

# بییهوشی در اعمال جراحی سرپایی

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متخصص بییهوشی

## **Table 68–1    Benefits of ambulatory surgery**

- Patient preference, especially children and the elderly
- Lack of dependence on the availability of hospital beds
- Greater flexibility in scheduling operations
- Low morbidity and mortality
- Lower incidence of infection
- Lower incidence of respiratory complications
- Higher volume of patients (greater efficiency)
- Shorter surgical waiting lists
- Lower overall procedural costs
- Less preoperative testing and postoperative medication

**Table 66-2** Operative procedures suitable for ambulatory surgery

Specialty	Types of Procedures
Dental	Extraction, restoration, facial fractures
Dermatology	Excision of skin lesions
General	Biopsy, endoscopy, excision of masses, hemorrhoidectomy, herniorrhaphy, laparoscopic procedures, varicose vein surgery
Gynecology	Cone biopsy, dilatation and curettage, hysteroscopy, laparoscopy, polypectomy, tubal ligation, vaginal hysterectomy
Ophthalmology	Cataract extraction, chalazion excision, nasolacrimal duct probing, strabismus repair, tonometry
Orthopedic	Anterior cruciate repair, arthroscopy, bunionectomy, carpal tunnel release, closed reduction, hardware removal, manipulation under anesthesia
Otolaryngology	Adenoidectomy, laryngoscopy, mastoidectomy, myringotomy, polypectomy, rhinoplasty, tonsillectomy, tympanoplasty
Pain clinic	Chemical sympathectomy, epidural injection, nerve blocks
Plastic surgery	Basal cell cancer excision, cleft lip repair, liposuction, mammoplasty, otoplasty, scar revision, septorhinoplasty, skin graft
Urology	Bladder surgery, circumcision, cystoscopy, lithotripsy, orchiectomy, prostate biopsy, vasovasostomy



**Table 68–4** Laboratory test recommendations for outpatients scheduled to undergo ambulatory surgery procedures under general anesthesia

Age Range	Men	Women
<40	None	Pregnancy test*
40-49	Electrocardiogram	Hematocrit level, pregnancy test*
50-64	Electrocardiogram	Hemoglobin or hematocrit level, electrocardiogram
65-74	Hemoglobin or hematocrit level, electrocardiogram, serum urea nitrogen, glucose	Hemoglobin or hematocrit level, electrocardiogram, serum urea nitrogen, glucose
>75	Hemoglobin or hematocrit level, electrocardiogram, serum urea nitrogen, chest radiograph†	Hemoglobin or hematocrit level, electrocardiogram, serum urea nitrogen, chest radiograph†

## BOX 31.2 Recommendations for Preoperative Resting 12-Lead Electrocardiogram

### **Class IIa Recommendation: It Is Reasonable to Perform the Procedure**

Preoperative resting 12-lead ECG is reasonable for patients with known IHD, significant arrhythmia, PAD, CVD, or other significant structural heart disease (except if undergoing low-risk surgical procedures).

### **Class IIb Recommendation: The Procedure May Be Considered**

Preoperative resting 12-lead ECG may be considered for asymptomatic patients without known coronary heart disease, except for those undergoing low-risk surgical procedures.

### **Class III Recommendation: The Procedure Should Not Be Performed Because It Is Not Helpful**

Routine preoperative resting 12-lead ECG is not useful for asymptomatic patients undergoing low-risk surgical procedures.

CVD, Cerebrovascular disease; ECG, electrocardiogram; IHD, Ischemic

- Sedative techniques can facilitate a wide variety of procedures performed in the hospital, office, or remote settings. However, sedation is no safer than general anesthesia and requires the same standards of personnel, monitoring, and perioperative care as for patients undergoing general or regional anesthesia.



**Table 68–5** Use of anxiolytic-sedative drugs for outpatient premedication

	Dosage Range	Onset (min)	Key Points
<b>Benzodiazepines</b>			
Midazolam	7.5-15 mg PO	15-30	Large first-pass effect
	5-7 mg IM	15-30	Water soluble, nonirritating
	1-2 mg IV	1-53	Rapid onset, excellent amnesia
Diazepam	5-10 mg PO	45-90	Long-acting metabolites
Temazepam	15-30 mg PO	15-40	Comparable anxiolysis to midazolam
Triazolam	0.125-0.25 mg PO	15-30	Prominent sedation
Lorazepam	1-2 mg PO	45-90	Prolonged amnestic effect
<b><math>\alpha_2</math>-Adrenergic Agonists</b>			
Clonidine	0.1-0.3 mg PO	45-60	Prolonged sedative effect
Dexmedetomidine	50-70 $\mu$ g IM	20-60	Bradycardia and hypotension
	50 $\mu$ g IV	5-30	Reduced anesthetic/analgesic requirements

- Ambulatory surgery remains very popular with patients with infrequent rates of adverse events and complications. One important component of success in ambulatory surgery and anesthesia is minimal postoperative nausea and vomiting.



