

# Fascial Layers of the Neck

by Kevin McCoy, PT, Certified Advanced Rolfer

This article is taken from a workshop I have offered and a presentation I gave at the International Association of Structural Integrators Symposium in Seattle, Washington this past fall. It will initially cover anatomy pertinent to the three fascial layers of the neck, then give some ideas/guidelines for contacting these layers, and finally include some ideas for working with these layers through active and passive movements with our clients in the context of the Ten Series.

## BASIC ANATOMY

Keith Moore, in *Clinically Oriented Anatomy*<sup>1</sup>, speaks of three layers of deep cervical fascia and identifies them as the Investing Layer, the Prevertebral Layer and the Pretracheal Layer.

The **investing layer** of cervical fascia lies beneath the skin, the superficial fascia and the platysma muscle. It receives its name by the fact that it “invests” or completely surrounds the sternocleidomastoid (SCM) muscles and the trapezius muscles. In other words, part of this layer is found superficial to these muscles and part of this layer is found deep to these muscles, hence it is called the “investing layer” of the neck. This “investing layer” has osseous attachments that are of value for us as practitioners to appreciate. These areas of osseous attachment are referred to as superior and inferior attachments. The superior attachments are as follows: superior nuchal line of the occipital bone, the mastoid process of the temporal bone, the zygomatic arch (inferior border), the inferior border of the mandible, the hyoid bone, and the spinous processes of the cervical vertebrae. The inferior attachments are: the manubrium, the clavicle, and the acromion and spine of the scapula.

The **prevertebral layer** of cervical fascia gives rise to a tubular sheath that surrounds the anterior and posterior muscles of the cervical spine. It surrounds all of the muscles of the neck with the exception of the SCM, trapezius and the infra-hyoid

muscles. It receives its name by the fact that it arises off from the anterior longitudinal ligament – prevertebrally.

The **pretracheal layer** of deep cervical fascia lies deep to the infra-hyoid muscles and anterior to the trachea as its name implies. It extends inferiorly from the thyroid cartilage and the cricoid cartilage into the thorax, and it surrounds the trachea, thyroid and esophagus.

Fascia, which is simply a form of connective tissue, will often change its name as it travels through the body. Next we will take a brief look at the fate of these three layers of connective tissue as they travel beyond the confines of the cervical spine. Above we acknowledged the inferior osseous attachment of the investing layer of fascia as being the manubrium, clavicle, and acromion and spine of scapula. Inferior to these regions in the body, this investing layer of fascia continues on only the name changes. Inferior to the manubrium and clavicle the fascia is called pectoral fascia, lateral and inferior to the acromion is the deltoid fascia, inferior to the spine of the scapula is a layer of fascia superficial to the infraspinatus muscle, and superior to the superior nuchal line of the occiput the fascia is called galea aponeurotica.

The prevertebral layer of cervical fascia, that layer deep to the investing layer that arises from the anterior longitudinal ligament, also has its own name-changing game as it moves beyond the region of the neck. Posteriorly and inferiorly this layer becomes known as the surface layer of the lumbodorsal fascia. Laterally the prevertebral layer extends as the axillary sheath. The axillary sheath is the connective tissue surrounding the vessels (nerve and blood) that reach into the arm. (We will address the importance of this fascial sheath later in the article.) And finally the anterior – inferior extension of the prevertebral fascia is the anterior longitudinal ligament and the posterior mediastinum.

The pretracheal fascia blends laterally with the carotid sheath (an intimate connection with the connective tissues leading to the heart). The posterior aspect of the pretracheal fascia extends as the buccopharyngeal fascia to the sphenoid bone.<sup>2</sup> And inferiorly the pretracheal fascia descends into the thorax where it blends with the fibrous pericardium in the middle mediastinum.<sup>3</sup> These last two descriptions help us to have a clear appreciation of the fascial connections relating thoracic visceral space with the visceral cranium.

## CONTACTING THE LAYERS

Contacting the **investing layer** is facilitated in three ways: 1) placing tissues on tension, 2) working with a broad tool, and 3) keeping the vector of the work at a shallow angle. For example, turning the head to the left tensions up the right SCM, assisting the practitioner to remain on this investing layer while working in this region. Working with the flat surface of the phalanges (backs of fingers) while keeping the vector of contact in the plane of the investing layer (i.e. toward the clavicle rather than toward the cervical vertebrae) helps assure the effectiveness of speaking to the layer.

Contacting the **prevertebral layer** is facilitated in four ways: 1) an effective point of entry, 2) placing tissues on slack, 3) working with as broad a tool as possible, and 4) the vector of work intends deeper. For example, the two great places to easily affect this layer are 1) in the posterior triangle of the neck (between the posterior border of the SCM and the anterior border of the trapezius and 2) in the superior aspect of the posterior neck, here in this second area, we need to work through the trapezius muscle in order to effect the prevertebral fascia, so it is important to induce slight extension of head and cervical spine in order to slacken the trapezius and allow contact with the underlying prevertebral fascia. Our clients’ experience of our contact is in relationship to the pressure we apply over a given surface area among other factors. This fact should always lead us to consider using as broad a tool as possible to effectively communicate our intention – the way we contact the tissues.

