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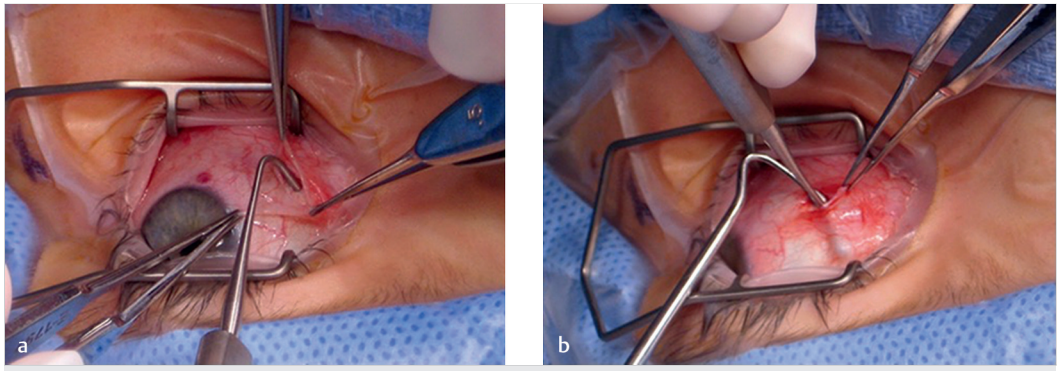

Fig. 4.3 **(a)** A small hook is first used to isolate the operative muscle, **(b)** followed by the Jameson hook.

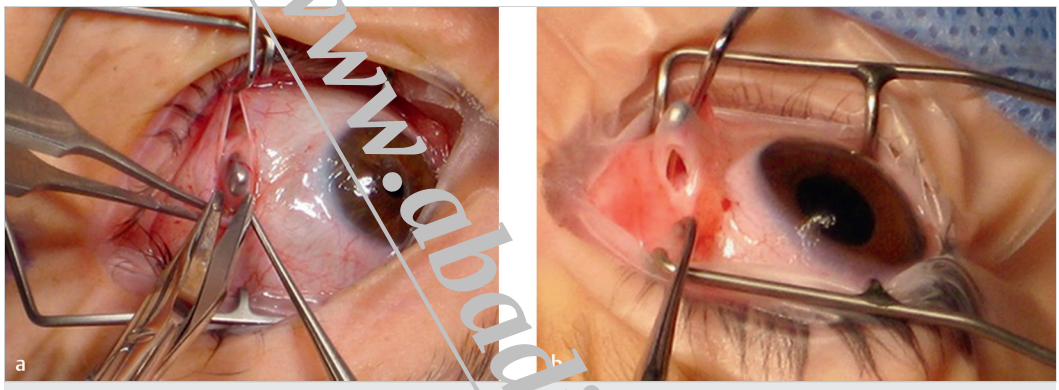

Fig. 4.4 **(a)** The intermuscular septum is incised under the hook of the Guyton hook, **(b)** then the bulb of the hook can be exposed through the opening of the intermuscular septum.

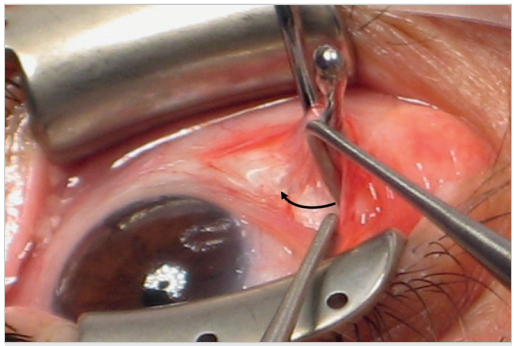

Fig. 4.5 The pole test is performed by the surgeon and the assistant using two small hooks, with one hook holding the incision open, and the tip of the second hook sliding from posterior to the insertion, around the pole of the insertion, to anterior to the insertion (*arrow*).

a small hook and brought onto the Guyton or Jameson hook to re-join the split muscle. Step 5 is repeated, followed by the pole test. The pole test can also be performed on the opposite pole of the muscle in the same manner.

7. The two Stevens hooks are then used by the assistant to retract the overlying conjunctiva to expose the muscle (▶ Fig. 4.6), Tenon's capsule, and check ligaments which are bluntly and sharply dissected using blunt Westcott scissors while taking care not to cut the muscle.
8. One Stevens hook is brought anteriorly to retract the conjunctiva away from the insertion to dissect Tenon's capsule to bare sclera, while holding the muscle taut on the Guyton or Jameson hook to visualize the area anterior to the insertion. The Tenon's capsule can be grasped and tented with forceps, and Westcott scissors used to

bluntly clear the Tenon's capsule from sclera (▶ Fig. 4.7a). Once the Tenon's capsule is separated from sclera, it can be sharply dissected off the muscle and sclera, if needed (▶ Fig. 4.7b).

