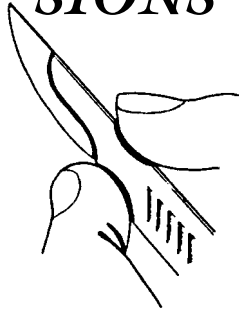


# DIMENSIONS IN SURGERY



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## Surgical Case Report: **Excision of the Femoral Head and Neck**

### EMPHASIS:

In veterinary patients, there are many painful conditions of the hip joint: Degenerative joint disease, avascular necrosis, and fractures involving the joint are all very frequently seen. If primary repair of the fracture is possible, or if the patient is large enough to receive a total hip joint replacement, then these options are preferred.

For smaller patients (i.e. less than 40 pounds), a femoral head and neck excision (femoral head and neck ostectomy, or excision arthroplasty) is recommended. By eliminating bone-to-bone contact, a fibrous pseudoarthrosis will form and the majority of the pain will be alleviated.

This is commonly considered to be an easy and foolproof procedure, but as with all surgeries, proper technique is vital. Errors in technique can produce a poor outcome. In this paper we will describe the technique for femoral head and neck ostectomy.

**AXIOM:** *During the preoperative consultation, clients will often ask, "With no hip joint, how does the leg stay on?" Reassure them that, since the joint capsule and all the associated musculature is preserved, the attachment and stability of the limb is excellent.*

**AXIOM:** *Warn the client that, since the hip joint will no longer be present, the patient may have a slightly different gait or stride.*

### PREOPERATIVE CARE

1. Physical examination.
2. Two-view radiographs of the pelvis and stifles.

**AXIOM:** *Be sure that all other orthopedic abnormalities that could produce lameness (i.e. a concurrent patellar luxation) have been ruled out.*

**AXIOM:** *The mere presence of radiographic changes at the hip is not sufficient justification for surgery. Only if the patient is clinically affected, showing lameness and hip pain on physical examination, is surgery indicated.*

3. Minimum data base: CBC, serum chemistry profile and urinalysis.

### PREOPERATIVE CARE:

1. Indwelling cephalic catheter.
2. Intravenous anesthetic induction protocol (Ketamine/Valium, Propofol, etc.)
3. Endotracheal intubation and inflate cuff.
4. Isoflurane inhalant anesthesia to effect.

5. Lead II ECG and pulse oximetry monitoring during prep and surgery.

6. Clip and prepare the hemipelvis.

**AXIOM:** *Some surgeons prefer to prep the entire limb, and then place an orthopedic stockinette, to facilitate limb manipulation intraoperatively. We prefer to "drape in" just the surgical site, and manipulate the leg through the drape.*

7. Cefalexin 20 mg/kg IV immediately preoperatively.

### SURGICAL TECHNIQUE

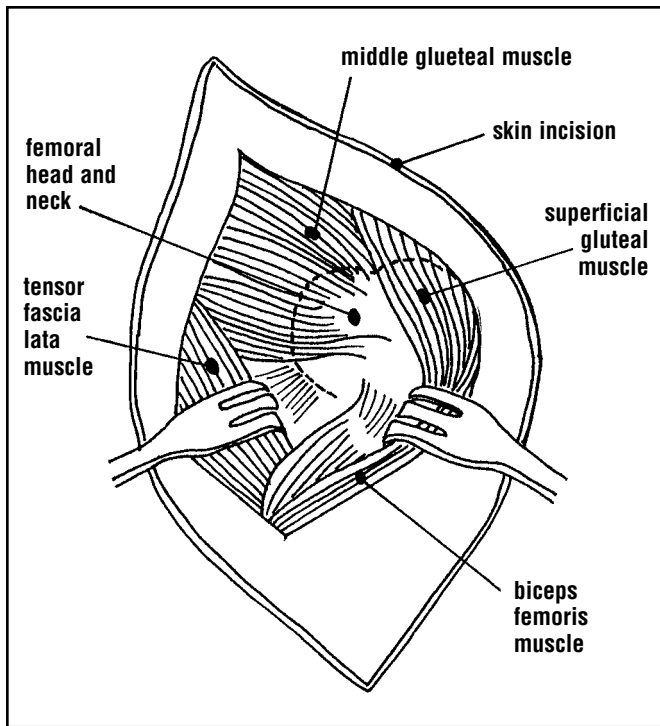
**AXIOM:** *Simultaneous bilateral FHNE can be performed in smaller patients, but we prefer to stage the surgeries 4-8 weeks apart, waiting until the patient is bearing weight adequately on the first leg before operating on the second.*

