

Third-Hour Thoughts

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ABSTRACT *The author discusses the Third Hour of the Ten Series through his understanding as both a Rolfer and manual osteopathic practitioner.*

Introduction

The Third Hour of the Ten Series of Rolfing® Structural Integration (SI) is uniquely impactful on human structure and physiology. Done effectively, it serves as one of several milestones throughout the Series, and sets up work for hours four through seven. This article is not intended to be a complete treatise; rather, it is my view of some aspects of Rolfing SI's Third Hour run through my individual osteopathic lens.

Innominate Intraosseous Distortion

Bone is slow-moving mesoderm and can give us a nice tool to affect joints. From an embryologic point of view, joints form secondarily as a result of what is called a physiological dislocation. This process is easiest to see in the limbs. The limb starts out as a solid, continuous structure, but there is a differential rate of growth of the limb versus the artery, which grows slower than what it supplies. This is a principle found in embryology everywhere in the body and is one of the main reasons we have curves. For example, this is why

our limbs bend in the direction they do, and not in any other way. The periosteum is continuous with the ligaments, joint capsules, and tendons. By working with the bone intraosseously, we can have a normalizing effect on not only the joints, but also on the surrounding muscles and connective tissues. This section will focus on the innominate bone. There are many intraosseous distortions that can occur in the innominate bone. I will call attention to just three that can have more of a direct impact on a classic Third Hour.

First, there can be intraosseous compression of the ilium to the ischium at their embryologic fusion site, running transversely through the acetabulum. (Remember fusion at the acetabulum doesn't take place till late teens.)

Second, there is a 'buttress line'¹, a thickening of the innominate that runs from the iliac tubercle down to the ischial tuberosity. This buttress can be likened to a piece of rebar inside concrete, and acts to strengthen the pelvis. You can learn to palpate the fusion site as well as the buttress line on almost any skeleton. I have noticed that when people have had a hard fall onto the ischial tuberosity, this buttress line can get compressed, the way an old-

time telescope slides inside of itself to get shorter. Classic manual therapists tend to have a bias towards diagnosing 'up-slips' of the innominate from this type of injury. Depending on how the force is transmitted, it can up-slip (relative to the sacrum) or it can remain stable. If it remains stable, depending on which muscles contract, we can have a relative down-slip of the sacrum on that side and/or the compression of the buttress line or fusion line within the acetabulum. This type of injury can also compress the ilium and ischium in a more general way by compressing at their fusion line in the acetabulum. This can have long-term consequences on the health of the coxofemoral joint, and it can speed up typical age-related changes of the angle of inclination of the neck of the femur. For treatment, we can use an indirect, intraosseous technique to slightly compress the buttress line, exaggerating the compression, in order to allow it to expand. Similarly, we can use a less specific focus, using broader hand contact, and treat the embryological fusion line inside the acetabulum to get relative breathing between the ilium and ischium.

A third type of restriction, more serious, is a distortion of the innominate that can show up as a non-physiological 'hinge' just above the acetabulum. This is where the ilium flares outward but the ischial tuberosity doesn't go medially, as in the classic osteopathic 'outflare'. I first noticed this on a postpartum client, and attributed it to the hormone relaxin, which softens connective tissues. The first time I noticed it on a male was in a client who had lost a large amount of weight quickly and I assumed he had relative innominate outflares due to the increased pressure from his large abdomen or 'bay window' (to quote Dr. Rolf). The 'bay window' often is associated with raised sympathetic nervous system activity and a relative shortening and compression of the diaphragm on the abdominal cavity, thus increasing turgor. But this client was not in innominate outflare. Rather, he had long-term distortion of the innominate. I now check this on all clients. The test is easy and flows right into treatment, and both are easy to learn. When people have this lesion, it dramatically changes their sacroiliac joint mechanics. In walking, they lumber side to side, and lose their 'spiraling vermicular undulation' (see "Natural Walking," Ohlgren and Clark 1995). This walking pattern will then be reinforced by gluteal shortness. Chronic gluteal shortness will not only speed

up the non-physiologic hinging of the innominate, it will also speed up the age-related changes of the angle of inclination of the neck of the femur and lessen motion within the sacroiliac joint. This will speed up of the aging process associated with sacroiliac joint ossification.

All of these changes will have a direct impact on our ability to get the sought-after lift in the lateral line of the Third Hour. I would challenge readers to do their classic Third-Hour work and then assess and treat these lesions and notice how much more lift they will get in the lateral line.

