

# What Are Anatomical Variations and Clinical Correlates?

## Worksheet

Anatomical variations are normal, non-pathological differences in structure, position, or number of anatomical parts between individuals; their clinical correlates describe how these variants affect diagnosis, surgery, or disease presentation.

## Questions

1. What best defines an anatomical variation?

- A) A disease process affecting an organ
- B) A normal, non-pathological difference in structure between individuals
- C) Damage caused by trauma
- D) An artifact from imaging equipment

2. Roughly what percentage of people have an accessory renal artery?

- A) 1-2%
- B) 25-30%
- C) 50-60%
- D) 90%+

3. Why is a non-recurrent laryngeal nerve clinically significant?

- A) It has no clinical impact
- B) Surgeons unaware of it risk cutting it during neck surgery, causing vocal cord paralysis
- C) It only affects hearing
- D) It causes thyroid cancer

4. What surgical technique helps account for cystic artery variants during cholecystectomy?

- A) General anesthesia
- B) The 'critical view of safety' technique
- C) Using a smaller incision only
- D) Avoiding imaging entirely

5. During a kidney transplant workup, imaging shows two renal arteries supplying one donor kidney instead of one. How common is this variant and why does it matter?

6. In about 1 in 500 people, the recurrent laryngeal nerve does not 'recur' around the subclavian artery but takes a direct path to the larynx. Why is this variant clinically dangerous?

7. A gallbladder surgery (cholecystectomy) is complicated because the cystic artery arises from an unexpected branch. What percentage of patients have a 'typical' cystic artery origin, and what should a surgeon do?

8. Define: What is an anatomical variation?

9. Define: What is a clinical correlate?

10. Define: Give an example of a common vascular variant.

## Answer Key

1. B) A normal, non-pathological difference in structure between individuals - Anatomical variations are normal differences, not disease or injury.
2. B) 25-30% - Accessory renal arteries are found in about 25-30% of people, making them a very common variant relevant to transplant surgery.
3. B) Surgeons unaware of it risk cutting it during neck surgery, causing vocal cord paralysis - Because it skips the usual recurrent course, an unaware surgeon may injure it, leading to vocal cord paralysis.
4. B) The 'critical view of safety' technique - The critical view of safety requires clearly identifying the cystic artery and duct before cutting, protecting against variant anatomy.
5. An accessory (supernumerary) renal artery occurs in roughly 25-30% of people, making it one of the most common vascular variants. It matters because the surgeon must identify and anastomose all arteries during transplantation, or part of the kidney could become ischemic. Preoperative CT angiography is used specifically to detect this variant before surgery.
6. This is called a non-recurrent laryngeal nerve, usually on the right side, linked to an aberrant right subclavian artery. Because the nerve doesn't take its usual looping course, surgeons unaware of it during thyroid or neck surgery may cut it, causing vocal cord paralysis. Recognizing the associated vascular anomaly on imaging beforehand helps the surgeon anticipate the variant.
7. Only about 60-75% of patients have the classic cystic artery arising from the right hepatic artery within Calot's triangle. In the rest, it may arise from the left hepatic, proper hepatic, or gastroduodenal artery. Surgeons use the 'critical view of safety' technique - clearly identifying structures before cutting - precisely because arterial variants are common.
8. A normal, non-pathological difference in the structure, position, size, or number of an anatomical part between individuals.
9. The practical medical consequence of an anatomical fact or variant - how it affects diagnosis, surgery, or symptoms.
10. An accessory renal artery, present in about 25-30% of people.

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