## **Table 68–6** Common factors associated with nausea, vomiting, and retching during the perioperative period

### **Patient-Related Factors**

Age, gender, preexisting diseases (e.g., diabetes), history of motion sickness or postoperative nausea and vomiting, smoking history, and level of anxiety, as well as intercurrent illness (e.g., viral infection, pancreatic disease)

### **Anesthesia-Related Factors**

Premedication, opioid analgesics, induction and maintenance anesthetics, reversal (antagonist) drugs, gastric distention, inadequate hydration, and residual sympathectomy

### **Surgery-Related Factors**

Operative procedure, length of surgery, blood in the gastrointestinal tract, forcing oral intake, opioid analgesics, premature ambulation (postural hypotension), and pain

**Table 68–8** Comparison of currently available intravenous anesthetics for use during ambulatory anesthesia

	Dose (mg/kg)	Onset of Action	Recovery Profile	Side Effects
Thiopental	3-6	Rapid	Intermediate	Drowsiness ("hangover")
Methohexital	1.5-3	Rapid	Rapid	Pain, excitatory activity
Etomidate	0.15-0.3	Rapid	Intermediate	Pain, myoclonus, emesis
Ketamine	0.75-1.5	Immediate	Intermediate	Psychomimetic reactions, cardiovascular stimulation
Midazolam	0.1-0.2	Slow	Slow	Drowsiness, amnesia
Propofol	1.5-2.5	Rapid	Rapid	Pain on injection, cardiovascular depression

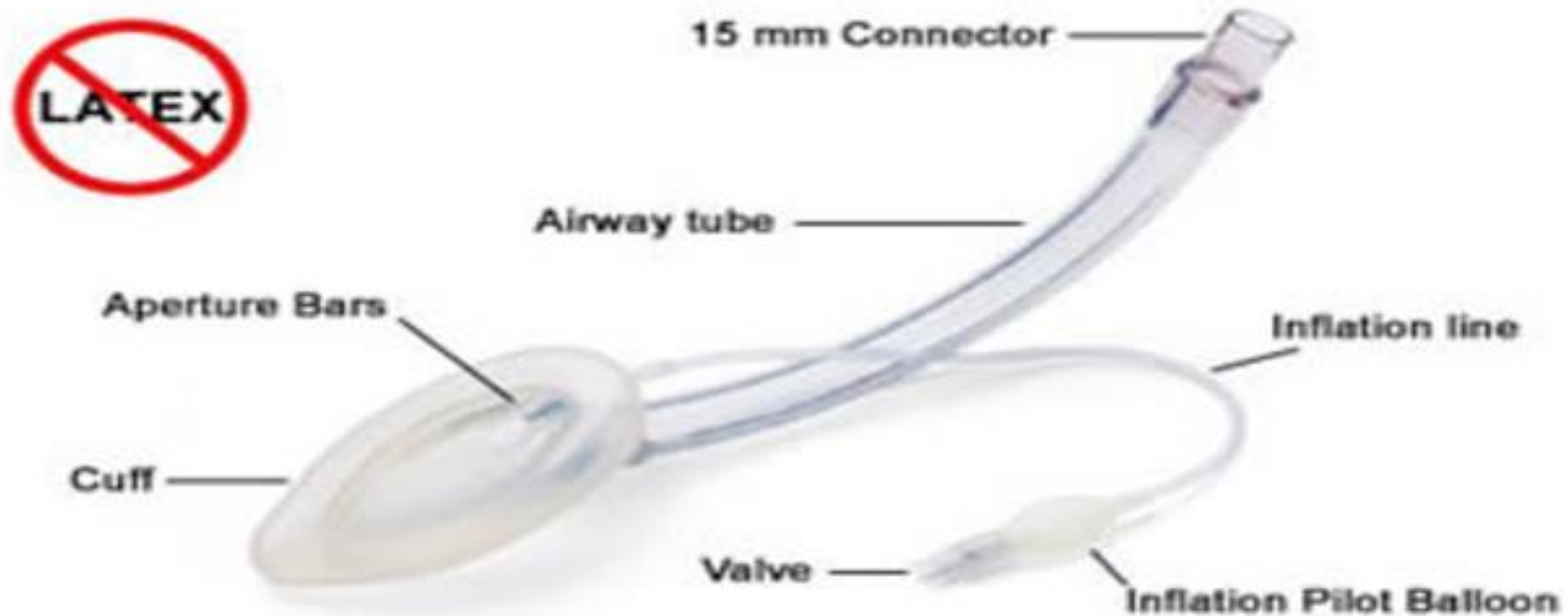


**Table 68-9** Comparison of currently available inhaled anesthetics for use during ambulatory anesthesia

Drug Name	Concentration (%)	Onset of Action	Recovery Profile	Side Effects
Halothane	0.5-1.5	Slow	Slow	Sedation, arrhythmias
Enflurane	0.75-1.5	Intermediate	Intermediate	Shivering
Isoflurane	0.5-1	Intermediate	Intermediate	Coughing
Desflurane	3-6	Very rapid	Very rapid	Coughing, tachycardia
Sevoflurane	1-2	Rapid	Rapid	Flammable
Nitrous oxide	50-70	Very rapid	Very rapid	Nausea/emesis (?)