The Arcuate Ligament's Relationship to Rolf's View of the Twelfth Rib

Historically, in Rolfing SI, there has been a great deal of focus on getting length in the quadratus lumborum (QL) muscle. I was taught by Peter Melchior that at the end of a good Third Hour, the QL should have span during breathing. This will show up in the classic caliper motion of the eleventh and twelfth ribs (sometimes the tenth rib too, if it is also floating). I refer to the QL as the 'Rodney Dangerfield of muscles' in that it gets little respect and tends to get beat up on. I used to overwork this tiny little muscle myself. Those who have done dissection can easily see how small this muscle usually is. As I continued to study, I learned that the QL muscle has three different fiber directions. This knowledge allowed me to be more specific with how I intervened and got length into this muscle. During my osteopathic training I was introduced to various treatment styles and methods. One technique pertaining to the QL in particular came directly from W.G. Sutherland, DO. The arcuate ligament, easily overlooked, is a thin structure, like a running sewing stitch, that starts at the tip of the twelfth rib (sometimes the eleventh), gently loops (or arcs) over the QL, and tacks down on the tip of the transverse process of the L1 vertebra. The arcuate ligament then loops over the upper end of the psoas and tacks down on the ipsilateral body of L1. Then it loops again over the abdominal aorta. Then it repeats on the other side. It is easy to see how it forms a continual connection on a horizontal plane straight through the body. If it shortens, it will pull the twelfth rib medially and inferiorly, thus crowding the fibers of the QL together and shortening the QL as well. This pull

acts as an anchor that has the potential to prevent that nice opening of the breath we want in the First Hour, much the same way as an anchor will hold a boat from floating freely.

The relationship between the twelfth rib and arcuate ligament can be partially addressed through the classic view of the first three sessions: lengthen the front, lengthen the back, and lengthen the sides. The arcuate ligament acts as a 'gasket' in some ways as it goes over the top of the QL muscle and wraps around the top end of the psoas (which can attach as high as T11). There is a nice, gentle way of addressing this area to get the upper end of psoas to be able to floss under the arc of the arcuate ligament. When this gets free, and the upper end of the psoas comes alive, we start to see that beautiful undulating movement that we love.

Michael Salveson once said that the key to the diaphragm is releasing the back side of it. I agree. The posterior diaphragm attaches on the superior edge along the entire arcuate ligament and therefore is not as easily accessed as the front portion of the diaphragm, which attaches on the inside of the costal margin. One can get ahold of the whole posterior diaphragm in a very safe way via the posterior aspect of the tip of the twelfth rib. This spot gives access all along the arcuate ligament as it loops over the QL, psoas, abdominal aorta, and thoracic duct. I recommend caution in directly treating the posterior fibers of the diaphragm unless one has had good visceral training; otherwise, we run the risk of pushing the kidney(s) caudal.

Classic osteopathy acknowledges that big stresses, fear, and shock can pull the kidneys and adrenal glands medially. When this happens, the arcuate ligament will shorten and pull the twelfth rib inferiorly, bunching up the posterior fibers of the diaphragm. In her work, Rolf emphasized this 'lumbodorsal hinge'. While it is not possible to explore fully the implications here, I wish to emphasize how critical this area is to the spiraling and rotational movement of the spine and pelvis. There is a similar reflection of this motion found in embryology. Don't be surprised if work on the arcuate brings up random, but usually fleeting, memories. Why these memories surface is not fully known, but within osteopathy, it is theorized that it is because of the cross-sectional relationship of the arcuate,

adrenals, and celiac plexus and their relationship to the stress response.

The corollary to the twelfth rib at the upper end of the rib cage is the clavicle. In osteopathy we refer to the clavicle as 'rib zero'. It can act like a cork on champagne bubbles, preventing the wave of lift of the breath from expressing its full potential. (I will devote a whole article to the clavicle in the future.)

Morphology

Years ago, Rolfer Richard Wheeler introduced me to the word *morphology*. Rolf emphasized how a barrel-shaped rib cage can be associated with heart problems. Several of my mentors in the Rolfering SI world – Peter Melchior, Jim Asher, and Ron Thompson – as well as various osteopathic teachers often emphasized the importance of breathing into our rib cage's sides. When practiced over time, this breathing pattern can result in a more domed, relaxed diaphragm and more of an oval morphology (compared to the barrel-shaped rib cage). (That said, I urge caution when discussing morphology, as a barrel-shaped rib cage can be perfectly functional.) The Third-Hour lateral-line work is a wonderful opportunity to allow this potential for the breath to open laterally and giving potential space for the re-doming of the diaphragm.

