



ORTHOPEDIC SURGERIES

MEDICAL FOCUS

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This issue of DIRECTIONS includes two articles about arthrogryposis, an orthopedic condition that often requires surgical intervention. A number of diagnoses may require orthopedic surgeries, including cerebral palsy. In cerebral palsy, the influence of increased muscle tone on growing bones can lead to orthopedic changes in various areas of the body.

TENDON LENGTHENING

Tendon lengthenings or releases are performed to increase range of motion in a specific muscle. Procedures are commonly done at the hamstrings, hip adductors and the Achilles tendon. These procedures may be done in combination with tone management strategies and other orthopedic surgeries.

OSTEOTOMIES

An osteotomy is a surgical procedure during which a bone is cut to shorten, lengthen or change its alignment.

VDRO: A common osteotomy performed in children with abnormal muscle tone is a varus derotation osteotomy (VDRO), sometimes called a femoral osteotomy. As small children begin to bear weight, the hip socket (acetabulum) begins to form around the head of the femur. In children who do not bear weight, this socket remains rather shallow. Increased muscle tone in the hip adductors and internal rotators in conjunction with less desirable postures (such as the notorious “W” sit

position) lead to rotation of the femur itself as it grows.

As a result, the ball is rotated out of the socket and the hip subluxes or dislocates. In a VDRO, the femur is cut in one or more places and realigned, so the ball of the femur fits into the hip socket.

VDROs are often performed

on both sides (bilateral VDRO) and hardware is typically placed in the bone during surgery. Tendon lengthening (i.e. adductors) is commonly done in conjunction with this surgery. A leg length discrepancy is common after this surgery as the position of the femur in relation to the hip has changed.

THE SHAPE OF THE TRUNK WILL CHANGE DRAMATICALLY AFTER SURGERY AND THE CLIENT MAY SIT TALLER IN THE SEATING SYSTEM.

Pelvic osteotomy: This surgery is designed to create a better shaped socket or cup to hold the ball of the femur. This surgery may be done in combination with a femoral osteotomy. Specific procedures include Pemberton, Ganz periacetabular and Chiari osteotomies.

After these procedures, it is common to use casting (i.e. spica cast), bracing and/or other positioning to keep the hips abducted during healing. The client may require a temporary seating system to accommodate this position, as well as a reclining wheelchair if hip flexion is limited post-surgery.

FUSIONS

A fusion permanently connects adjacent bones to maintain alignment. This is most commonly done at the spine to correct spinal curvatures, but fusions can occur at other joints, such as the ankle or wrist, to reduce significant contracture and stabilize a joint.

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(CONTINUED ON PAGE 38)



ORTHOPEDIC SURGERIES
(CONTINUED FROM PAGE 36)

Spinal fusion is a major surgery and is typically delayed as long as possible to allow for maximum growth of the trunk. Many surgeons will only recommend this surgery if a curvature exceeds a certain limit, such as 50 degrees. Some clients are not a candidate for this surgery due to medical fragility. The surgery may be performed posteriorly (over the back), anteriorly (through the abdomen) or both. Part or all of the vertebrae are fused and often attached to the pelvis. Rods and wires are used to correct the curve(s) as much as possible and are attached to the vertebrae. The bones are then prepared, so bony fusion occurs over time.

The shape of the trunk will change dramatically after surgery, and the client

may sit taller in the seating system. Many clients may have used a molded back before surgery to support and accommodate spinal curvatures. This back will no longer match the client's body contours after surgery. Hip flexion is typically limited after surgery to minimize forces between the pelvis and spine and so the seat-to-back angle may need to be opened or a recliner used during the post-operative time period.

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