## The Single Use LMA™ Airway





Size	Air passage (mm)		Whole Length $\pm 25$	Max inflation (mL)	Cuff(mm)		Inflation tube ( $\pm 15$ )
	nominal OD $\pm 0.5$	Length $\pm 20$			Length A $\pm 5$	Width B $\pm 5$	
1	8	95	135	4	39	23	100
1.5	10	100	160	7	48	29	100
2	11.5	115	185	10	57.5	34.5	130
2.5	13.2	130	210	14	67	40.5	130
3	15	170	250	20	78	47	200
4	15	170	260	30	88.5	53.5	200
5	16.8	190	290	40	99.5	60	200
6	16.8	190	300	50	110	68	200





**TABLE 33.1** Clinically Important Effects, Perioperative Concerns, and Recommendations for Perioperative Discontinuation of 11 Commonly Used Herbal Medicines

Herbs (Common Names)	Pharmacologic Effects	Perioperative Concerns	Discontinue Before Surgery
Echinacea (purple cone-flower root)	Activation of cell-mediated immunity	Allergic reactions Decreases effectiveness of immunosuppressants Potential for immunosuppression with long-term use	No data
Ephedra (ma huang)	Increases heart rate and blood pressure through direct and indirect sympathomimetic effects	Risk of myocardial ischemia and stroke from tachycardia and hypertension Ventricular arrhythmias with halothane Long-term use depletes endogenous catecholamines and may cause intraoperative hemodynamic instability Life-threatening interaction with MAO inhibitors	24 h
Garlic (ajo)	Inhibits platelet aggregation (may be irreversible) Increases fibrinolysis Equivocal antihypertensive activity	May increase risk of bleeding, especially when combined with other medications that inhibit platelet aggregation	7 days
Ginger	Antiemetic Antiplatelet aggregation	May increase risk of bleeding	No data
Ginkgo (duck-foot tree, maidenhair tree, silver apricot)	Inhibits platelet-activating factor	May increase risk of bleeding, especially when combined with other medications that inhibit platelet aggregation	36 h
Ginseng (American ginseng, Asian ginseng, Chinese ginseng, Korean ginseng)	Lowers blood glucose Inhibits platelet aggregation (may be irreversible) Increased PT/PTT in animals	Hypoglycemia May increase risk of bleeding May decrease anticoagulant effect of warfarin	7 days
Green tea	Inhibits platelet aggregation Inhibits thromboxane A <sub>2</sub> formation	May increase risk of bleeding May decrease anticoagulant effect of warfarin	7 days
Kava (kava, intoxicating pepper, kawa)	Sedation Anxiolysis	May increase sedative effect of anesthetics Increase in anesthetic requirements with long-term use unstudied	24 h
Saw palmetto (dwarf palm, Sabal)	Inhibits 5 $\alpha$ -reductase Inhibits cyclooxygenase	May increase risk of bleeding	No data
St. John's wort (amber, goat weed, hardray, hypericum, Klamath weed)	Inhibits neurotransmitter reuptake MAO inhibition unlikely	Induction of cytochrome P450 enzymes; affects cyclosporine, warfarin, steroids, and protease inhibitors; may affect benzodiazepines, calcium channel blockers, and many other drugs Decreased serum digoxin levels Delayed emergence	5 days
Valerian (all heal, garden heliotrope, vandal root)	Sedation	May increase sedative effect of anesthetics Benzodiazepine-like acute withdrawal May increase anesthetic requirements with long-term use	No data

MAO, Monoamine oxidase; PT, prothrombin time; PTT, partial thromboplastin time.