Biomechanics

For our purposes, there are three classic biomechanical movements of the ribs around axes: pump handle (transverse axis), bucket handle (anterior/posterior axis), and external/internal rotation (vertical axis). The ratios of how much, and what percentage of bucket and pump handles, will vary depending on the individual's unique morphology. In general, the lower ribs have a higher percentage of bucket-handle motion and a lower percentage of pump-handle motion. The upper ribs have a higher amount of pump-handle and lower amount of bucket-handle motion. For those who know lung visceral work, you will find that there is a 50/50 crossover point of bucket/pump ratio found at the fissure of the lungs roughly at rib five. This allows for rotation to continue upward as the rib cage becomes smaller cephalically. The clavicle has 100% pump-handle motion (relative to breathing). Finally, because rotation of the

ribs occurs around a vertical axis, we can relate rotational movement to the classic 'cylinder model' from SI. This model affords us a view of rib movement through a 'macro' lens – how individual ribs move upon the whole 'cylinder' of the rib cage. Seen as separate cylinders, the left and right sides of the rib cage become two vertical axes. Even though the Third Hour introduces the vertical axis via the classic SI 'spreading of tissues' away from the 'lateral line', it also involves restoring rib movement within all three axes.

Styloid Diaphragm

I want to emphasize the styloid diaphragm and its unique relationship to the lateral line. The styloid diaphragm is a vertical oblique diaphragm running from lateral to medial in the anterior upper neck. Its fibers make up the space between, and wrap around, the following structures: sternocleidomastoid muscle, digastric muscle, stylohyoid muscle, stylohyoid ligament, styloglossus muscle – and we can include the stylopharyngeus muscle as well. It mostly hangs from the styloid process of the temporal bone and has vast implications for the full freedom of the temporal bone and brain health. Together, these structures form somewhat of a fan shape on either side of the pharyngeal tube; they act to keep pressure off of the carotid artery. This diaphragm also supports the posterior and inferior parotid gland. We can see it as an extension of the lateral line into the neck. With overall tightening/shortening of other core and anterior neck structures, the styloid diaphragm's subsequent shortening creates a downward pull on the temporal bone (a topic for another time that is very important for long-term health). In this scenario, we also get a narrowing of the 'fan', much in the same way as the medial shortening and narrowing of the arcuate ligament, described above.

The lengthening and widening of the styloid diaphragm can be incorporated into treatment of the lateral line in the Third Hour in a safe way, without running the risk of injury to the facial nerve, which typically runs on the anterior surface of the styloid process. It can also be regarded as preparatory work for the midline lift of sessions four through six, as well as for 'putting the head on a clearly differentiated core' in the Seventh Hour.

Microscope/Macroscopic; a Lemniscate of Perception

One thing I love about the Third Hour is that it can cover such a broad expanse of territory, tying many things together. The Third Hour relates the front and back by establishing the lateral line. Opening up this line paves the way to reveal the midline of the body. Another way we have a 'lemniscate of perception' in the Third Hour is that we can zoom in with our 'microscope' and get very specific with anatomical details, such as individual rib mechanics; then we can zoom out with our 'macroscopic' to see a regional (cylinder model), and global big picture (movement in gravity).

In Third-Hour work, structural and physiological changes can occur in a cascade of interwoven events. For example, cardiovascular pumping return from the legs can be enhanced by freeing the fibula, (assuming the Third and possibly Second Hour was successful in liberating the fibula (I will write about the amazing fibula another time). Third-Hour work also results in a better pumping effect of lymphatic return, since the cisterna chyli dumps lymph from lower extremities and abdominal contents through the diaphragm via the thoracic duct. It does this at the midline, where the arcuate ligament surrounds the abdominal aorta. The aorta's strong muscular walls are sturdy enough to avoid impingement by tensions in the arcuate ligament,

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but such impingement can certainly slow the movement of lymph passing through this area. This contributes to excess turgor in the abdomen, resulting in less drainage of venous and lymphatic return. Excess diaphragm tension will increase gut turgor, which lessens fluid drainage not only from the gut, but the lower extremities. This diaphragmatic tension can create increased pressure in the abdominal cavity, which can bias the innominates into outflare; this (relatively) opens the superior aspect of the SI joint while compressing the inferior aspect of the SI joint, thus limiting the normal dissociation of the two innominates from each other in the walk cycle. Less mobility of the innominates goes synergistically with less psoas function and less rolling through ankle and toe hinges. Increased pressure in the lower legs will also contribute to decreased ankle dorsiflexion, resulting in less fibular motion thus less innominate rotation.

