

RADIOGRAPHIC ANATOMY OF THE CERVICAL SPINE

Prepared for



SPINENET

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CHAPTER 1

PRECEPTS

This course of Instruction is deliberately long, and is ostensibly tedious, for the reason that there are no short cuts to mastery.

There are some sections, such as learning how to sketch a cervical spine, that might seem unnecessary, or so childish as to be beneath the dignity of some would-be participants. However, every section has premeditated merits in that it produces or underpins certain skills and competencies, each of which contribute to final mastery.

Experts are quite able to sketch the cervical spine, and do so when discussing or describing phenomena or techniques to one another. They will have acquired that skill through years of familiarity with the subject, but you will not have the leisure of years in which to acquire those skills. Yet they can be acquired rapidly, within minutes, if you bother to follow the advice and instruction.

If and as you progress through the course, you will come to realise how exercises that seemed banal or tiresome at the time realise their relevance the deeper we go into actual clinical imaging.

The course of instruction uses two pedagogic tools:

anatomy by **expectation**, and
reconstructive anatomy.

Anatomy by expectation is a device by which to approach and read images. The idea is not to be dominated or oppressed by medical images, or to feel that you will need to learn many new facts about those images. The idea is to approach images with an expectation of what is supposed to be there. That way, you remain in control, and are not dominated or overwhelmed by the image. To the image you bring your own knowledge and expectation. By knowing what is supposed to be there, you can look for it. If you find a structure, your expectation is confirmed. If you can't see it, you nevertheless will know where it is supposed to be. The structure may not be fully evident, but a hint of its presence – coupled with your expectation – will allow you to confirm its presence or location. In extreme cases, when a structure is not evident, because it has been obscured, you will nevertheless be able to extrapolate confidently where it lies on the grounds that you know where it is supposed to be. You will know where it is even if you cannot see it.

Reconstructive anatomy is a device for recall. Anatomy is not intellectually difficult; there is nothing “hard” about Anatomy, intrinsically. The only burden of Anatomy is volume. There is a lot of it. The problem lies not so much in remembering it but in **recalling** it.

One method of solving complex problems is to reduce the problem into smaller, more manageable parts. So, if the problem is one of Anatomy, in which there is a lot of material, a solution is to break it down into smaller components, each of which can be mastered, whereupon the original problem can be solved by recombining the smaller parts.

Instead of having some sort of instant recall about everything involved in a region of Anatomy, reconstructive anatomy invites you to put it back together in a systematic way. A complex region can be recalled if first it is subdivided into parts, and if then each part can be easily recalled. Although this method takes a bit more time than does instant recall, it is far more secure – and does not rely on magic or special skills such as a photographic memory. Taking the extra time serves to be thorough. It could be likened to using “rewind” on a tape or CD, instead of “skip”.

Crucial to the effectiveness of reconstructive anatomy is the ability to recall the constituents of a region or one of its subdivisions, and the order in which those constituents are laid down. This could be achieved by brute force of memory but, instead, I use a variety of devices. I cut down on technical terms and big names; sometimes I use colloquialisms.

For example, instead of teaching that “the brachial plexus is an anterior relation of the scalenus medius but a posterior relation of the scalenus anterior”, I say and write that “the brachial plexus is sandwiched between the scalenus anterior and medius”.

Likewise, for purposes of recall, I refer to “**big red**” instead of “the common carotid artery and the internal carotid artery”, on the grounds that “**big red**” is shorter and easier to remember, and I rely on your personal subliminal realisation, from previous learning, that the red structures in the neck are arteries, and that the common carotid and internal carotid are the biggest of them. More specifically, the problem of recall is solved by remembering “**big red**” but it is then up to you to remember to translate what that precisely means.

The other device that I use are short lists, and preferably rhythmic “raps” whenever possible. This device invites you recall not only the structures in a list but also their order. The device requires discipline. Always recite the list in the same order, in order to get it right. When dealing with structures that occur in the middle of a list, avoid going straight for them. Instead, always work systematically through the list until you get to the structure in which you happen to be interested. Doing so ensures not only that you get to the structure, but you also recall the context of that structure in terms of where it lies in relation to its immediate companions.

For example, the list for the prevertebral structures of the cervical spine is:

anterior longitudinal ligament (ALL), flanked by
longus cervicis, and then
longus capitis, traversed vertically by
sympathetic trunk.

If you care to delete the verbs and prepositions, on the grounds that these will be obvious to you, the list reduces to

“ALL”, (longus) cervicis, capitis, and sympathetic trunk.

Likewise, the scalene region becomes:

medius

nerves

anterior

phrenic

This is the code for recall, but once it has been applied, you can elaborate the details to become:

scalenus medius

brachial plexus and cervical plexus

scalenus anterior

phrenic nerve,

which in turn tells you that the brachial plexus and the cervical plexus lie in front of scalenus medius, but are covered by the scalenus anterior, over which descends the phrenic nerve.

So, there will always be two steps in reconstructive anatomy:

a device as simple as possible to prompt recall, and

a requirement subsequently to derive the formal details.

Do not let the second obligation distract you from the fundamental problem which is recall. Do not try to recall everything at once. Make it a simpler task. Recall the list; and then subsequently, at your leisure, let the details flow back from your memory.

END CHAPTER 1