

A Closer Look



Surface Anatomy—Exploring Yourself

Surface anatomy is a valuable branch of medical science. True to its name, surface anatomy is, indeed, a study of the *external surface* of the body. More importantly, it also concerns *internal* organs as they relate to external surface landmarks and as they are seen and felt through the skin. Feeling internal structures through the skin with the fingers is called **palpation** (literally, “touching”).

Surface anatomy is living anatomy, better studied in live people than in cadavers. It can provide a great deal of information about the living skeleton (almost all bones can be palpated) and about the muscles and vessels that lie near the body surface. Furthermore, a skilled examiner can learn much about your heart, lungs, and other deep organs by performing a surface assessment during a standard physical examination. For those of you planning a career in the health sciences, a study of surface anatomy will show you where to take pulses, where to insert tubes and needles, where to locate broken bones and inflamed muscles, and where to listen for the sounds of the lungs, heart, and intestines. However, you must walk before you can run, so our goal here will be to conduct a very brief exploration of surface anatomy.

We will take a regional approach to surface anatomy, exploring the head first and then the girdles and limbs. You will be observing and palpating your own body as you work through this exercise, because your body is the best learning tool of all.

THE HEAD

Recall that the head is divided into the cranium and face. However, we will take a little liberty here and include the back of the neck.

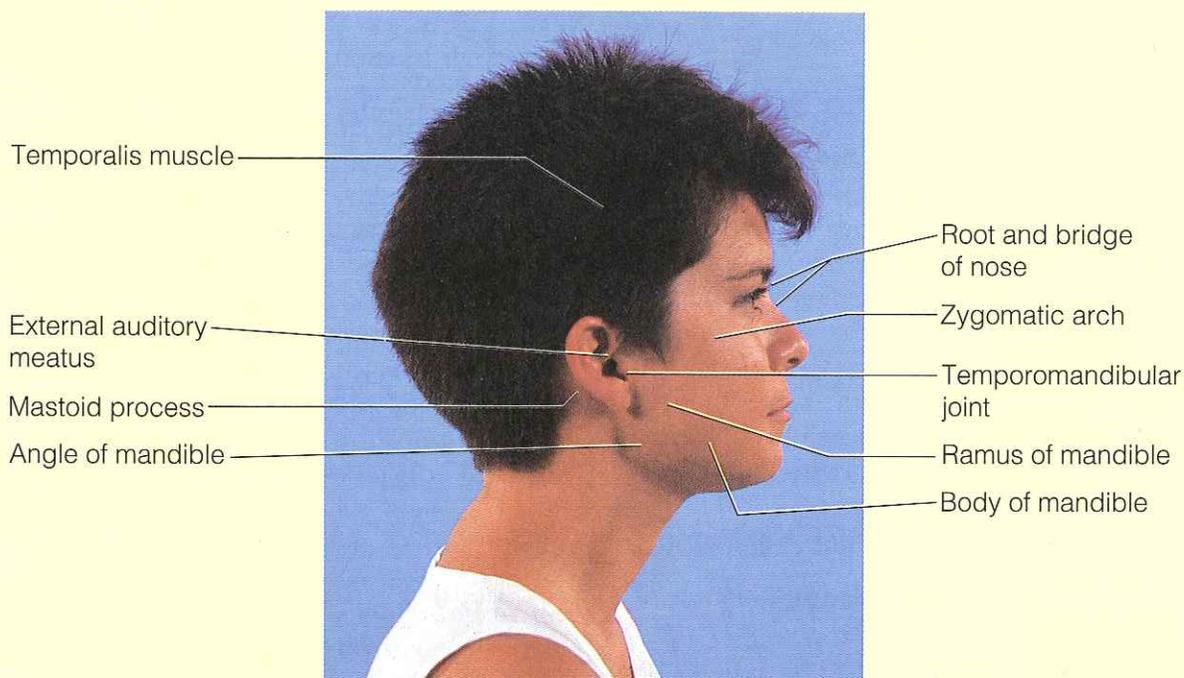
1. Run your fingers over the surface of your head. Notice that the underlying cranial bones lie very near the surface. Now, feel for your *mastoid process*, the roughened area just behind your ear.
2. Grasp your auricle, the shell-like part of the external ear that surrounds the opening of the ex-

ternal auditory meatus. Insert your small finger into that canal. (See the photo.)

3. Run your hand anteriorly from your ear toward your eye, and feel the *zygomatic arch* at the high point of your cheek just deep to the skin. This bony arch is easily broken by blows to the face. Next, spread your fingers on the skin of your face and feel it bunch and stretch as you smile, frown, and make other “faces.” You are now monitoring the action of your *muscles of facial expression*, which you will be studying in Chapter 6.
4. Palpate the different regions of your mandible, or lower jaw: its anterior *body* and its posterior ascending *ramus*. To feel your *temporomandibular joint* in action, place a finger directly in front of the external auditory meatus, and open and close your mouth several times. The bony structure you feel moving is the *head of the mandible*.
5. Now, turn your attention to the eye region, and trace a finger around the entire margin of an orbit. On the medial side of the orbit, feel for the fossa in the *lacrimal bone*, which contains the tear-gathering lacrimal sac.
6. Touch the most superior part of your nose, its *root*, between the eyebrows (see the photo). Just inferior to this is the *bridge* of your nose, which is formed by the *nasal bones*. Run your index finger and thumb along opposite sides of the bridge of your nose until they “slip” medially at the inferior end of the nasal bones.
7. To finish up the head and neck region, run your fingers inferiorly along the midline of the back of your neck to feel the *spinous processes* of the cervical vertebrae. The spine of C₇ is especially prominent, which is why this vertebra is sometimes called the *vertebra prominens*.

THE PECTORAL GIRDLE AND UPPER LIMB

Only selected bony areas will be palpated from this point on because of the difficulty of reaching posterior markings on yourself.



1. Palpate your *clavicle* along its entire length from the sternum to the shoulder. At the sternum-clavicle junction, identify the rigid *sternoclavicular joint*. At the high point of your shoulder, find the *acromion*, the anterior end of the scapular spine.
2. Feel the medial projection at the distal end of the humerus; this is the *medial epicondyle of the humerus*.
3. Now, work your elbow—flexing and extending it—as you palpate its dorsal aspect to feel the *olecranon process* of the ulna moving in and out of the *olecranon fossa* on the backside of the humerus.
4. Clench your fist and find the first set of flexed-joint protrusions beyond your wrist. These are your *metacarpophalangeal joints*, commonly called the *knuckles*.

THE PELVIC GIRDLE AND LOWER LIMB

Find this last set of bone markings before winding up your self-exploration.

1. Rest your hands on your hips—they will be overlying the *iliac crests*. Trace an iliac crest as far anteriorly as you can. This bone marking, the *anterior superior iliac spine*, is fairly easy to feel in almost everyone, and it is clearly visible through the skin (and perhaps the clothing) of very slim people.
2. The *greater trochanter of the femur* is usually easier to locate in females than males because of the wider female pelvis and the fact that it is more likely to be covered by bulkier muscles in males. Try to locate it on yourself—it is the most lateral point of the proximal femur, and it typically lies 6 to 8 inches below the iliac crest.
3. Feel your kneecap, or *patella*, and palpate the ligaments attached to its superior and inferior borders. Follow the inferior ligament to the *tibial tuberosity* to which it attaches.
4. Palpate the medial protrusion of your ankle, which is the *medial malleolus* of the distal tibia. Now feel the bulge of your lateral ankle, which is the *lateral malleolus* of your fibula.
5. Attempt to follow the extent of your *calcaneus*, or heelbone. (It helps if you are really thin!)