## GINGER

Ginger (*Zingiber officinale*) is a popular spice with a long history of use in Chinese, Indian, Arabic, and Greco-Roman herbal medicines. Ginger has a wide range of reported health benefits for those with arthritis, rheumatism, sprains, muscular aches, pains, sore throats, cramps, constipation, indigestion, nausea, vomiting, hypertension, dementia, fever, infectious diseases, and helminthiasis.<sup>50</sup> Ginger contains up to 3% volatile oil, mostly monoterpenoids and sesquiterpenoids.<sup>51</sup> Gingerols are representative compounds in ginger.<sup>52</sup>



## GINSENG

Among the several species of ginseng used for their pharmacologic effects, Asian ginseng (*Panax ginseng*) and American ginseng (*Panax quinquefolius*) are the most commonly described.<sup>68</sup> Ginseng has been labeled an “adaptogen” because it reputedly protects the body against stress and restores homeostasis.<sup>69</sup> Because its pharmacologic actions are attributed to the ginsenosides, a group of compounds known as *steroidal saponins*, many commercially available ginseng preparations have been standardized to ginsenoside content.<sup>68,70</sup>

Ginkgo is derived from the leaf of *G. biloba* and has been used for cognitive disorders, peripheral vascular disease, age-related macular degeneration, vertigo, tinnitus, erectile dysfunction, and altitude sickness. Studies have suggested that ginkgo can stabilize or improve cognitive performance in patients with Alzheimer disease and multiinfarct dementia,<sup>59</sup> but not in healthy geriatric patients.<sup>60</sup> The compounds that might be responsible for its pharmacologic effects are the terpenoids and flavonoids. The two ginkgo extracts used in clinical trials are standardized to ginkgo-flavone glycosides and terpenoids.

## GREEN TEA

Tea from the *Camellia sinensis* is one of the most ancient and the second most widely consumed beverage in the world.<sup>86,87</sup> Tea can be classified into different types, such as green, oolong, and black. Green tea, which is not fermented and is derived directly from drying and steaming fresh tea leaves, contains polyphenolic compounds. Catechins in green tea account for 16% to 30% of its dry weight. Epigallocatechin-3-gallate (EGCG), the most predominant catechin in green tea, is responsible for much of the biologic activity mediated by green tea.<sup>86</sup>

## KAVA

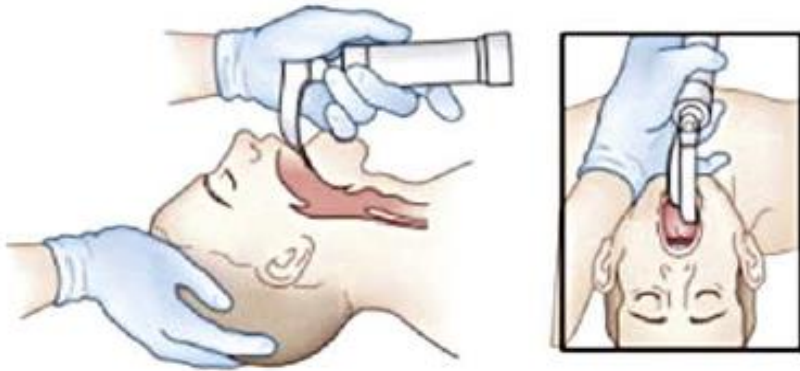
Kava is derived from the dried root of the pepper plant *Piper methysticum*. Kava has gained widespread popularity as an anxiolytic and sedative. The kavalactones appear to be the source of kava's pharmacologic activity.<sup>95</sup>



## BOX 44.1 Components of the Physical Examination of the Airway

- Visual inspection of the face and neck
- Assessment of mouth opening
- Evaluation of oropharyngeal anatomy and dentition
- Assessment of neck range of motion (ability of the patient to assume the sniffing position)
- Assessment of the submandibular space
- Assessment of the patient's ability to slide the mandible anteriorly (test of mandibular prognathism)





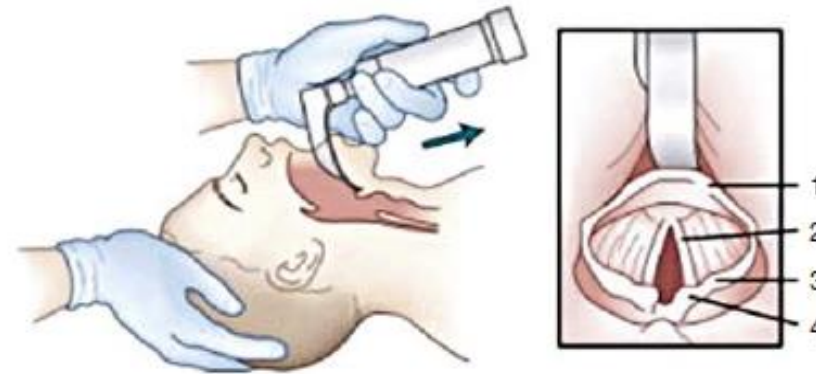
**A** Insert the laryngoscope blade into the right side of the mouth



