Al-Mustaqbal University

College of Health and Medical Technology

Anesthesia Techniques Department

Practical Lecture

Anesthesia for Orthopedic Surgery Part (1)

BSc. Anesthesia & Intensive Care

Prepared by: Mohammed Khudair, Ali Rasoul

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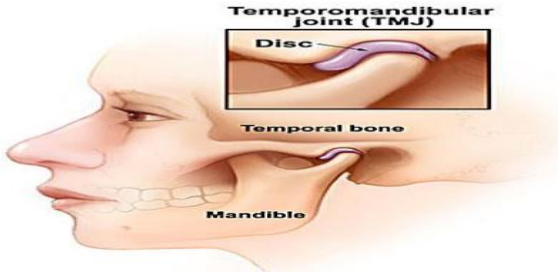
Anesthesia for Orthopedic Surgery is the medical specialty practice concerned with providing safe and effective anesthesia to patients undergoing surgical procedures on the musculoskeletal system, including bones, joints, ligaments, and muscles

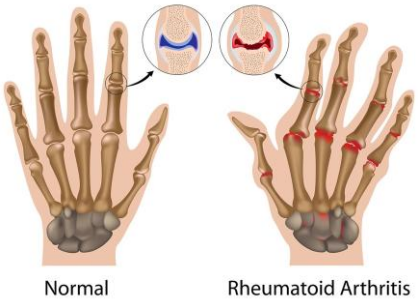
The common Anesthetic considerations for Orthopedic surgery may be related to:

- **Trauma association**: Some of the orthopedic patients present with other injuries due to trauma, and carry risks of emergency surgery (e.g., aspiration of gastric contents, internal bleeding).

- **Musculoskeletal disease**: Some patients have musculoskeletal disease need Orthopaedic surgery, e.g., rheumatoid arthritis RA, connective tissue diseases, and muscular abnormalities.

- **Airway management** : in patients with **RA** can be challenging in these patients because RA involvement of the cervical spine and temporomandibular joints results in limited neck range of motion and mouth opening. Also, Patients with RA on chronic steroid therapy may require perioperative steroid replacement.





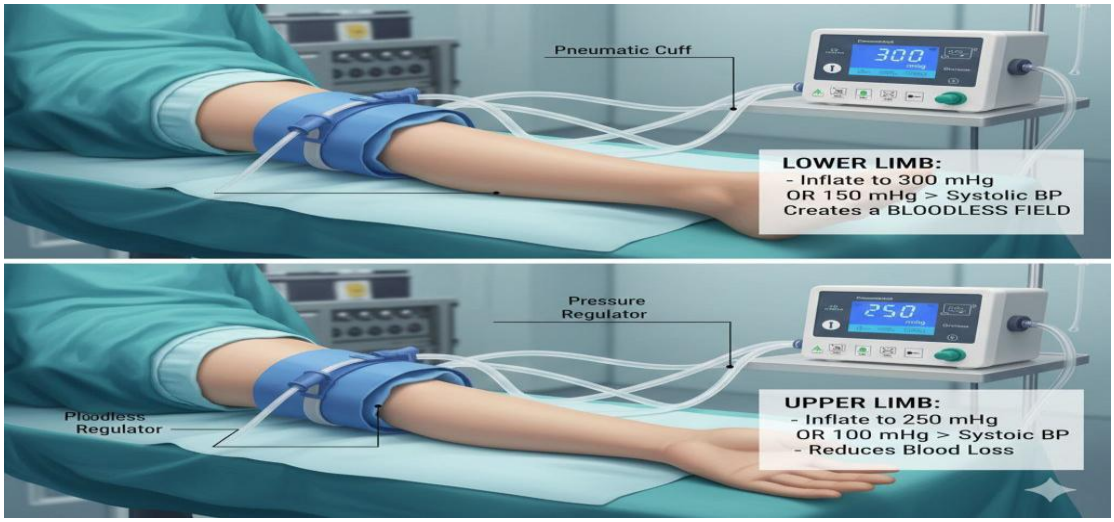
Tourniquets use:

–Use of a pneumatic tourniquet on an extremity creates a bloodless field and decreases blood loss during surgery.

– The pressure in the arterial tourniquet should, in all cases, exceed arterial pressure. For the **lower limb**, this pressure is typically 300 mmHg (or 150 mmHg above systolic arterial pressure), and for the **upper limb,** 250 mmHg (or 100 mmHg above systolic arterial pressure)

– The maximum period of safe ischemia is not known precisely. Lasting damage is unlikely if a tourniquet time of 90 minutes for the upper limb and 120 minutes for the lower limb is not exceeded.

– Tourniquet on more than one limb should never be deflated (or inflated) simultaneously.

