The anterior thoracic adjustment

D. Bruce Fligg, DC*

The anterior thoracic, by the semantics of its name, has produced some misunderstanding in its clinical application. Historically, the name came from the following two factors; i) the vertebral subluxation felt anterior (spinous) and ii) the adjustive thrust was applied anteriorly.

Biomechanical Considerations

This adjustment is most commonly used to correct a mid-thoracic extension subluxation and flexion fixation. This is determined through static and motion palpation (see figures 1 through 4). A pottenger's saucer or a flattening of the thoracic kyphosis (akyphosis or hypokyphosis) is often observed posturally. This being the case, P to A compressive manipulations are contra-indicated, therefore the anterior adjustment is preferred. Considerations must be given to the patient's and doctor's tolerance to chest compression, (i.e. congestive heart condition, sensitivity of the breasts, calcification of the costal chondral and sternal costal regions, osteoporosis), before applying this procedure.

Patient-Doctor Positioning

There are many modifications of this procedure. The determination of which modification to apply is largely dependent on the physical structure of the patient and of the doctor. The most common procedure utilized is seen in Figure 5 and 6. The doctor reaches around the patient with one arm and lifts the patient's head with the other. Although this is easier on the patient, the doctor's low back and chest regions are at risk. The procedure as seen in Figure 7 is often preferred by the doctor for it reduces stress on the doctor's chest and low back regions. The doctor therefore relies on the ability of the patient to assist in this procedure. In either case, the patient is lowered to or raised off the table depending on the level of the thoracic segment being adjusted. For example, with an upper thoracic segment the patient is raised up off the table to the pivotal point whereas for a lower thoracic segment the patient is lowered to the pivotal point. Each time, the patient's thoracic spine is "flexed" to re-inforce the adjustment. In many cases due to the flexibility of the patient the hands of the patient can be interlocked behind their head and neck (see figure 8 and 9). This increases the amount of flexion distraction in the thoracic spine and also controls the patient's head at the same time. It should be noted that the patient has to have a reasonable amount of flexibility in the shoulders and of the cervical spine to tolerate this positioning.

Contact hand positioning

There are two common contact hand positions. The objective of both is to create a pivotal point so that the adjustive forces flex the desired segment (see figure 10 and 11). The pocket technique where the first three fingers are used with the second finger producing the pocket is fairly traumatic to the doctor's interphalangeal joints. The thumb re-inforced by the second metacarpal phalangeal segment is preferred. Here, the vertebra above the contact point is flexed. The "thickness of the hand contact" depends on the compressibility of the patient's spine and of the table. For example, the more compressibility, the thicker the hand contact. In some cases a padded board can be used to reduce the compressibility of the table or an S.O.T. block may be used to produce a pivotal point if the patient has increased compressibility (see figure 12).

Special considerations

It should be noted that rotation is often associated with this fixation. To correct for both while performing the anterior thoracic maneuvre, rotate the patient over the heel of your contact hand while thrusting. This will rotate the spinous towards the heel contact. Breathing co-ordination is important. The patient should exhale as the compressive thrust is applied. Whether the patient's head is supported or not, it should not be allowed to "whip back into extension". Extreme caution should be observed with this so as to avoid traumatizing the vascular and soft tissue structures of the cervical region. This can be avoided by having the patient consciously tuck their chin in.

Thrust

The thrust is of utmost importance. The thrust is applied by the doctor's body and/or forearm on the patient's folded arms. The amplitude of the doctor's thrust is dependent upon three factors: i. patient's sensitivity to compression. ii. The amount of weight of the patient and how well the patient can assist in the adjustment. iii. Size and strength of the doctor relative to the patient's size and strength. The direction of the thrust not only is anterior to posterior but also has a slightly cephalad component. This enhances the flexed position and the thrust is centred through the pivotal hand contact (see figure 13). A frequent mistake often made by the doctor is one of going past the pivotal point and then thrusting. Although a release is often heard the specificity of the flexion correction is lost. However, in some cases this procedure can be utilized to correct for the opposite subluxation fixation complex (figures 14 and 15). This is achieved by positioning the doctor cephalad to the pivotal point and thrusting with a slightly caudal component. For this procedure the thumb re-inforced second metacarpal phalangeal contact is required. Instead of the vertebrae flexing immediately above the contact point, the vertebra beneath the contact point is forced to extend.

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* Assistant professor, Division of Chiropractic Sciences, Canadian Memorial Chiropractic College, 1900 Bayview Avenue, Toronto, Ontario M4G 3E6

Figure 1: This figure demonstrates the extension position of the top vertebra relative to the lower vertebra. This is the position that the vertebra becomes subluxated in and the anterior thoracic adjustment is indicated for. Our static palpation findings for this extension subluxation are as follows: diminished interspinous space and because the horizontal projection of the spinous is more vertical the spinous palpates as being anterior.