When I originally trained as a Rolfer, our structural and educational work was biased towards expansion (inhalation) in the breathing cycle. Mechanically speaking, during inhalation the ribs rotate around a vertical axis of external rotation. This pushes the posterior rib head anterior into the sympathetic ganglia chain, thus stimulating a sympathetic nervous system response that contributes to a tighter diaphragm, thus increasing gut turgor. As time went by, I started working with clients on their exhale. This approach helped to achieve an old-time osteopathic view: most people need to have their diaphragm 're-domed', or lengthened, because it tends to shorten and flatten in chronic sympathetic nervous system activation. But focusing on the exhale contains its own bias of just half of normal motion. Nowadays I work on helping both inhalation and exhalation, teaching and inducing the client's full genetic and morphologic excursion of his/her unique rib mechanics in breathing. Below, I describe two approaches I use to optimize breath.

Technique #1 is a variation of a basic SI technique of tracking. First, through tracking I assist the client's ribs to mechanically go through their full excursion of inhale/exhale with the client's respiratory assistance. Then, I add to this based on an old European osteopathic principle called 'lemniscate hydration of the target tissues'. In using this principle, we are adhering to one of Rolf's statements, that

"We are educators," and in this case I am educating the client with my hands on his/her rib cage. I do this by encouraging and inducing the full biomechanical excursion of the ribs by mechanically taking them through the complete range of motion of pump handle, bucket handle, and internal/external rotation with the client's respiratory assistance, but I briefly hold the ribs in their opposite motion of what the lungs are doing. This technique creates a rising and falling pressure gradient of the tissues of the rib cage, and especially of the many joints (sternochondral, costochondral, costotransverse, and costovertebral joints) involved in breathing. The other aspect of this approach is that it acts as indirect visceral work. Holding the ribs in opposition of the lung motion creates a generalized shear, or dissociation, of the parietal pleura versus the visceral pleura. This is done in sidelying position, and dovetails perfectly with the classic Third-Hour positional strategy. I recommend always finishing this technique with a few breath cycles matching the biomechanics of the ribs to the corresponding breath motion to mobilize and reeducate the joints involved in ventilation. This fits a classic tracking principle from SI applied to this region.

Technique #2 is more regional, direct work on an entire cylinder. All of this technique is done, again with the client in sidelying, while decompressing the cylinder directly away from the midline of the client towards the ceiling with one forearm just lateral to the sternum and the other on the medial border of the angles of the ribs. I admit that this is not easy to accomplish, but the benefits are well worth the effort spent in learning it. (There are size limitations for the client if the practitioner is small.) In this technique we can ask many questions based on the six ways things can move: rotation on the X, Y, and Z axes, and shear on the X, Y and Z planes. I do this toward the end of the Third Hour, after having the client stand and feel the effects from the classic sidelying work. S/he gets to experience how this direct cylinder decompression helps to connect her/his awareness into the 'Line' or 'midline'. I recommend going direct with the decompression parameter towards the ceiling, and then any combination of parameters (direct and/or indirect) that gets results.

Another way of viewing this is that we are decompressing the pleural sac laterally away from the pericardial sac and mediastinum. This is setting us up for the

Fourth and Fifth Hours to get length up the midline in a couple of different ways. First, by reducing sympathetic stimulus, we relax and potentially re-dome the diaphragm. This will reduce downward pull on the pericardium, which is essentially welded to the diaphragm and has very little stretch (similar to the dura mater). By reducing the lower tensions from the diaphragm, and reducing the lateral tensions from the lungs, we can get a cleaner effect of 'lift' (in sessions five and six) on the mediastinum and especially the pericardial ligaments, which blend with the posterior aspect of the majority of the sternum and manubrium, as well as their attachments on the anterior aspect of the bodies of the upper thoracic vertebrae and lower cervical vertebrae. These attachments contribute significantly to the typical age related 'hump' that often occurs at the cervicothoracic junction. Viewed this way, we can see how the Third Hour prepares us for sessions four through seven, where we will open up and connect through the so-called core.

In this article I have attempted to share some thoughts to deepen our inquiry into the Third Hour, and hopefully stimulate readers to take it further.

Endnotes

1. In a future article, I will explore how German embryologist Blechschmidt's information on what he called the 'lateral ectodermal ring' relates directly to Dr. Rolf's 'lateral line', and how this line or ring has continuity with the buttress line I described in this article as well as the styloid diaphragm line.

Ron Murray trained in the second Comprehensive Studies Program at the Rolf institute® in the mid 1980s, then went on to train in a 'bonesetter' lineage (Lauren Berry method) in the early 1990s, and then to osteopathic school in Toronto in the late 1990s where he presented his thesis on the concept of the cranium being modified vertebrae. He now teaches for two osteopathic programs in Canada as well as small private intensive classes across North America. He can be found at his website, www.osteoron.com.

References

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