

Positioning for surgery: Considering the three variables

The PATIENT, the procedure, and the tools - preventing injuries

Our previous Express Learning referred to the three variables in positioning for surgery, which are the patient, the procedure, and the tools.

During this session we will delve into more detail around Patient considerations needed to prevent injury to the patient, during positioning.

The best way to prevent injury during positioning is to holistically consider the 11 systems of the body individually. Each of these systems function independently but are often **interdependent** with one or more of the other systems. We will only be discussing the main systems which could be affected by positioning, but simultaneously we acknowledge that all systems have a physiological impact on the patient.

The **skeletal system** forms the patient frame. And is supported further by the **muscular system**. Considering range of motion, assessing limitations, such as replacement or fusion, highlights where an injury may occur. An elderly patient's range of motion may be limited due to stiff joints and would require slow movements. Compared to a young child whose joints are more flexible.

While transferring the patient, pulling on or moving limbs, or not ensuring that the bed linen is not folded may affect the **integumentary system**. Shearing forces, could lead to pressure injuries later on. See Figure 1.

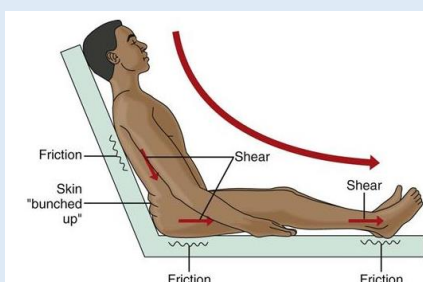


Figure 1

The **nervous system** could in many ways, during positioning, be injured. Compression of the nerve could occur when a nerve pushes up against a table accessory. Or hyper extension of the neck could pull on the nerves, causing damage to the brachial plexus.

Simultaneously, while the nervous system is compressed, the **circulatory system** may be compromised. The circulatory system may be

impacted by three actions. Firstly, the position required for surgery itself, but also the anaesthetic drugs effects on the body and the physiological status of the patient, i.e. blood loss during surgery.

Prone positioning, which allows for spine surgery exposure, puts tremendous strain on the **respiratory system**. This in turns puts strain on the circulatory system. Here we start can once again see the interdependency of the systems to each other.



Let us quickly discuss a Type 1 diabetic patient who is coming for surgery. With this patient we need to consider how the **metabolic system** may impact on both circulatory and integumentary systems. The diabetic patient's circulation may have been compromised by pressure on their heel during surgery. As they already have circulatory problems, it is exacerbated by the surgery and prolonged pressure on the heel. Post operatively the patient develops a pressure sore and their skin integrity is compromised.

Before the start of surgery, ensure you have sufficient tools to protect all the individual body systems of your patient. On receipt of the patient into the theatre, your risk assessment should have identified patient risks related to all the systems. During your "surgical pause" or "Time-out" procedure you could discuss any risks that could affect the surgical outcome. Finally, while positioning, and importantly when realigning the patient after the procedure, care should be taken to protect and evaluate joints, nerves, circulation, and any other body system that may be impacted by the surgery.

By holistically assessing your patient and considering all physical factors that may be impacted during surgical positioning, you are actively preventing potential injury to the patient.

References

- <https://radiologykey.com/introduction-to-anatomy-positioning-and-pathology/>
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