9. The center of the anterior insertion is dried and marked on sclera (▶ Fig. 4.8), keeping in mind any planned vertical displacement for a pattern strabismus.

4.8.3 Rectus Muscle Recession

1. Once the operative muscle is isolated, a 6–0 double-armed polyglactin suture secures the central one-fourth to one-third width of the rectus muscle near its insertion with a central full-thickness 2–1 throw square knot.

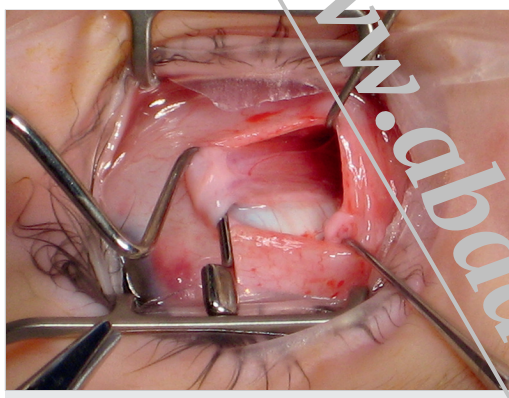

Fig. 4.6 Two small hooks tent the overlying conjunctiva to bluntly dissect Tenon's capsule and the check ligaments away from the muscle using Westcott scissors.

2. Each end of the suture is passed partial thickness with a slight weaving motion through the respective half to one-third of the muscle width to the edge of the muscle (▶ Fig. 4.9), followed by a full-thickness pass including one-fourth to one-third of the muscle width. The suture is then locked by passing the end of the suture with the needle through the loop that is created at the edge of the muscle (▶ Fig. 4.10a) and tightened (▶ Fig. 4.10b).
3. Both ends of the suture are then gathered and held taut between the thumb and forefinger while the same hand holds the Guyton or Jameson hook between the forefinger and the middle finger (▶ Fig. 4.11).
4. Blunt Westcott scissors are used to disinsert the muscle with consecutive small snips flush to the sclera (▶ Fig. 4.12), leaving a small stump that can be grasped securely without cutting the muscle suture. Foot plates posterior to the insertion may be present and are also disinserted. The sutures are then released.
5. The insertion is grasped with toothed forceps and cotton-tip applicators are used to dry the insertion and identify bleeding vessels. Minimal cautery is used to cauterize the vessels, aiming for the vessels at and just anterior to the insertion and avoiding cautery posterior to the insertion where the sclera is thinner. A Stevens hook is used by the assistant to retract the conjunctiva away from the insertion.
6. The rectus muscle can then be reinserted with either direct scleral passes at the new insertion site or at the original insertion using a hangback technique.

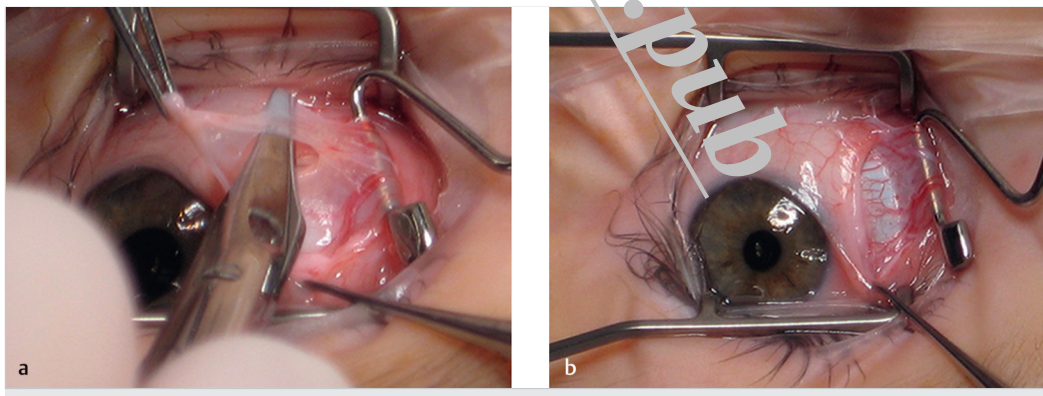

Fig. 4.7 **(a)** Tenon's capsule anterior to the insertion is bluntly dissected with toothed forceps and Westcott scissors, while a small hook retracts the conjunctiva. **(b)** Once the Tenon's capsule is cleared, bare sclera and the anterior ciliary arteries are readily visible.

