Developmental Positioning of The Preterm Infant

Faith Irving, ARNP-BC & Jasmine Torres, RN-BSN Holtz Children Hospital at Jackson Neonatal Intensive Care Unit

Background

- The NICU environment contributes to neuromotor abnormalities such as tone and posture.
- A developmental approach to intensive care has been advocated due to the recognized negative impact of the intensive care environment on the premature infant.
- This approach is designed to optimize development by reducing and structuring the environment to support physiological, motor, and behavioral state systems.
- Developmentally supportive care includes how the premature infant should be handled to enhance physiological stability and motor control while minimizing stress; and providing developmental positional strategies.

Objectives

- To understand the importance of positioning the preterm infant.
- To understand the importance of implementing developing supportive strategies into clinical practice to prevent neuromuscular and postural abnormalities.

Neuromotor Development

- Premature infant have floppy muscles and lacks the ability to move against gravity and to hold itself in position or carry out smooth movements.
- Immaturity of their skeletal structure contributes to postural and skeletal malalignment.

Effects of Improper Positioning

- Being nursed on a flat surface without support; causes misshapen head or flattened posture leading to problems described as "W" arms and "frog legs" or "M" in lower extremities.
- Premature infants with "W" arms have difficulty getting their fingers and hands to their mouth for sucking & hand clapping, or touching their mouth & head.
- Premature infants with "frog legs" or "M" lower extremities have hips that are not positioned well and they fall out to the side.
- They may have problems with crawling, standing or walking later in life and dislocated hips.
- Due to inability to control their head preterm infants head tends to fall to the right or left causing shortening of neck muscles and preference in turning its head to the same side.
- A poorly positioned neck can also affect breathing, swallowing and feeding.

Examples of Improper Positioning

- Scaphocephaly: asymmetrical distortion of the skull resulting in an abnormal head shape.
- Positional plagiocephaly (deformational plagiocephaly): flat deformation on the back or one side of the head caused by remaining in a supine position for prolonged periods of time.
- Scaphocephaly: a long and narrow head caused by remaining in a prone or side-lying position for prolonged periods of time.
- Deformational brachycephaly: central flattening and widening of the head caused by remaining in a supine position for prolonged periods of time.

Torticollis or "Wry neck": asymmetrical shortening of the sternocleidomastoid muscle.

Developmental Supportive Interventions

The Goals of Supportive Interventions Include:

- To reduce the abrupt movements that increases stress in the preterm infant.
- To facilitate age-specific postures and movements.
- To decrease the musculoskeletal sequelae associated with improper positioning of these infants.

Supine Position:

- Shoulders should be rounded forward and supported off the mattress.
- Legs should be bent and together with boundaries for foot support.
- Head should be midline.
- Position should facilitate infants’ hands to face or mouth interactions.

Prone Position:

- Shoulders should be rounded forward, not sticking out.
- Legs should be flexed with boundaries for foot support.
- Hands are central and near the face/mouth.
- Back and neck should be supported in a “C” shape.
- Sides should be changed.

Supine Position:

- Shoulders should be rounded forward, not sticking out.
- Legs should be flexed with boundaries for foot support.
- Hands are central and near the face/mouth.
- Back and neck should be supported in a “C” shape.
- Sides should be changed.

Positioning Aids should be discontinued when the infant reaches 35 weeks post-conceptual age, or in a bassinet. The infant should be positioned on his or her back.

Long-term Effects of Improper Positioning

- Tummy Time: Initial of choice for mild to moderate plagiocephaly; keep flat spot free from external pressure and allows the growing brain to remold the deformity.
- Helmeting: a noninvasive therapy in which molding helmets work in conjunction with passive cranial growth to treat head deformity.
- Tubular Orthosis for Torticollis Collar: An orthotic device used for the treatment of torticollis when conservative treatment fails used to limit head tilt.

Benefits of Positioning

- Facilitate normal patterns of growth and development.
- Prevent muscle tightness and asymmetry.
- Decrease unnecessary energy expenditure and stress.
- Provide sense of security and boundaries for individualized containment.
- Enhance infant self-calming behaviors and aid in infant organizational ability.
- Improve head shaping and decrease cosmetic deformity.
- Provide sensory exploration of self and environment.

Treatment

- Repositioning: Initial of choice for mild to moderate plagiocephaly; keep flat spot free from external pressure and allows the growing brain to remold the deformity.
- Helmeting: a noninvasive therapy in which molding helmets work in conjunction with passive cranial growth to treat head deformity.
- Tubular Orthosis for Torticollis Collar: An orthotic device used for the treatment of torticollis when conservative treatment fails used to limit head tilt.