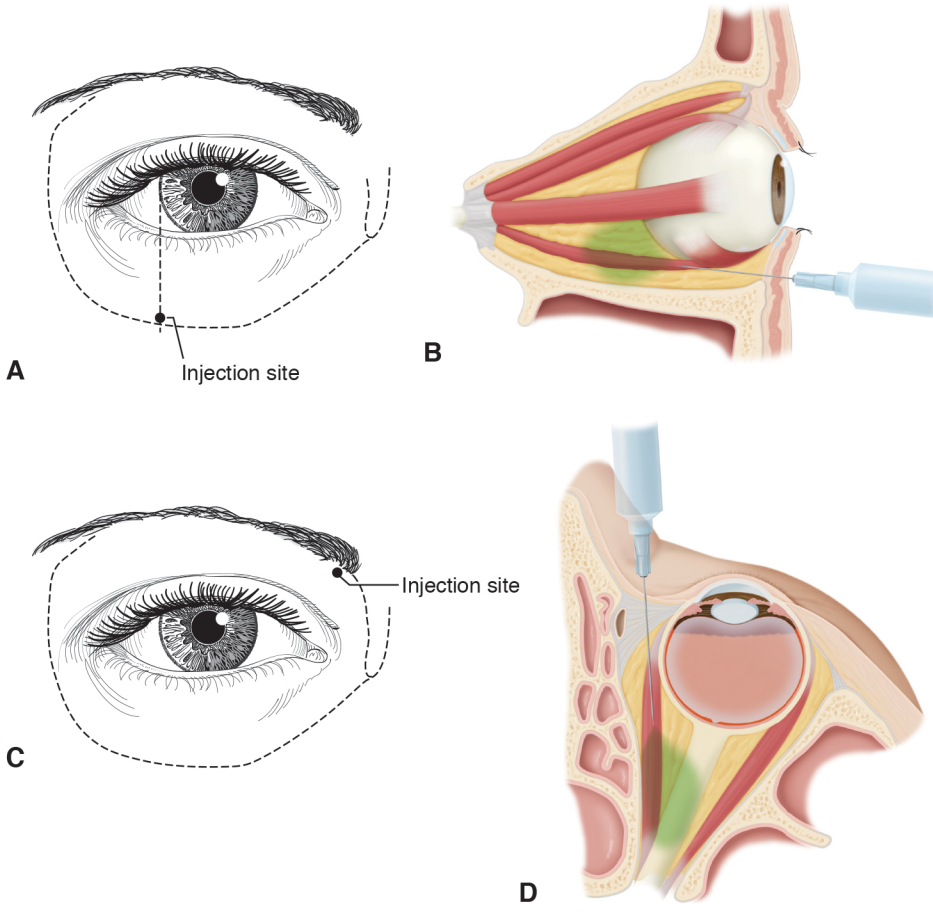

Figure 13-2 Peribulbar block. A 1-inch, 25- or 27-gauge needle is inserted at the inferotemporal orbital rim at a point in line with the lateral limbus **(A). B,** The needle is advanced tangential to the globe and parallel to the orbital floor with penetration 3–4 mm posterior to the equator. **C,** If necessary, an additional injection may be made in the upper eyelid at a point midway between the medial canthus and supraorbital notch. **D,** The needle is advanced tangential to the globe to the equator. *(Illustration by Mark M. Miller.)*

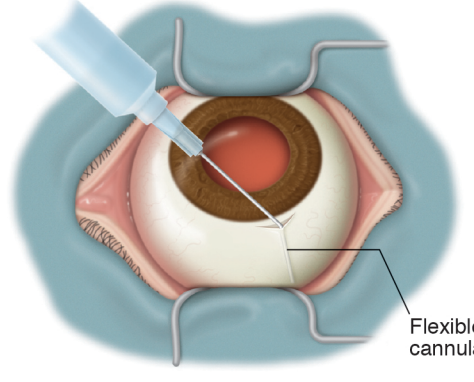

Figure 13-3 Parabulbar block. A blunt metal or flexible cannula is introduced into the sub-Tenon space and passed posteriorly beyond the equator of the globe. *(Illustration by Mark M. Miller.)*

General Anesthesia

In the elderly population, the advantages of regional anesthesia usually outweigh those of general anesthesia for the performance of safe and comfortable surgery in a cost-effective manner. While the incidences of death and major complications are similar for general and regional anesthesia, general anesthesia has been reported to produce more postoperative nausea and vomiting, intraoperative oxygen desaturation and hemodynamic fluctuation, and initial postoperative pain. Therefore, it is prudent to avoid, if possible, general anesthesia in patients with severe cardiovascular or pulmonary disease.

General anesthesia in ophthalmology is typically used in pediatric strabismus surgery and lengthy vitreoretinal procedures. Additionally, patients who cannot cooperate adequately (eg, those with tremor, an inability to lie supine, or severe mental or psychological impairment) may not be candidates for regional anesthesia in any surgical procedure. Patients who have experienced a prior complication with regional anesthesia (eg, retrobulbar hemorrhage, inadvertent intrathecal injection of anesthetic) should have subsequent ocular surgery under general anesthesia. Lengthy ocular procedures (those lasting more than 3 or 4 hours) may require general anesthesia or may benefit from the use of low-dose propofol, dexmedetomidine, or remifentanil.

Table 13-6 lists advantages and disadvantages of general anesthesia. General anesthesia offers the advantages of complete control of the patient, avoidance of complications associated with orbital injection, and application to patients in all age groups. Disadvantages of general anesthesia include absence of postoperative analgesia, an increased incidence of postoperative nausea and vomiting, greater intraoperative cardiovascular and pulmonary stress, a risk of malignant hyperthermia, slower immediate postoperative recovery, and greater cost.

The main requirements for general anesthesia in ocular surgery are anesthesia and akinesia of the globe and eyelids and control of the IOP (to protect against extrusion of intraocular contents). A variety of inhalation and intravenous agents may be used to accomplish these goals. Following a smooth induction, a deep level of anesthesia is maintained until the wound has been closed. A depolarizing muscle relaxant is commonly administered while the eye is open. Intraoperative use of antiemetics decreases the incidence of postoperative nausea and vomiting.

Ocular complications associated with general anesthesia for eye surgery are usually related to coughing and straining during surgery or nausea and vomiting in the

Table 13-6 Advantages and Disadvantages of General Anesthesia

Advantages	Complete control of patient
	Avoids complications associated with orbital injection
	Applicable to all ages
Disadvantages	Absence of postoperative analgesia
	More postoperative nausea and vomiting
	Greater cardiovascular and pulmonary stress
	Risk of malignant hyperthermia
	Slower immediate postoperative recovery
	More expensive