropractor does not have a full spine bucky and cassettes to obtain a full spine lateral x-ray, then three sectional views may substitute for this view. These sectional views are: lateral cervical, lateral thoracic, and lateral lumbo-pelvis.

Second, the AP full spine view will provide an analysis of several possible spinal subluxations including:

1. a global view of the AP balance of C1, T1, T12, S1,
2. an evaluation of segmental subluxations in the cervical, thoracic, lumbar, sacral, and pelvic regions,
3. an evaluation of posture (knowledge from the postural examination) and spinal coupling on the AP radiograph,
4. an evaluation of any cervical scoliosis,
5. an evaluation of any thoracic scoliosis,
6. an evaluation of any lumbar scoliosis, and
7. an evaluation of pelvic and leg length asymmetry.

If the Chiropractor does not have a full spine bucky and cassettes to obtain a full spine AP x-ray, then three sectional views may substitute for this view. These sectional views are: AP cervical, AP thoracic, and AP lumbo-pelvis.

While the items listed above for the AP full spine and lateral full spine analysis may seem straight forward, one might ask why Hildebrandt[1] suggested the femur head view, the sacral base view, and the upper cervical view (Nasium). To change from the fetal C-shape curve, the cervical vertebrae extend and the lumbar vertebrae extend. This extension to eventually assume an upright stance is restricted to the median-sagittal plane. Thus, while the spinal structures in the sagittal view are normally aligned perpendicular to the central ray, this extension of the spine to allow upright stance creates a situation where the AP x-ray beam is at an angle to the plane of the lower lumbar segments (L4-L5-S1) and upper cervical segments (C0-C1-C2) in the AP view. Additionally, any pelvic axial rotation in front of the grid cabinet will project one femur head lower than its twin on the other side. Thus, taken together the femur head view, the sacral base view, and the upper cervical view (Nasium) allow for assessment of the following subluxation types:

1. short leg causing an un-level sacral base and spinal AP curvatures on the short leg view,
2. an evaluation of the SI joints, sacral ala, L5, and L4, and lumbo-sacral angle at the sacral base on the Ferguson projection,
3. an evaluation of the skull-atlas and atlas-cervical spine as upper angle (UA), lower angle (LA), C2 axial rotation, and cervico-dorsal (CD) angle at mid neck on the AP nasium upper cervical view.

Patients expect and deserve a thorough radiographic evaluation of their spines when any of the above indications are present.[2] By following this minimal radiographic set of views, the vast majority of structural spinal subluxations can be located and measured. However, there are additional radiographic views needed to perform a thorough investigation in trauma and 'deformity' cases. These may include all or part of the following list:

1. Davis Cervical Series:
   a. AP cervical,
   b. Lateral cervical,
   c. AP Open Mouth (APOM),
   d. Flexion,
   e. Extension,
   f. Left oblique,
   g. Right oblique,
2. Sand bag stress views in cervical lateral bending (alar ligament views),
3. Cervical Motion X-ray during flexion-extension, open-mouth lateral bending, and oblique lateral bending cervical articular facet views,
4. Lumbar flexion-extension,
5. Lumbar oblique,
6. Lumbo-sacral spot views, etc…,
7. Bending and/or postural stress films for flexibility assessment of scoliosis or buckling displacements (see Section V for definitions).

Conclusion

Routine Plain Film Radiography is the Standard of Practice in Chiropractic and has been for nearly 100 years. Chiropractors utilize Plain Film Radiography to detect and measure subluxations. The ICA's PCCRP X-ray Guidelines, an extensive document, is the supporting evidence for this conclusion. Any attempts by new recent x-rays guidelines must prove that their guidelines result in better patient outcomes than those documented in Section X of PCCRP. As yet, this has never been done.

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