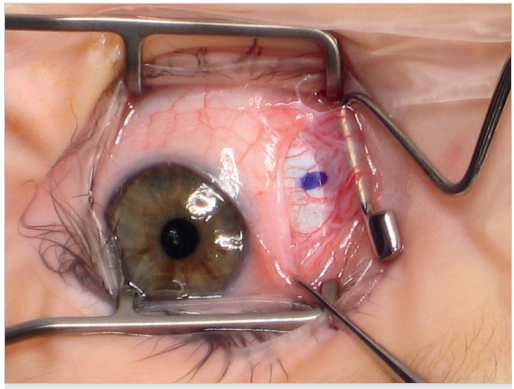

Fig. 4.8 The center of the insertion is marked directly on sclera.

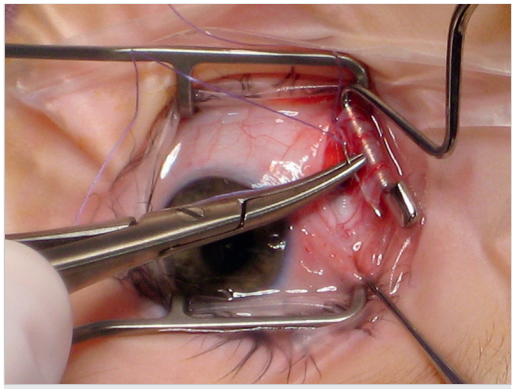

Fig. 4.9 One end of the 6–0 polyglactin suture is passed partial thickness on the rectus muscle, near its insertion, to the edge of the muscle during imbrication for a rectus muscle recession.

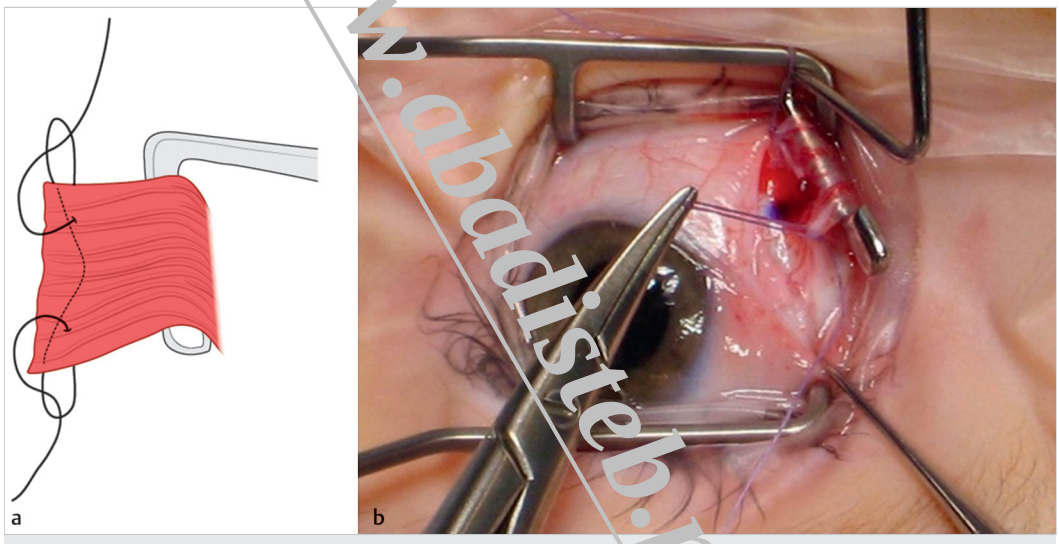

Fig. 4.10 **(a)** Following the partial-thickness then full-thickness passes at the edge of the rectus muscle during imbrication, the suture is locked by passing the end of the suture through the loop that is created at the edge of the muscle and **(b)** securely tightened by first pulling taut the segment of suture between the loop and muscle and then pulling the end of the suture.

7. For direct scleral reinsertion, calipers are set at the planned amount of recession in millimeters which may be confirmed with a straight ruler. One tip of the calipers, that is, the side with the knob, is marked with a marking pen:
   a) The insertion is grasped with toothed forceps and the calipers are placed with the unmarked tip at the level of the insertion, either at one pole or with vertical displacement if needed for pattern strabismus or a small vertical deviation. The marked tip is oriented posterior and perpendicular to the insertion. The new insertion site is dried with a cotton-tip applicator and marked (▶ Fig. 4.13). Alternatively, two locking forceps may be used at the insertion and held by the assistant who also retracts the conjunctiva with a Stevens hook for better exposure if needed.
   b) The ends of the suture are held up to identify the poles of the muscles with their respective