1. Make a gently curved incision, starting proximal and cranial to the trochanter, paralleling the cranial edge of the femur to just below the femoral neck.
2. Incise the fascia lata and insertion of the tensor fascia lata muscle along the cranial border of the biceps, continuing proximally to

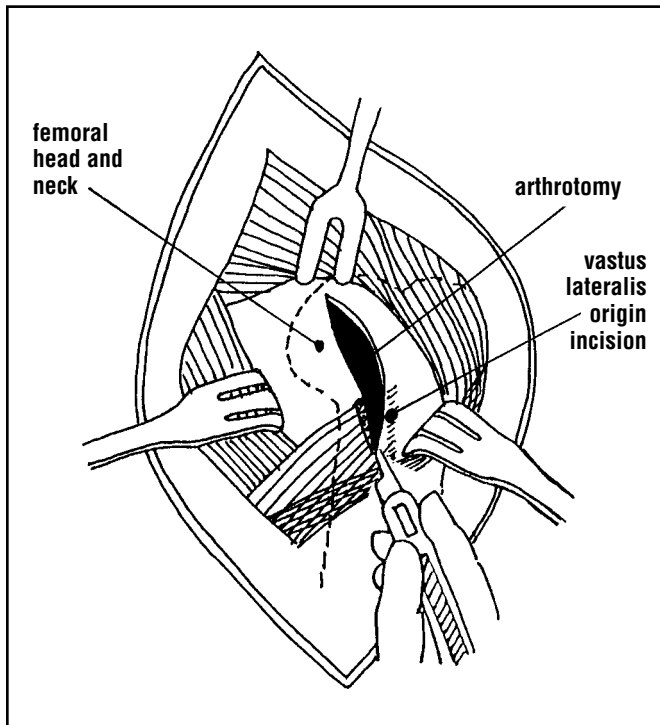
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**Figure One:** This schematic drawing depicts a lateral approach to the left femoral head. The fascia lata is incised along the cranial edge of the biceps femoris muscle. The incision in the fascia lata is continued dorsally separating the tensor fascia lata muscle and the superficial gluteal muscle.



**Figure Two:** This schematic drawing depicts an arthrotomy incision that extends ventrally through the cranial portion of the origin of the vastus lateralis muscle.

separate the tensor muscle and superficial gluteal muscle (See Figure 1)

3. Palpate the femoral head, ventral and deep to the insertion of the deep gluteal muscle.

**AXIOM:** Have an assistant rotate the leg externally to facilitate palpation of the head.

4. A periosteal elevator can be used to bluntly separate the tendon of insertion of the deep gluteal tendon from the underlying joint capsule.
5. Sharply incise the joint capsule, in a line parallel to the deep gluteal tendon.
6. Continue this incision into the insertion of the vastus lateralis, elevating the cranialmost part of its origin to help expose the femoral neck (See Figure 2).
7. Externally rotate the leg, to luxate the hip.
8. With a curved scissors, sever the ligament of the femoral head.

**AXIOM:** If this surgery is being done to treat a femoral capital fracture, leave the fracture fragment in the acetabulum until the excision has been performed, and then it can be more easily removed.

9. Using a periosteal elevator, elevate the capsule and vastus lateralis origin enough to fully expose the distalmost extent of the femoral neck, with the leg held in 90 degrees external rotation.

### DANGER:

The most common error in this procedure is a failure to remove the entire femoral neck. The sharp remnant of the neck then contacts the pelvis during ambulation, causing pain. This error can be easily avoided by creating sufficient exposure of the femoral neck (See Figure 3).

10. Place a hemostat or other blunt probe at the proximal edge of the femoral neck.

**AXIOM:** By placing this hemostat and using it as a guide, you will ensure that the maximum portion of the femoral neck is removed proximally, while not inadvertently cutting into the trochanter itself. This area often has substantial proliferative joint capsule, especially in cases of advanced DJD, and placing a hemostat provides a reliable landmark to aim for.