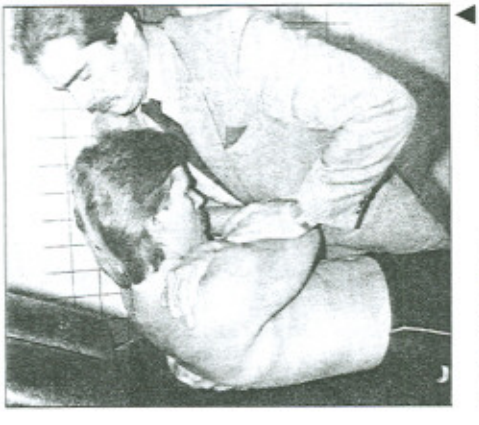
Figure 2: This illustrates the position of flexion of the top vertebra relative to the lower vertebra. With an extension subluxation there is an inability of the upper vertebra to move into this flexed position.

Figure 3: This figure demonstrates the motion palpation procedure used to determine a flexion fixation of the thoracic region. Here the patient's arms are folded across their chest and the doctor uses a three finger contact in the interspinous spaces. As the patient is forward flexed the doctor feels for the interspinous spaces to open. An inability of the space to open indicates a flexion fixation.

Figure 4: This figure illustrates motion palpation of the upper thoracic to detect for a flexion fixation relative to cervical pathomechanics. Here the patient's head is flexed by the doctor's indifferent contact hand while the same three finger contact on the interspinous spaces monitor the opening of these spaces during cervical flexion.

Figure 5: This figure illustrates the initial setup for the most commonly used anterior thoracic procedure. Here the doctor reaches around while tipping the patient towards the doctor and places the contact hand on the involved segments.

Figure 6: This figure illustrates the patient/doctor positioning just prior to thrusting. Notice the control of the patient's head by the doctor's cephalad arm. Although this procedure is easier on the patient, notice how the doctor's low back and chest regions are at risk to injury.



◀ **Figure 7:** This figure illustrates the anterior thoracic being applied ipsilateral by the doctor. This procedure relies on the ability of the patient to assist in the rolling down and rolling up aspect of this procedure.

Figure 8: This figure illustrates the anterior ▶ thoracic adjustment where the patient interlocks their hands behind their neck and head. The patient requires a reasonable amount of flexibility in their shoulders and cervical spine in order to tolerate this positioning.

Figure 9: This figure illustrates the adjustment being applied utilizing the interlocked hand set-up of figure 8. Notice how this position increases the flexion distraction of the thoracic spine while maintaining control of the cervical region.

Figure 10: This figure illustrates the hand positioning commonly referred to as pocket technique. The second finger creates the pocket where the vertebra being flexed is contacted. The spinouses of the vertebra above and below are contacted by the first and third fingers. Notice the angle of the interphalangeal joints. They are susceptible to trauma through the patient's weight, hyperflexing these joints.

Figure 11: a) This figure illustrates the hand positioning where the thumb is re-enforced by the second metacarpal phalangeal segment.

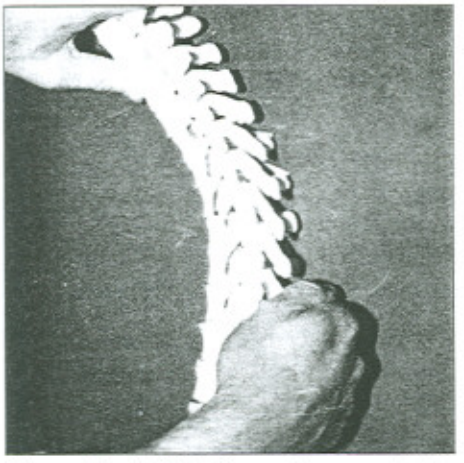
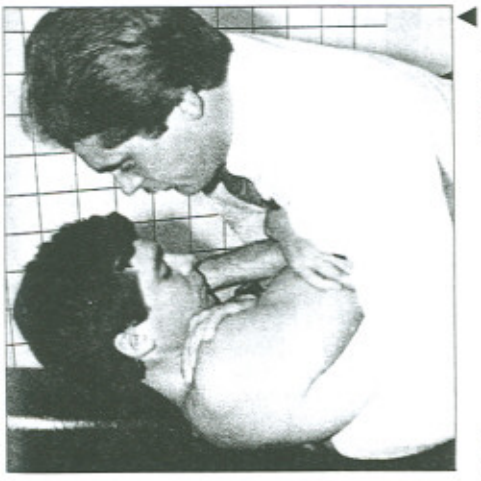


Figure 11: b) This figure illustrates that by flexing the interphalangeal and metacarpal-phalangeal joints you can increase the thickness of the hand contact.

Figure 12: This figure illustrates a padded board, and an S.O.T. block which are commonly used to compensate for either over-compressibility of the foam of the table or of the soft tissue structures of the patient in the thoracic region.

Figure 13: This figure illustrates the spinous stabilized under the thumb contact. This creates a pivotal point so that the thrust flexes the vertebra immediately above the contact point.



◀ **Figure 14:** This figure demonstrates the positioning that can be used to extend the vertebra under the thumb contact. The doctor's position is more cephalad and the thrust has a caudal component which enhances the extension.

Figure 15: This figure illustrates the vertebra under the thumb contact being extended. ▶