Contacting the **pretracheal layer** is facilitated in three ways: 1) an effective point of entry, 2) placing tissues on appropriate slack or tension, and 3) working with cautious attention to the delicate anatomy of the area (e.g., the trachea, the esophagus,

the thyroid gland and the carotid arteries). Contact should be made with clear awareness of the relationship of your touch to these delicate areas. By gently contacting the midline just anterior to the trachea, you are able to contact the pretracheal fascia, asking the client to slowly extend and flex the head will enhance this gentle contact. Finally, by gently following this layer ever so slightly laterally off from the midline of the trachea and beneath the layer of the infra-hyoid muscles, it is possible to get a feel for the dimension of this layer. Again, this area requires specific attention to the delicate anatomy and demands a very light quality of contact.

## IDEAS FOR WORKING WITH THE LAYERS VIA ACTIVE AND PASSIVE MOVEMENTS

In general, asking for movement or passively moving a client while working is a great idea. Working this way, the practitioner enhances their ability to feel through the tissues to perceive areas calling for attention and areas where movement easily moves through the body. The client benefits as the gamma motor system, basal ganglia and cerebellum are engaged in different ways when being passively moved or when actively moving. This movement, either active or passive, engages proprioceptors in muscle and tendon (muscle spindles and golgi tendon organs). The primary ways we can include movement in our neck work are by asking for breath, neck movements, arm movements, and swallowing movements.

The **investing layer** work can be enhanced by observing and inducing qualitative changes in the clients' respiratory patterns. We must be alert to the qualitative changes in the tissues as the client explores old habitual patterns of respiration versus new options of respiration available through skillful guidance (for more on this topic, see articles by Aline Newton in previous issues of this journal or look into the Movement Certification Program offered through the Rolf Institute). Additionally, active or passive movements of either the arms or the head and neck can greatly assist the effectiveness of our work in this cervical layer.

The same comments which respect to respiration are equally relevant while working with either the prevertebral layer or the pretracheal layer. We will now look at some specific movements of the arms related to working with the prevertebral

layer and some specific movements related to the esophagus and trachea related to working with the pretracheal layers. As mentioned above, the **prevertebral layer** extends laterally as the axillary sheath, the connective tissue surrounding the vessels (nerve and vascular) leading to the arms. By either passively inducing a stretch to the various nerves of the brachial plexus or asking the client to move in such a way as to, in effect, "tension up" a given nerve bed, we are able to have an effect on the prevertebral layer of cervical fascia and to some extent reach right into the dura of the spinal cord via the connective tissue investing the various nerve roots contributing to the given-named nerve.

For example, the median nerve receives contributions from spinal nerves C-5, 6, 7, 8 and T-1. It is encased in the axillary sheath and becomes distinctly separate from the other nerves (the ulnar nerve and the radial nerve, as well as a few other less appreciated nerves) supplying the arm approximately in the region of the axilla. The median nerve crosses the shoulder, elbow, wrist and fingers in such a way that the following individual movements assist in "tensioning up" the nerve and associated connective tissues investing it: scapular depression, gleno-humeral external rotation and abduction to approximately 30 degrees, elbow extension, wrist and finger extension, and forearm supination. Actively or passively inducing these movements is a means of facilitating the effectiveness of working with the prevertebral layer of cervical fascia.

The effectiveness of working with the **pretracheal layer** may be enhanced by asking for movements of swallowing or breathing especially with the cue of inviting the client to visualize the back of his throat opening up as he breathes, as this is a region where an inhibition may restrict potential available movement. This visualization is particularly useful given that this layer is continuous with the buccopharyngeal fascia, which attaches to the sphenoid bone specifically in the region related to potential work with the palate and with the pterygoids. We might consider the value of encouraging our clients to breathe with this particular visualization as we are engaged in such work.

## CONCLUSION

Having an awareness of the fascial layers of the neck, the extensions of these fascial layers as they leave the proper region of the neck and become known by other names, the ways that we contact these layers, and the ways we include movement in our neck work can all enhance the effectiveness of our work with individuals. The Ten Series can be a guide as to the important regions with respect to these fascial layers to attend to in a particular session. A general guideline would be to attend primarily to the investing layer during sessions 1-3. During sessions 4-6, attend primarily to the prevertebral and pretracheal layers, with special attention to the particular layer that limits palintonicity through either the thorax to visceral cranium or the axial complex to neurocranium. Sessions 7-10 attend to all three layers to the extent that any one layer is limiting the goals of the session in particular, and/or the series as a whole. □

1. Moore, Keith L., *Clinically Oriented Anatomy*, 3rd Edition, Williams & Wilkins, 1992.
2. *Primal 3D Interactive Series: Head and Neck* CD-ROM, Primal Pictures Ltd., 2004.
3. Op. cit.

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Copyright: Kevin McCoy (author)  
[kevinmccoyrolfing@mac.com](mailto:kevinmccoyrolfing@mac.com)