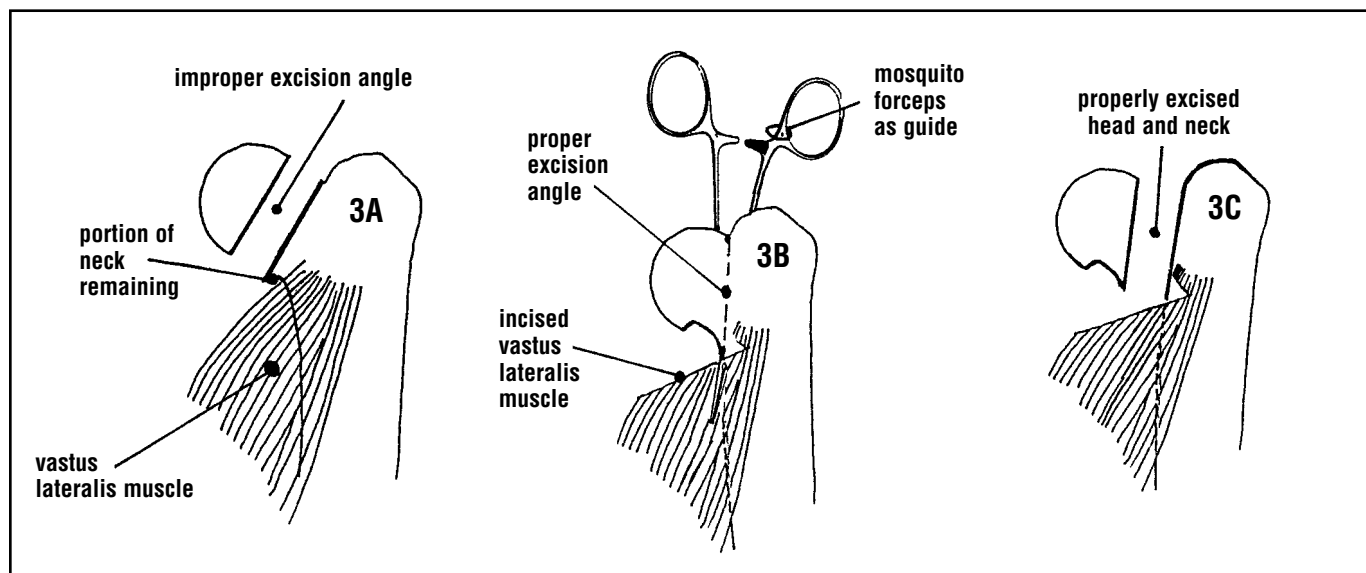
11. With a nitrogen driven saw, cut the femoral neck, along a line extending from the distalmost edge of the femoral neck, towards the hemostat which has been placed proximal to the neck (See Figure 3).

**AXIOM:** Although an osteotome or Gigli wire (or even a rongeur in very small patients) could be used to perform the excision, we find that the smoothest bone surface is created when an oscillating saw is used. This also minimizes the risk of splintering the bone or traumatizing other structures.