**B** Advance the laryngoscope blade toward the midline of the base of the tongue by rotating the wrist



**C** Approach the base of the tongue and lift the blade forward at a 45-degree angle



**D** Engage the vallecula and continue to lift the blade forward at a 45-degree angle

## BOX 44.3 Predictors of Difficult Laryngoscopy

- Long upper incisors
- Prominent overbite
- Inability to protrude mandible
- Small mouth opening
- Mallampati classification III or IV
- High, arched palate
- Short thyromental distance
- Short, thick neck
- Limited cervical mobility



From Cormack  
and Lehane

From Williams,  
Carli, and Cormack



Grade 1



Grade 2



Grade 3



Grade 4



Fig. 44.23 The Cormack-Lehane grading system for laryngoscopic



**Fig. 44.26** The Storz C-MAC videolaryngoscope. (From Aziz M, Brambrink A. Video-assisted laryngoscopy. In: Hagberg CA, Artino CA, Aziz M, eds. *Hagberg and Benumof's Airway Management*. 4th ed. Philadelphia: Elsevier; 2018.)

and limited movement of the head and neck. The X-Blade is a hyperangulated blade for the McGrath MAC, while the D-Blade (Karl Storz, Tuttlingen, Germany) is a highly curved VL blade for use with the C-MAC system. These devices are typically inserted in the mouth midline, without sweeping the tongue from right to left as in DL. Because of the high degree of angulation of the blade, an ETT stylet is almost always necessary; malleable stylets with a 60- to 90-degree bend, articulating stylets, and the GlideRite stylet (a rigid stylet with a 90-degree curve specifically designed for use with the GlideScope) have all been successfully used with these VLs.<sup>240,241</sup> The VL and the styletied ETT should be inserted into the oral cavity under direct vision to avoid oropharyngeal trauma (Video 44.9).<sup>242</sup>

Some VLs with highly curved blades have integrated tube-guiding channels to facilitate intubation without the use of a stylet, similar to the Airtraq. The King Vision (King Systems, Noblesville, IN) and the Pentax Airway Scope (AWS; Pentax Medical, distributed by Ambu Inc., Ballerup, Denmark) fall into this category. This type of VL has been shown to be useful in patients with cervical immobilization and has been successfully used for awake intubation.<sup>243,244</sup>



**Fig. 44.27** The GlideScope A1 videolaryngoscope system with titanium blades. (From Aziz M, Brambrink A. Video-assisted laryngoscopy. In: Hagberg CA,

## Box 44.5 Complications Associated with Extubation

- Laryngospasm and bronchospasm
- Upper airway obstruction
- Hypoventilation
- Hemodynamic changes (hypertension, tachycardia)
- Coughing and straining, leading to surgical wound dehiscence
- Laryngeal or airway edema
- Negative-pressure pulmonary edema
- Paradoxical vocal cord motion
- Arytenoid dislocation
- Aspiration



## Box 44.6 Factors Associated with Increased Extubation Risk

### Airway Risk Factors

- Known difficult airway
- Airway deterioration (bleeding, edema, trauma)
- Restricted airway access
- Obesity and obstructive sleep apnea
- Aspiration risk