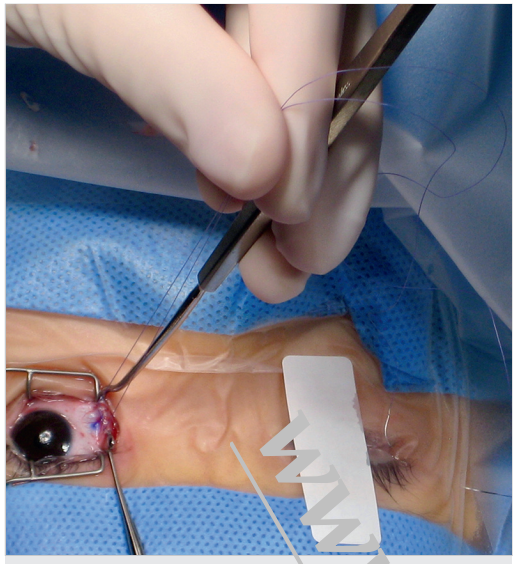

Fig. 4.11 The sutures are held taut with the Guyton or Jameson hook.

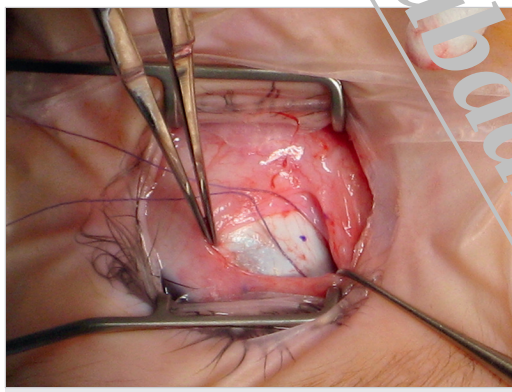

Fig. 4.13 The new insertion site has been marked by marked calipers before direct scleral reinsertion during recession of a rectus muscle.

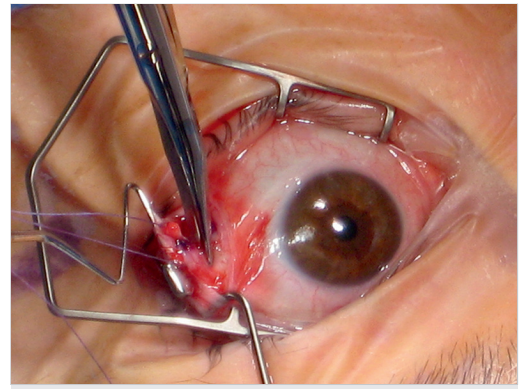

Fig. 4.12 The muscle is disinserted with Westcott scissors with consecutive small snips flush to the sclera, leaving a small stump without cutting the muscle suture.

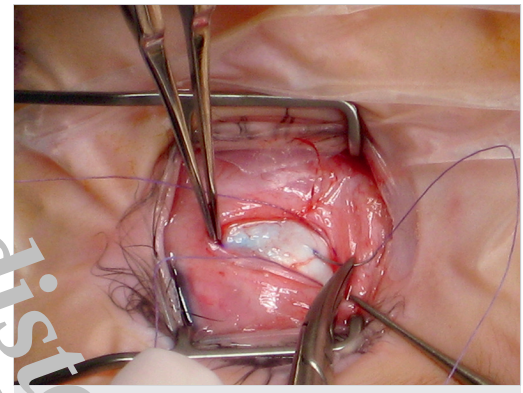

Fig. 4.14 Reinsertion of the muscle with a partial-thickness sclera pass. Note the positioning of the needle loaded at its center with the sharp end of the needle pointing slightly away from the globe, and the needle visible along its course.

needles, and the end corresponding to the first mark is chosen. The needle is loaded on a needle holder near its center. The insertion is securely grasped with toothed forceps. If needed, a Stevens hook is used by the assistant to provide exposure of the mark, while positioning the hook so that the surgeon's hands are not impeded. The needle is held with its tip oriented tangential to and pointed slightly away from the sclera, then engaged in the sclera at the mark and carefully advanced partial thickness, ensuring that the needle is visible along the entire scleral tract without being too shallow (▶ Fig. 4.14). The course of the needle may be toward the center of the insertion or may be nearly perpendicular to the insertion.

c) The above two steps are repeated for reinsertion of the opposite pole of the muscle. Again, the assistant retracts the conjunctiva with a Stevens hook if needed.
d) The muscle is pulled up to the new insertion site with both ends of the suture, and a 3–1-1 throw square knot is tied to secure the