

# High-flying anatomy (with a dash of clinical ornithology)

Knowledge about the origin of words makes it easier to understand anatomical names. Such insight can sometimes give a feeling of flying.

Many anatomical expressions derive from the structures' similarity with plants and animals. Comparative anatomy is regarded as founded by the French author Pierre Belon (1). If we are to believe an illustration from his book *L'Histoire de la nature des oyseaux* (*Natural History of Birds*, 1555) (2), we are all birds on the inside (fig 1).

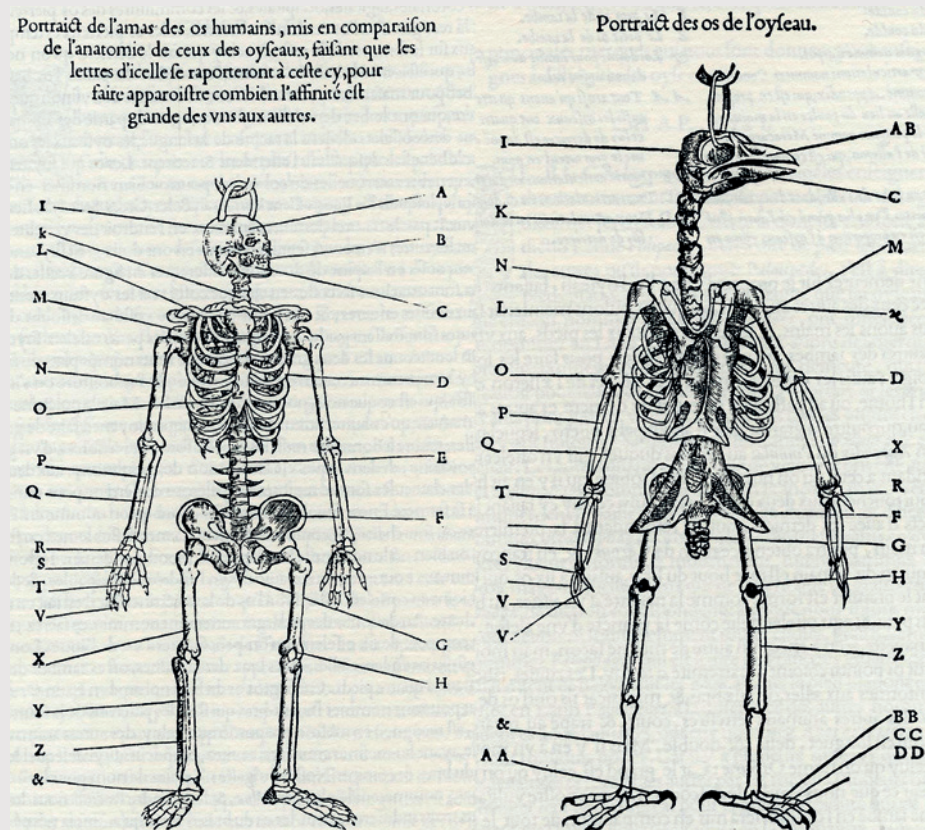
From neuroanatomy we are familiar with the Latin directional terms «rostral» (towards the beak or snout) and «caudal» (towards the tail or body-end) (3). Despite a certain evolution, we humans have up to several beaks distributed in our body. In the brain we find the rostrum of corpus cal-

losum – the foremost, downward-directed apex of corpus callosum. Some anatomical reference books (4) state that «rostral» denotes the direction towards exactly this beak. Another beak is the coracoid process, from Greek *korax* = raven, which is the raven-beak protrusion of the scapula, where the short head of the biceps muscle has its origin. Another important elbow flexor, the brachialis muscle, attaches to the coronoid process on the proximal ulna, and the name of this structure probably derives from its resemblance to a crow's beak. The same applies to the identically named projection of the mandible, which serves as the insertion for the temporal muscle.

## Feathers and wings

It is quite fascinating that we also possess a cock's comb, *crista galli*, from Latin *gallus* = cock. It rises as a comb from the ethmoid bone. This sieve-shaped bone constitutes the uppermost part of the nasal septum, and the olfactory nerves pass through it into the cranium. If the nose receives a strong punch, the cock's comb may be displaced inwards thereby causing damage to the brain (5).

Moreover, not only birds have feathers. In humans, skeletal muscles may be classified as spindle-shaped (*fusiform*), uni- or bipennate. *Pennatus* is Latin for «feather-shaped». «Pennate» denotes the attachment



**Figure 1** Comparison of the skeleton of bird and human. From the French author Pierre Belon's 1555 book *L'Histoire de la nature des oyseaux* (*Natural History of Birds*).

of the muscle fibres at the tendon, like the barbs on a feather shaft (3).

And when it comes to wings, we have several of them! For example, there are the nose wings, the alae of the nose, from Latin *ala* meaning «wing». The wings of the nose may be elevated by the muscle with the convoluted name of levator anguli oris alae-*quae nasi*. And several bones are equipped with wings. This is the case with the above-mentioned crista galli and the ploughshare-bone vomer, as well as the iliac and sacral bones.

But the most extensively winged bone in our body is undoubtedly the sphenoid bone, which has two pairs of wings, namely the two greater and the two lesser wings, in addition to a paired pterygoid process. The latter owes its name to a Greek word for wing, *pteryx*, a distant relative of Norwegian «fjær» (6) (and English «feather» – comment added in the English version of the article). The same word is also the origin of the expression pterygion or pterygium, designating a reactive connective tissue proliferation in the conjunctiva, which can grow as a wing-shaped extension onto the cornea and impair the vision.

### From beak to tail

Whether one flies or not, having feet to walk on is an advantage. To be on the safe side, we are equipped with three pairs of goosefeet. The best known, pes anserinus, is the tendinous structure corresponding to the insertion of the three thigh muscles, the sartorius, gracilis and semitendinosus muscles, medially on the upper portion of the

tibia. The other two goosefeet are – albeit surprisingly – located in the face, where they designate nerve ramifications. The greater foot, the major pes anserinus, is the ramification of the facial nerve in the parotid gland. Where the trigeminal nerve's second branch exits through the infraorbital foramen below the eye, it divides into the lesser pes anserinus (3). The nerve which ramifies here, the infraorbital nerve, is prone to damage (7).

At the other end of the body is the tail bone. The Latinized name coccyx derives from Greek *kokkyx* = cuckoo. If one puts together two examples of the crooked tail bones, they may in fact resemble a cuckoo's beak (3). Humans, then, are birds from head to foot, and also from beak to tail.

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