### General Risk Factors

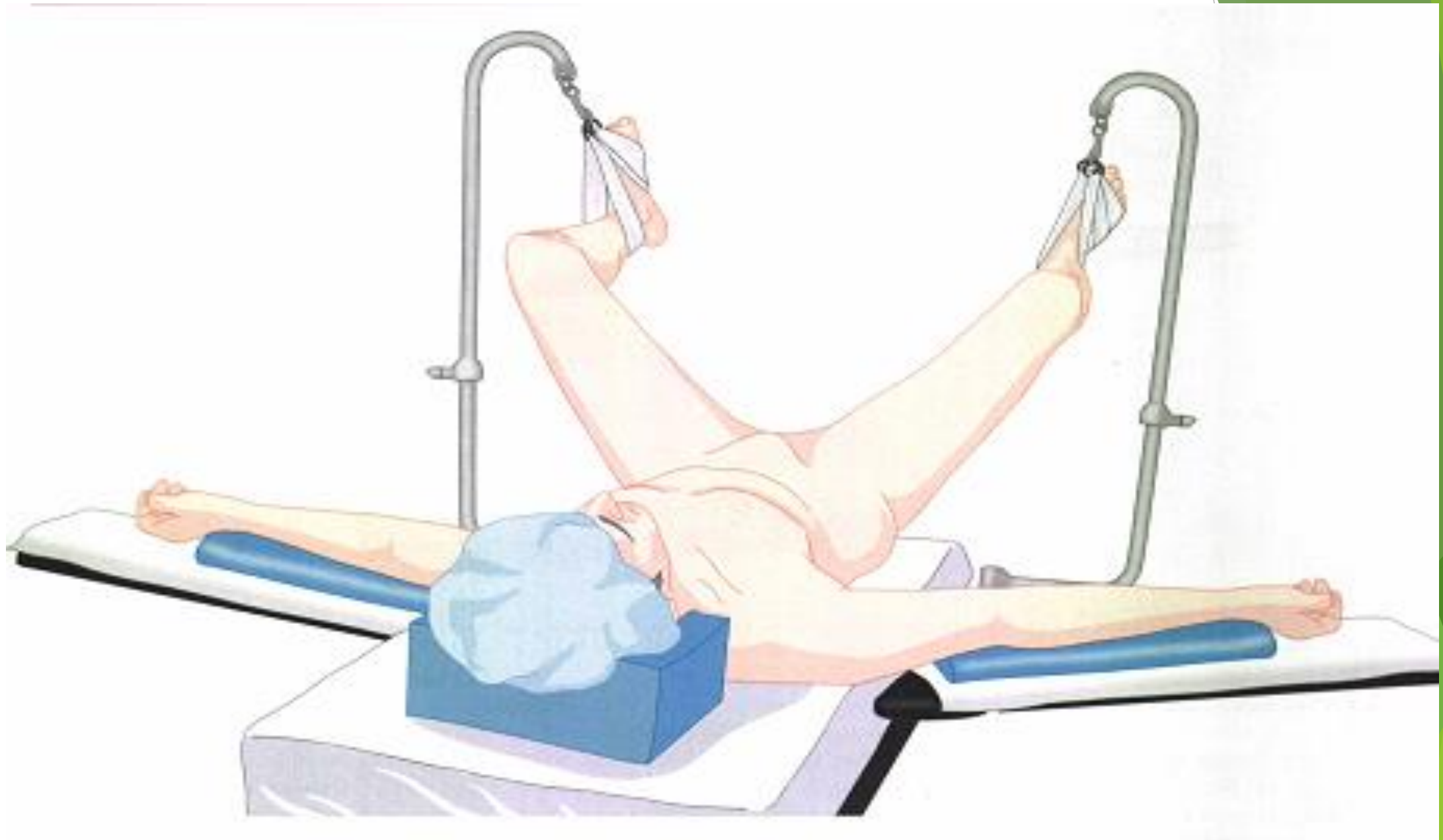
- Cardiovascular disease
- Respiratory disease
- Neuromuscular disease
- Metabolic derangements
- Special surgical requirements

