Which is true?

1. “Saccades are used to point the peripheral retina to the words in this sentence.”

2. “You can see clearly while making a saccade from word to word.”

3. “You can voluntarily control the speed of a saccade.”

4. “Vergence eye movements cause double vision.”

5. “Vergence eye movements rotate the two eyes at the same speed, in the same direction, and by the same amount.”

6. “You can generate pursuit eye movements without a moving target.”

7. “The vestibular ocular reflex responds quickly because it does not require a visual input.”

Answer

1) Saccades are used to point the peripheral retina to the words in this sentence.

No, saccades point the fovea to the words.

2) You can see clearly while making a saccade from word to word.

No, you're nearly blind during the saccade because the speed of saccades is so high.

3) You can voluntarily control the speed of a saccade.

No, the speed of each saccade is fixed to fast.

4) Vergence eye movements cause double vision.

No, they prevent double vision by pointing the fovea of each eye at the target.

5) Vergence eye movements rotate the two eyes at the same speed, in the same direction, and by the same amount.

No, vergence movements turn the eyes in opposite directions.

6) You can generate pursuit eye movements without a moving target.

No, they require a moving target.

7. The vestibular ocular reflex responds quickly because it does not require a visual input.

That is correct. It is driven, as the name implies, by the vestibular input which is a short reflex to the eye muscles.

A patient of Dr. David Nicolle complains that when looking at the near tip of a screw driver just before placing it into the more distant head of a screw, the head of the screw disappears. What is the most likely cause of this patient's deficit?

a) The patient suffered from strabismus as a child.

b) The patient suffers from strabismus.

c) The patient has a lesion of the corpus callosum.

d) The patient has a lesion of the optic chiasm.

e) The patient is perfectly healthy but has placed the head of the screw in his blind spot.

Answer

a) The patient suffered from strabismus as a child.

No. Such a patient may not be able to see in stereo or have amblyopia but not this symptom.

b) The patient suffers from strabismus.

No. Such a patient might see double, that is two screw heads, not one.

c) The patient has a lesion of the corpus callosum.

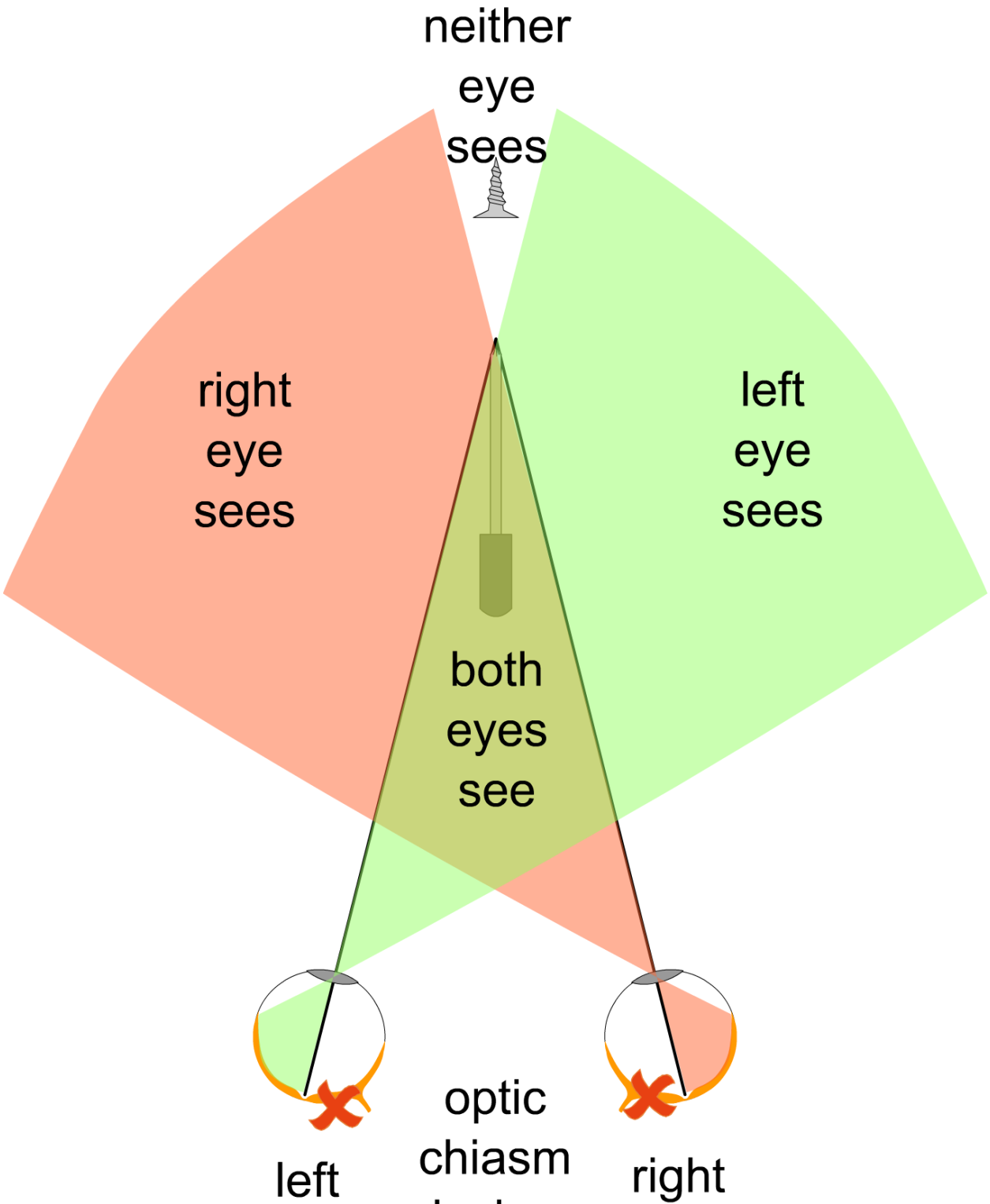
No. The corpus callosum (CC) stitches together the left and right sides of V1.
The CC mediates the retinal disparity of objects that lie on or near the vertical meridian, the interface between the two sides. A lesion of the CC would result in a loss of stereo vision for close and far binocular cells along the vertical meridian.
The images of any near or far object along the vertical meridian end up in the opposite hemisphere. They need the corpus callosum to bring them together.

d) The patient has a lesion of the optic chiasm.

That is correct, an optic chiasm lesion causes a loss of vision from the nasal retina and blindness in the region of the far screw because it's image lies on the nasal retina of both eyes. See figure.

e) The patient is perfectly healthy but has placed the head of the screw in his blind spot.

No. Our blind spots are in different places in each eye, so unless one eye is closed this can never happen.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