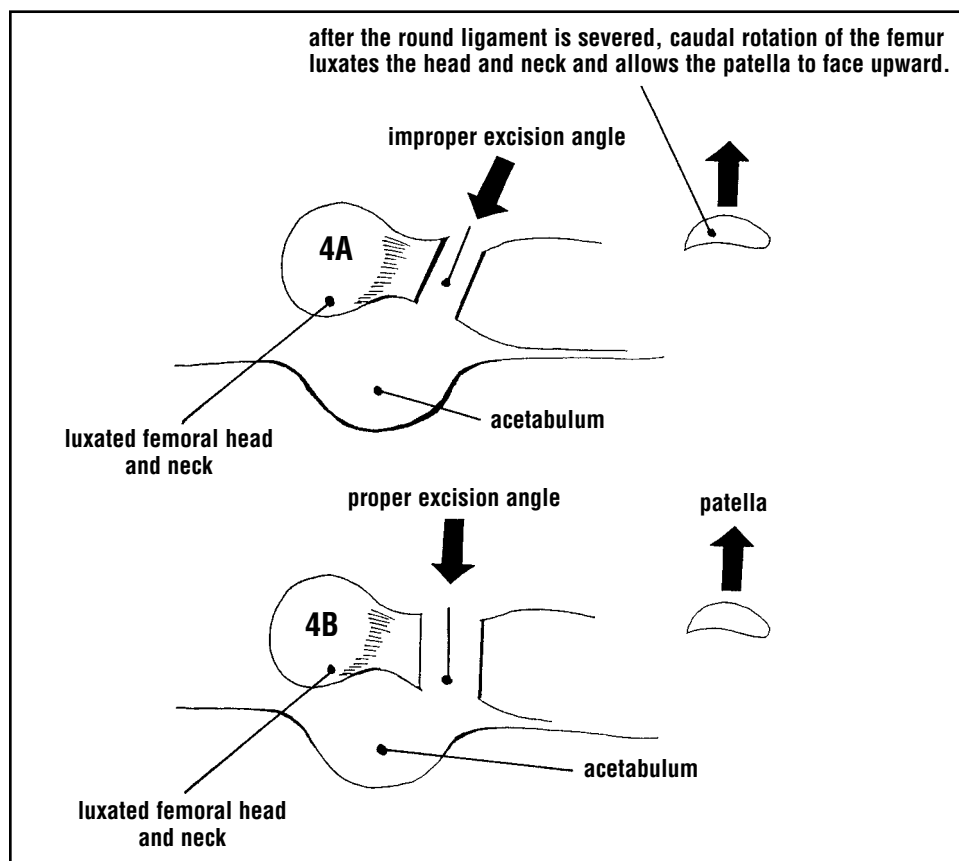
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**Figure Three:** This schematic drawing depicts: **3A)** In this preparation the surgeon failed to incise and reflect the origin of the vastus lateralis muscle. The resultant excision angle is too oblique leaving a piece of the femoral neck in place. This bony protruberance can contact the acetabulum causing pain. **3B)** The surgeon has properly incised the origin of the vastus lateralis and is using mosquito forceps as a guide for the perfect vertical excision removing the femoral head and neck completely. **3C)** This view shows the completed vertical excision removing the head and neck.



**Figure Four:** This schematic drawing depicts: **4A)** The improper angle of this excision will leave the caudal aspect of the femoral neck still in place. This bony protruberance creates contact with the pelvis, resulting in pain and poor weight bearing. **4B)** This is the proper angle for the excision removing the head and neck completely.

**AXIOM:** With the leg held in 90 degrees rotation, the saw blade should be perpendicular to the operating table. A common error is to inadvertently cut at a slight angle (See Figure 4) and thus fail to remove the caudal aspect of the femoral neck. This will create bony contact between the femur and the pelvis, resulting in pain and poor weight bearing.

12. Palpate the osteotomy site, to make sure that a smooth bone surface has been created. If necessary, smooth out any rough edges using a high-speed drill, or the saw.
13. Flush the site with isotonic solution.
14. Continuous closure of the tensor fascia lata incision with 3-0 monofilament absorbable material.
15. Routine subcutaneous and skin closure.

### POSTOPERATIVE CARE:

1. Pain management using oral, injectable, or transdermal analgesics.

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2. Suture removal two weeks postoperatively.
3. Limit the activity to short leash walks only for the first two weeks. After that time, let the patient be active, since exercise will help to maintain range of motion and improve the weight bearing.

**AXIOM:** *Reassure the client that the patient is not at risk of damaging the surgical site due to activity. Therefore, walking or swimming should be encouraged.*

### **PROGNOSIS:**

Excellent, with the great majority of these patients returning to normal or virtually normal weight bearing.

### **AUTHOR'S NOTE**

If you have any questions concerning this paper, additional references, surgical supplies or sources of products mentioned or used in this protocol, please FAX us at 1-310-479-8976. We will answer your questions promptly.

### *Coming Attractions*

Hiatal hernia is a rare cause of chronic vomiting in the dog. Two types of hiatal hernias are reported in humans:

1. The paraesophageal hiatal hernia in which the gastric fundus passes through the esophageal hiatus (this hernia is very rare in dogs).
2. The sliding hiatal hernia in which the abdominal portion of the esophagus, along with the cardia and fundus of the stomach move forward into the thorax.

Next month, we shall present our surgical protocol for sliding hiatal herniorrhaphy.

*See you then!*

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