Adapted from David JJ, Mitchell J, David J, et al. Difficult Airway Society

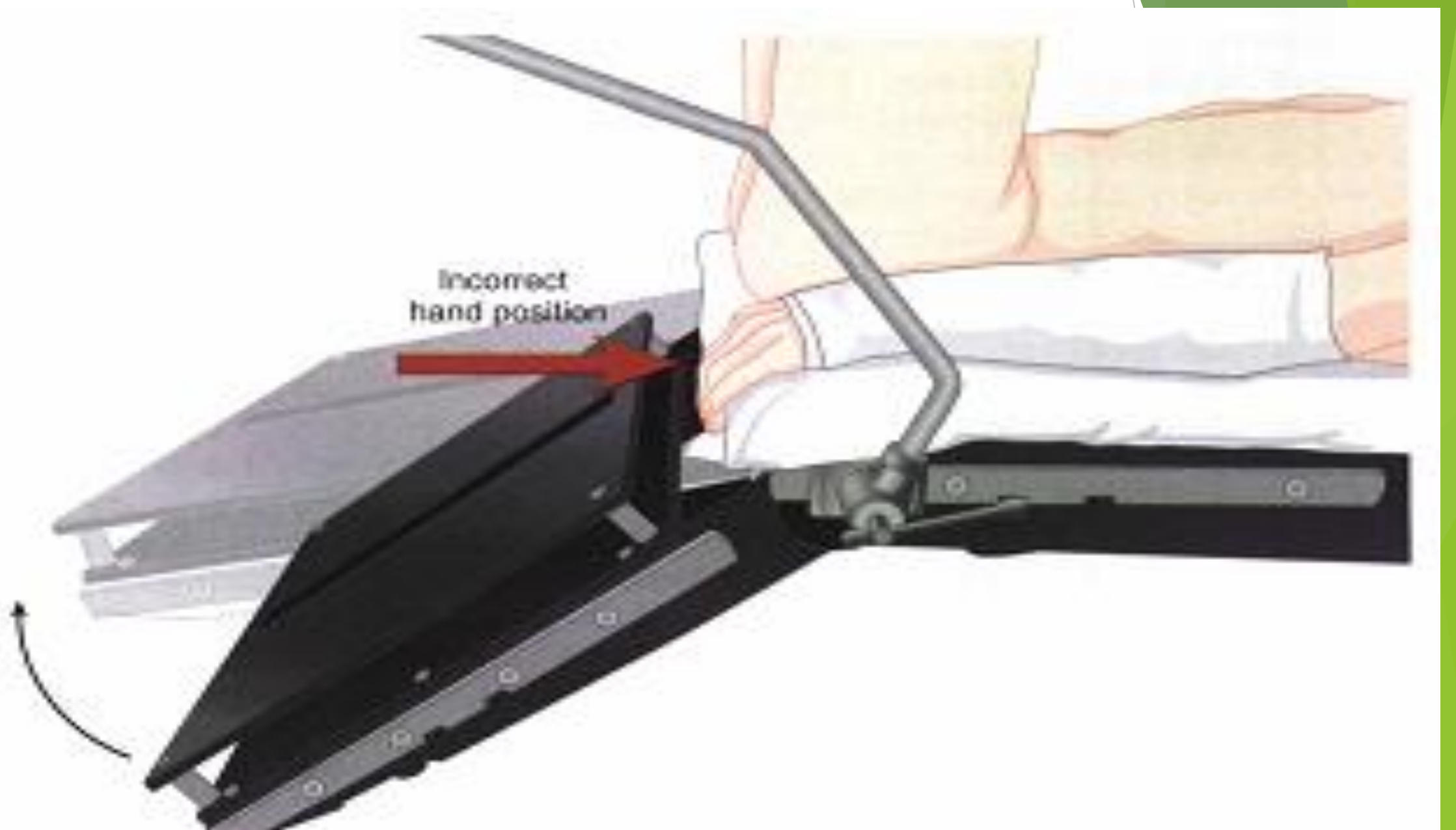


Gurney position. Note the asymmetry of the base of the table, placing the patient's center of gravity over the base if positioned in the usual

