



THE LIGAMENTUM TERES. By J. B. SUTTON, *Demonstrator of Anatomy, Middlesex Hospital.* (PLATE VIII.)

THE *round ligament* of the coxo-femoral articulation has long been an anatomical puzzle, consequently many diverse notions exist concerning it. Some anatomists ascribe to this hollow band of fibrous tissue very important functions in the mechanism of the hip-joint; others deprive it of all glory, simply assigning to it the menial duty of conveying blood-vessels to the head of the femur.

Certain authors content themselves with a brief description of its attachments; others give elaborate and detailed accounts, extending over several pages, of its anatomy and supposed function. My object in the present communication is to show that this singular ligament is nothing more than the tendon of the pectineus muscle, separated from it in consequence of skeletal modifications.

Careful attention to the mode of development of the ligamentous bonds of diarthrodial articulations has led me to formulate two rules with regard to them—viz.,

1. Many ligaments arise as thickenings in a capsule, due to prolonged tension in definite directions, the capsular ligament itself being merely the perichondrium passing from one cartilage to another.

In this manner distinct bands of tissue form on the sides, and other aspects of joints which afterwards differentiate into distinct ligaments.

2. Many ligaments are the *tendons of muscles* which were originally in relation with the joint; but the parent muscle has either formed new attachments or become obsolete, whilst its tendon remains as a passive element in the articulation.

To this group belongs the *lig. teres*, a structure fairly constant throughout Mammalia, though absent in the elephant, seal, &c. (sometimes wanting in man, says Meckel).

It is almost universal among birds; indeed, among these highly specialised and beautiful creatures it reaches a high standard of development.

The attachments and relations of the ligament in man are so well known that description is needless here, merely noting that in the foetus at birth it is very strong and dense.

In the horse one gets the first glimpse of its true nature.

In this animal the ligament consists of two bands—one hidden within the joint, termed the cotyloid portion; the other passes out of the cavity to join the linea alba at its junction with the pubes, hence termed the pubio femoral portion. From this band the pectineus takes part of its origin.

These facts led me to investigate the ligament in the ostrich, holding as it does a corresponding position among birds as the horse does among mammals, for cursorial powers.

In the ostrich (*Struthio camelus*) the ligamentum teres has a true tendinous structure. It is dense and strong, contains a large quantity of elastic tissue, and has its individual fasciculi arranged regularly, corresponding to the arrangement encountered in the rounded tendons of limb muscles. In my specimen the ligament was three-fifths of an inch in thickness.

On making a section horizontally through the acetabulum, so as to include the ambiens muscle at its origin, and the ligament (see fig. 1), it may be clearly seen that they are continuous with one another across the cotyloid cavity by fibrous tissue.

The ambiens is a muscle of considerable interest, partly on account of its variability, but also on account of its curious course and relations.

It is fusiform, and arises from the tip of the short, anteriorly directed spine, which is situated above the anterior border of the acetabulum, and runs along the inner border of the thigh to the knee, where it is covered by the sartorius. Here it degenerates into a round and polished tendon, crossing in front of the knee, running in the substance of the fascia of the extensor tendon, immediately in front of the patella, to the outer side, where it joins the fibres of origin of the *flexor perforatus digitorum*.

Remembering that birds and mammals had a common origin, one turned for farther information to that curious lizard, *Sphenodon*. In this remarkable creature the hip-joint is of simple character, and the muscle corresponding to the ambiens of birds and the pectineus of man arises by two heads—one from the lateral spine of the pubes; the other is reflected from the muscle to the

inside of the capsule, so as to gain an attachment to the head of the femur; thus holding a corresponding relation to the joint as does the ligamentum teres of man and birds (see fig. 2).

The varying relations of muscle and ligament may be arranged in a tabular form, thus :—

1. *Sphenodon*.—Tendon of ambiens (pectineus) passes inside the capsule to the head of femur.
2. *Struthio*.—Lig. teres continuous with ambiens (pect.) across the cotyloid cavity by fibrous tissue.
3. *Equus*.—Lig. teres in two parts—one continuous with pectineus outside the joint.
4. *Homo*.—Lig. teres a fibrous band, carrying blood-vessels to the head of femur.

Besides the direct evidence, other facts may be mentioned respecting the ambiens to show that it is a muscle of great variability.

In comparing it with pectineus, it would seem that the crural portion alone persists in mammals.

Its crural and lower parts in birds; but all parts, upper, crural, and lower—luxuriate in full perfection among lizards and crocodiles.

For more detailed accounts of this peculiar muscle, the reader must refer to papers by Garrod, published in the *Proc. of Zoolog. Society*, 1873, "On certain Muscles of the Thigh in Birds," and an extremely valuable paper by Dr. Hans Gadow, in *Journal of Anatomy and Physiology* for July 1882.