POSTERIOR EXPOSURE OF THE HIP JOINT

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So much attention has been focused in recent years upon the anterior approach to the hip joint that the advantages of the posterior approach have been ignored almost entirely and many surgeons have no experience of it. The descriptions given in some standard text-books are incomplete or even inaccurate. Moreover, the impression is prevalent that haemorrhage during the operation may be troublesome. This view cannot possibly be entertained by anyone who is familiar with the procedure. A few small vessels may have to be clamped, but it is seldom necessary to apply a ligature.

To anyone who is not well acquainted with the anatomy of the buttock the description of the operation may sound complicated; but in reality the anatomical simplicity is most striking. The earliest account of a posterior exposure is that of von Langenbeck (1874). The patient was laid upon the sound side with the affected hip flexed 45 degrees, a position in which the axis of the thigh corresponds approximately with a line joining the greater trochanter with the posterior superior iliac spine. The incision began in this line, three finger-breadths proximal to the tip of the greater trochanter, and extended about three finger-breadths down the line of the thigh (Fig. 1). While the wound was retracted the lower limb was rotated outwards and inwards to facilitate detachment of the muscles and capsule from the trochanter and neck of the femur. The ligamentum teres was cut or torn across, and the head of the femur was dislocated from the acetabulum.

The Langenbeck approach was modified by Kocher (1907). The first edition of Kocher’s “Operative Surgery” was published in 1892, but the earliest description of his approach to the hip joint that I have been able to find is in an article by his pupil Dumont, published with Kocher’s permission in 1887. All Kocher’s incisions served the fundamental principle—primum non nocere; they were designed to pass between adjacent nerve territories. In the hip joint the tissues were separated between the territories of the superior and inferior gluteal nerves—between the gluteus medius, gluteus minimus and tensor fasciae latae on the one hand and gluteus maximus on the other. The skin incision was angled. Beginning at the upper anterior border of the greater trochanter, its lower or vertical limb extended distally along the line of the shaft of the femur; the upper limb passed obliquely backwards towards the posterior superior spine along or near the upper border of the gluteus maximus.

Kocher’s work was translated into English by Stiles (1911); during the life-time of the translator, Kocher’s approach to the hip joint was widely employed in Great Britain but was never well known in the United States of America or in Canada. On the continent of Europe it is still first in favour (Klapp 1923). During the last thirty-five years a modification of Kocher’s posterior approach has been used by the present writer as a routine procedure; in the belief that the exposure has outstanding advantages, he has therefore undertaken the following detailed description.
The patient is placed upon the sound side in the lateral position; "kidney supports" ensure that the position is maintained securely throughout the operation. The skin incision is shown in Figure 2. Only two landmarks are necessary—the posterior superior spine of the ilium and the upper anterior angle of the greater trochanter (Fig. 3). The gluteus maximus is attached to the crest of the ilium for about two inches in front of the posterior superior spine. The upper part of the skin incision outlines the upper border of the muscle and should be arched slightly forwards from a point two and a half inches in front of the posterior superior spine to the upper anterior border of the greater trochanter; the lower part extends distally along the line of the thigh for six or seven inches. The first incision divides skin and subcutaneous fat; small vessels may require clamping. The flaps are reflected backwards and forwards for a short distance to display clearly the gluteo-femoral fascia.

The next step (Fig. 4) is to incise the deep fascia vertically in the lower half of the incision. The posterior flap is raised, defining the upper border of the gluteus maximus. The gluteal fascia is divided along this border. The whole mass formed by gluteus maximus and its aponeurotic prolongation into the fascia lata is retracted backwards. Separation of its deep aspect is made easy by the large bursa which lies between the tendon of gluteus maximus and the upper posterior part of the femur. It is not always necessary to reflect the muscle as high as the crest of the ilium. We now have a dissecting room view of the gluteal region: the muscles attached to the greater trochanter—gluteus medius, gluteus minimus, piriformis, obturator internus and gemelli, obturator externus and quadratus femoris—are all clearly defined.

The next step is to detach these muscles from the greater trochanter. Those supplied by the superior gluteal nerve (gluteus medius and gluteus minimus) are retracted forwards, and the others backwards. The posterior border of gluteus medius is easily demarcated from the piriformis by blunt dissection (Fig. 5). The gluteus medius is followed down to its attachment to the outer side of the greater trochanter and is detached; the insertion is
The short muscles have been detached from the great trochanter and retracted to expose the capsule of the hip joint which is incised and reflected anteriorly by detaching it from the margin of the acetabulum and base of the neck of the femur (Fig. 6). The head of the femur is dislocated by flexion, adduction and external rotation of the limb (Fig. 7).
tendinous and there is little bleeding. By rotating the thigh outwards it is easy to detach the insertion of gluteus minimus from the anterior surface of the greater trochanter in a sheet continuous with the attachment of gluteus medius. Similarly, the insertion of piriformis to the tip of the greater trochanter is divided; if necessary the insertion of the external rotators is also severed. Detachment of the quadratus femoris is seldom necessary. When the muscle insertions have been detached and retracted all aspects of the capsule of the joint are exposed in the bottom of the wound.

The joint capsule is incised superiorly in the line of the neck of the femur from its upper attachment at the rim of the acetabulum to its distal attachment at the base of the neck (Fig. 6). By rotating the limb it is a simple matter to detach the whole capsule from the anterior rim of the acetabulum and from the anterior inter-trochanteric line. The posterior part of the capsule may also be incised, but this is not essential.

The final step in the exposure is to dislocate the head of the femur from the acetabulum by flexing the thigh and rotating it laterally (Fig. 7). Occasionally it may be necessary to chisel osteophytes from the acetabular rim in order to permit disengagement of the head of the bone. The ligamentum teres is usually ruptured. The manoeuvre of dislocation is performed by an assistant whose duty it is to control the position of the limb so that the head of the femur and cavity of the acetabulum are easily accessible.

**COMMENT**

The advantages of the posterior approach are that it is rapid, almost bloodless and attended by little shock. The power of the muscles is unimpaired, for they are not detached from an extensive iliac origin as in the Sprengel "Beckenrand" approach (1897). The gluteus maximus and tensor fasciae latae, which are so important for stability of the hip, are not weakened and the operation causes no instability.

The original purpose of this exposure, as used by Langenbeck, was to secure drainage in suppurative arthritis. In Kocher's hands it was employed to give full and free access to the acetabulum in the surgical treatment of tuberculosis of the hip joint. In modern surgery it has a still wider field of usefulness. In posterior fracture-dislocations of the hip joint, direct exposure of the site of the injury is gained. When operation is required to secure replacement of a slipped upper femoral epiphysis the posterior part of the joint with the displaced epiphysis is exposed readily. The approach is ideal for exposure of the sciatic nerve in the buttock, and for dealing with injuries of the gluteal arteries. In arthrodesis of the hip joint the anterior flap may be retracted to allow access to the ilium which may be required for use as a graft, and the implantation of the graft is displayed with the least possible trauma. In cup-arthroplasty of the hip joint the simplicity and efficacy of the method give the most useful application of all.

It is not too much to say that as a routine procedure for exposure of the hip joint the posterior approach is *facile princeps*.

**REFERENCES**


Sprengel, O. (1897): Beiträge zur wissenschaftlichen Medicin. Festschrift... Versammlung deutscher Naturforscher und Aerzte... Braunschweig, 51.