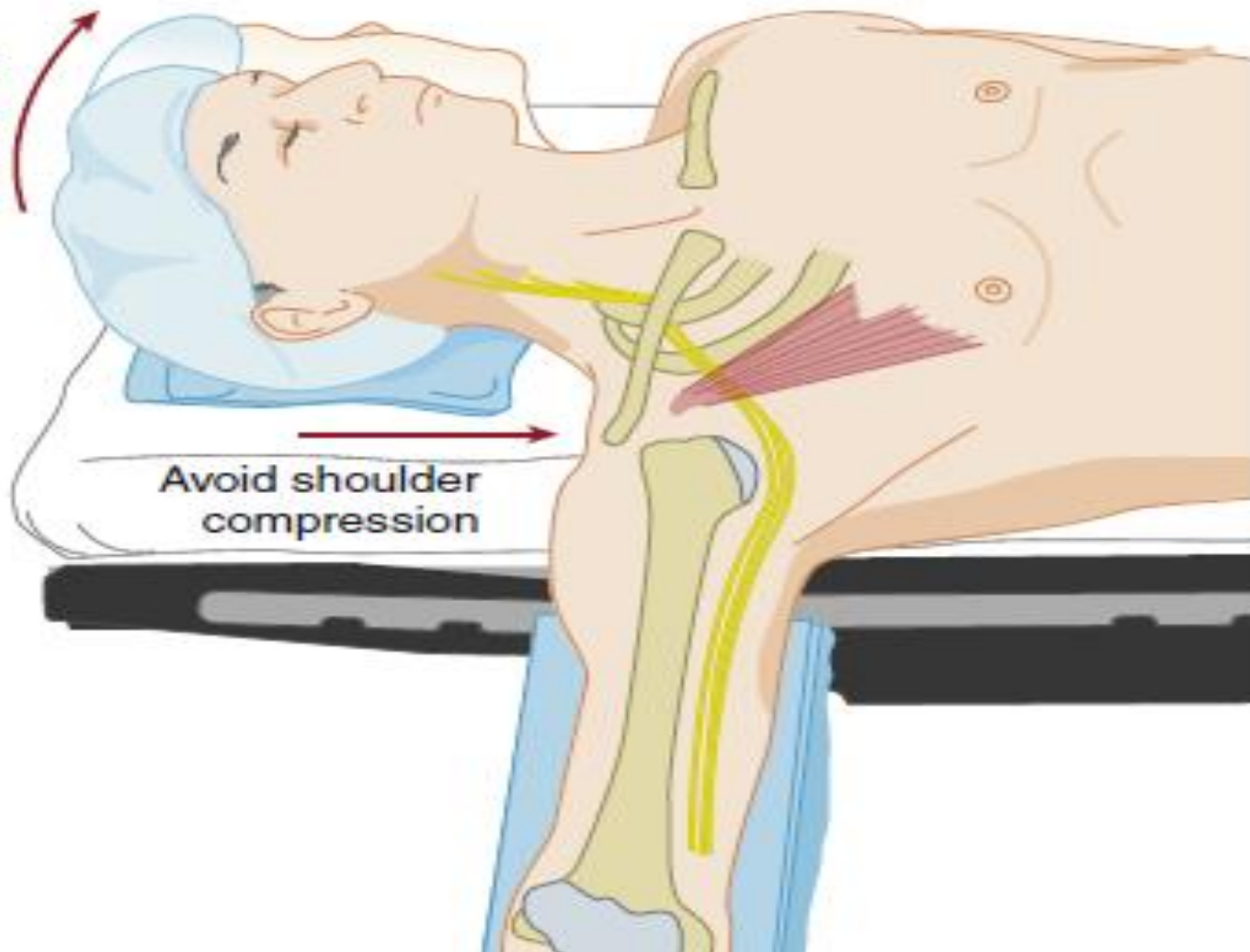




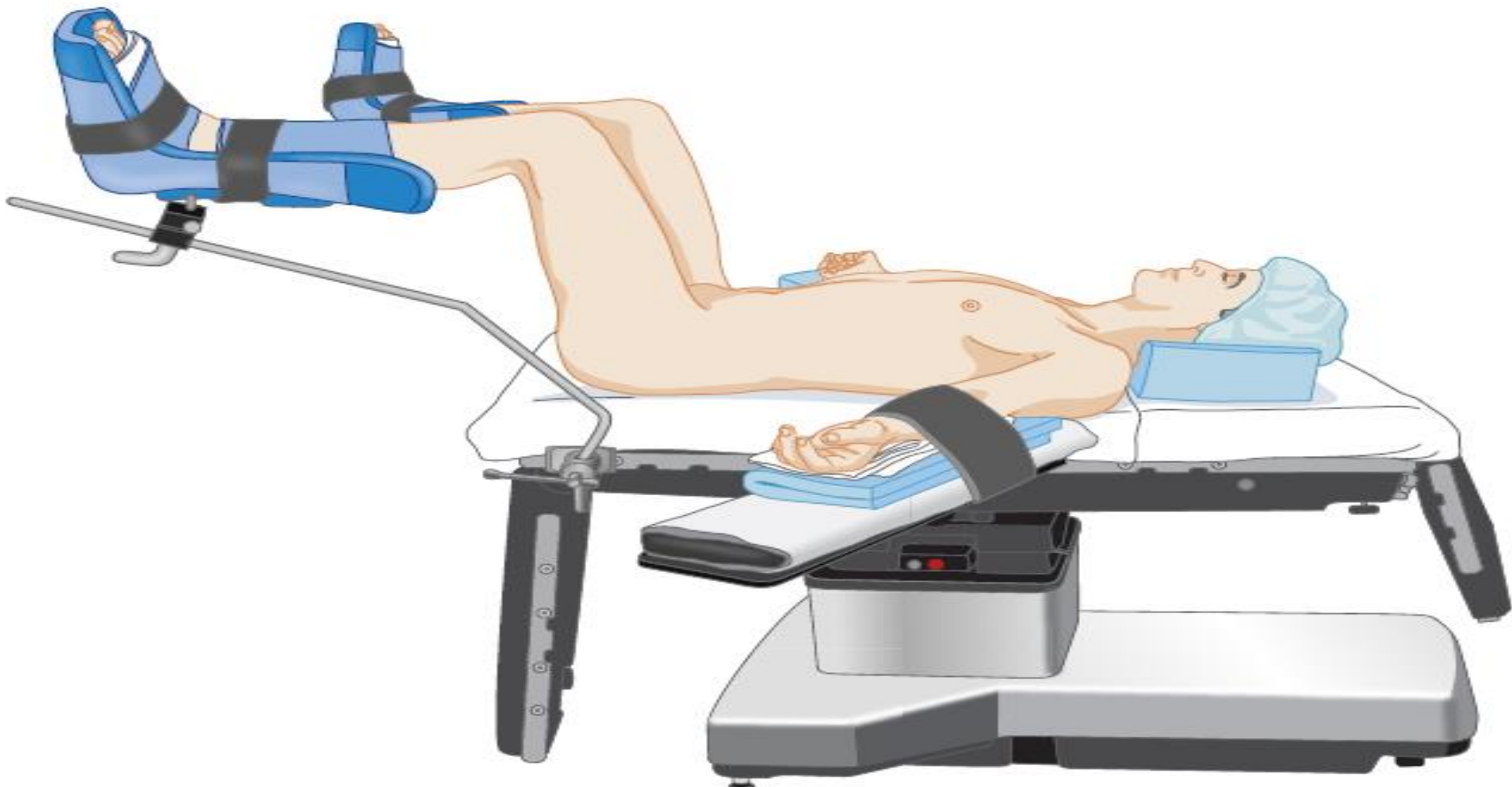




Avoid  
head rotation  
away from  
abducted arm



Avoid shoulder  
compression





Thank  
You