Open Coxofemoral Reduction and Stabilization – Toggle Rod/Pin Stabilization
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Patient positioning and preparation:
Place the patient in lateral recumbency with the affected limb up. Clip the limb from the tarsus to the dorsal and ventral midline. Aseptically prepare all clipped skin. Wrap the unclipped distal limb with a water-proof material (drape, foil, etc.) and then cover it with vetwrap. Drape the entire limb in the sterile field to allow for manipulation during the procedure.

Surgical approach:
Standard craniolateral approach to the hip:
- Make an incision through the skin and subcutaneous tissues from just cranial to the mid-femur to the greater trochanter, then that same distance from the greater trochanter dorsally.
- Incise the superficial leaf of the fascia lata at the cranial border of the biceps femoris muscle.
- Incise the deep leaf of fascia lata distally and between the tensor fascia lata muscle and superficial gluteal muscle proximally.
- Use blunt dissection to expose the joint capsule, middle and deep gluteal muscles, and vastus lateralis muscle.
- A deep gluteal tenotomy is usually not needed as the hip is already luxated.

Specific technique:
- Externally rotate the femur to expose the femoral head.
- Remove any residual ligament or clot from the acetabulum and femoral head.
- If necessary, incise the joint capsule so that acetabulum can be visualized and the hip can be reduced.
- Evaluate the femoral head and acetabulum for signs of significant damage.
- Drill a hole (typically 2.5 mm) starting at the third trochanter, through the center of the femoral neck, and exiting through the fovea capitis of the femoral head.
  - Drill guide – Place the C-shaped drill guide such that the pointed tip is in the fovea capitis of the femoral head and the drill sleeve is pressed against the third trochanter.
  - No drill guide – If no drill guide is available, the bone tunnel can be created freehand by starting either at the third trochanter or (if positioning allows) at the fovea capitis.
- Drill a hole in the center of the acetabular fossa (usually 3.5 mm).
- Place one or two strands of the desired artificial ligament suture (nylon leader line, polyester, fiberwire) through the eye of a commercially available toggle rod or homemade toggle pin.
- Place the toggle through the acetabular hole.
- Alternate pulling on the two ends of the artificial ligament suture material to rotate the toggle until it sits flat against the medial aspect of the acetabular wall. Have a non-sterile assistant confirm appropriate placement via rectal palpation.
- Pass the suture material through the femoral head and neck bone tunnel using a hook or a bent Kirshner wire.
- Reduce the hip, ensuring all joint capsule and other soft tissues are cleared from the joint.
- Place the suture material through another toggle or a polypropylene button, tension the suture slightly, and tie the strands together. Alternatively, one strand can be passed through a hole drilled craniocaudally through the femoral cortex and the two ends can be tensioned and tied.
- Take care to not overtighten the suture. Hold the limb in a natural standing angle when tying the suture.
- Place the hip through a range of motion to ensure it cannot be luxated.

Surgical closure:
- Close the joint capsule over the femoral head with horizontal mattress sutures.
- If there is insufficient joint capsule remaining, the hip can be stabilized with a prosthetic capsule technique:
○ Place bone anchors or bone screws with spiked or flat washers in the dorsal acetabular rim 0.5-1 cm from the acetabular rim edge.
○ If there is a fair amount of joint capsule available, suture can be passed through/around these anchor points and through the remaining joint capsule.
○ If little or no joint capsule remains, a craniocaudal bone tunnel is drilled in the femoral neck and suture is placed between this tunnel and the acetabular rim anchor points.
- Close the tensor fascia lata muscle/fascia lata to the biceps femoris muscle.
- Close the subcutaneous tissues and skin routinely.

Potential complications:
- Reluxation
- Osteoarthritis
- Implant loosening
- Infection
- Reduced function and/or range of motion

References