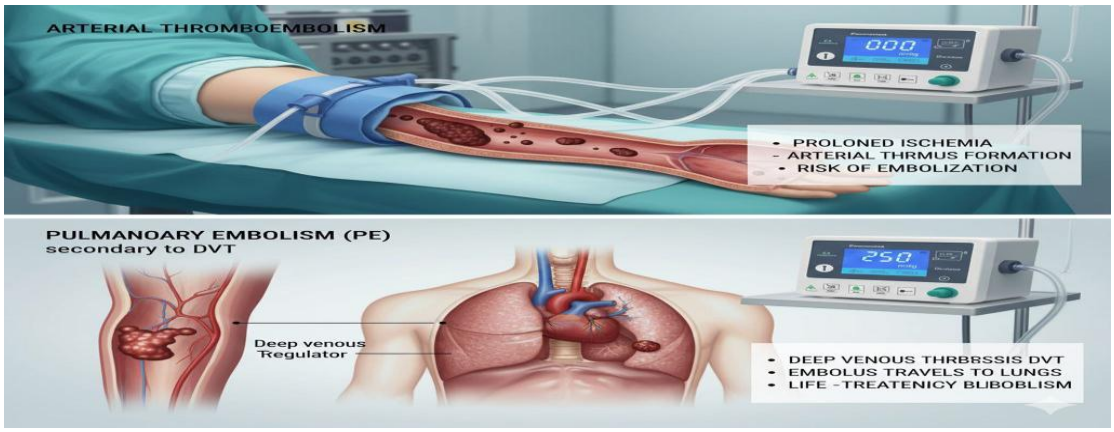


tourniquets Inflation can produce potential clinical problems, including: -

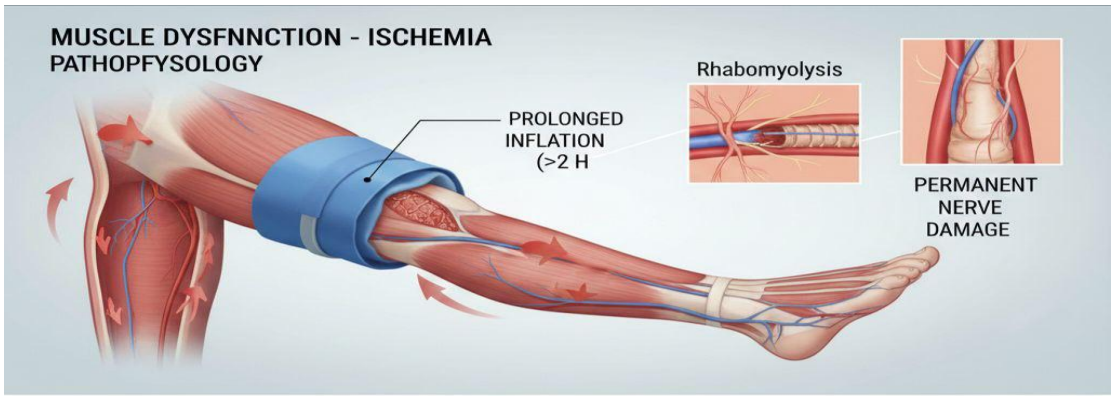
A. **Hemodynamic changes**: - This is because of a rapid shift of blood volume into the central circulation. This is well tolerated in normal patients, but in patients with noncompliant ventricles and diastolic dysfunction may be disastrous.

B. **Tourniquet pain starts gradually**, beginning approximately 1 h after cuff inflation and becomes so severe over time, which is presented by Signs of progressive sympathetic activation, including marked hypertension, tachycardia, and diaphoresis**.**

C. **Arterial Thromboembolism**, and **pulmonary embolism**. Tourniquet-induced ischemia of a lower extremity may lead to the development of deep venous thrombosis.

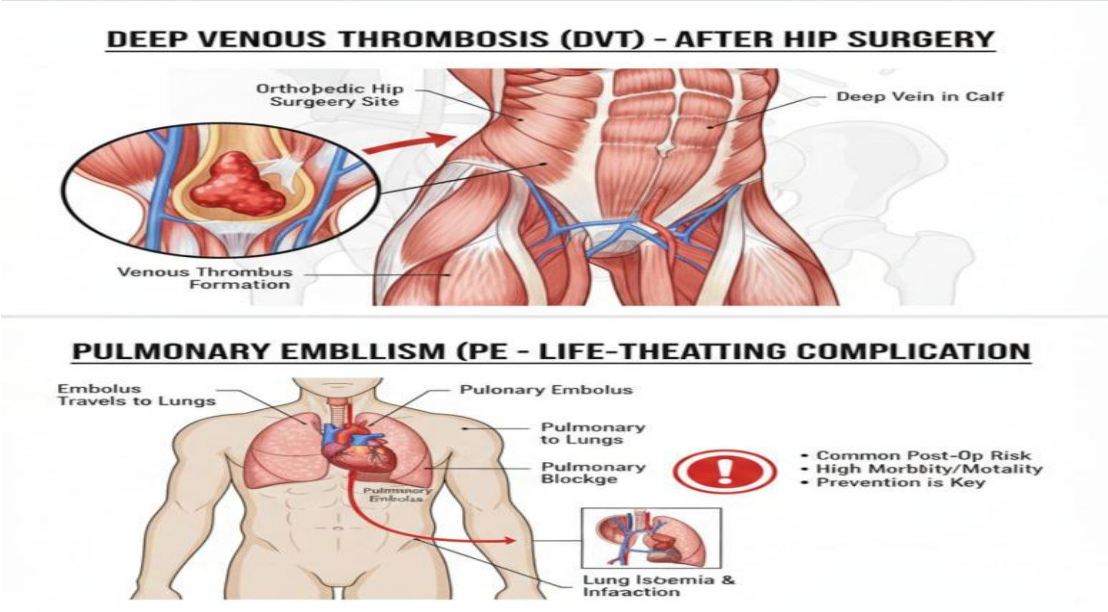


D. **Muscle dysfunction: -** Prolonged inflation **(>2 h)** routinely leads to transient muscle dysfunction from ischemia and may produce rhabdomyolysis or permanent peripheral nerve damage.



❖ Tourniquet inflation has also been associated with **increases** in **body temperature in pediatric patients undergoing lower extremity surgery.**

- DVT (deep venous thrombosis) and PE (pulmonary embolism) are **common**, especially after hip surgery, and can cause morbidity and mortality following orthopedic operations on the pelvis and lower extremities.



- **Risk factors of DVT and PE include**:

A. Obesity,

B. Age greater than 60 years,

C. Procedures lasting more than 30 min,

D. Use of a tourniquet,

E. Lower extremity fracture.

F. Immobilization for more than 4 days.


Thank you
for listening