

## CYSTS OF THE ILIO-PSOAS BURSA

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THE ilio-psyas bursa is situated beneath the musculo-tendinous portion of the ilio-psyas muscle, where it bends over the edge of the pelvis and the capsule of the hip-joint. It is said to be the largest synovial bursa normally present in the body. Its anatomical relations have been carefully studied by Durville, Lund, and others, though these writers differ somewhat as to its extent. Durville states that its upper limit is not above Poupart's ligament, whereas Lund states that, in a great number of cases, it extends upwards into the iliac fossa. Both writers are agreed that its inferior border is in the neighborhood of the lesser trochanter of the femur, and that its lateral extent is approximately from the ileo-pectineal eminence medially to the anterior inferior spine of the ileum, laterally.

The portion of the capsule of the hip-joint lying between the ilio-femoral ligament (Y ligament) and the pubo-capsular ligament is very thin. At this spot the bursa is in almost immediate relation with the synovial membrane of the hip-joint. In some cases the membrane separating them is imperfect and a communication is established between the bursa and the hip-joint. It would seem that such communication is not unusual, particularly in the adult of middle age or past. Perhaps as stated by Durville, trauma and friction tends to establish the communication.

Cysts, as well as inflammatory conditions of the ilio-psyas bursa, are probably of more common occurrence than the rather infrequent reports of them in the literature would seem to indicate. We have been able to find reports by only two American writers, Lund and Cullen. As far as we are able to determine, Joly first described cystic lesions of this bursa in 1847. Durville writing in 1895 published the first comprehensive article. This paper, together with the work of Zuelzer, are the classical papers on the subject. We have been able to collect 32 cases from the literature; of these 9 were inflammatory (including tuberculous) lesions, and 23 were simple cystic tumors.

The purpose of this paper is to add a new case to the literature and to summarize the clinical data on affections of the ilio-psyas bursa.

*Clinical History.*—Mrs. W. H. S. was referred by Dr. Leslie Lingeman, of Noblesville, Indiana, for a tumor of the right groin.

The patient was sixty years of age, and had never been of rugged health. Her father, a brother, and a sister had died of tuberculosis. For the past six or seven years

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she had complained of aching pains in her limbs (including the hip-joint) and back. She also has had occasional spells of numbness and weakness in the legs which have caused her to fall to the floor.

She had noticed the tumor of the groin for the first time two months before the examination. There had been an entire absence of pain, disability or discomfort traceable to the tumor.

The patient was a tall, thin, rather anæmic-appearing woman. A general physical examination revealed nothing of importance. Temperature, normal. Blood-pressure, 180/90. Complement fixations for syphilis and tuberculosis were negative.

In the right groin was an ovoid tumor about the size of a hen's egg directly below the middle of Poupart's ligament, its long axis parallel to the ligament. It had a definite edge. Its contour was smooth and regular. The skin over it was unchanged in appearance. Over the internal aspect of the tumor could be seen the femoral artery, which was pushed forward by the mass. No fluctuation could be detected. The tumor did not change in shape or position on any movement of the thigh, and apparently was firmly attached to the deep structures. There was no enlargement of the inguinal glands, and no detectable interference in the circulation of the leg. Deep palpation above Poupart's ligament revealed nothing abnormal. The patient walked without pain or limp. There was no bulging on coughing or straining. There was no pulsation. The hip-joint seemed normal in every respect. Examination of the spine was negative, as was pelvic examination. There was no evidence of bone disease in either the pelvic bones or vertebræ. Psoas abscess could certainly be excluded, likewise hernia, aneurism, or enlargement of lymphatic glands. The hip-joint was apparently normal. The tumor was regarded as probably neoplastic, though its smooth contour and the lack of attachment to the skin or interference with the circulation of the limb made it seem likely that the tumor was not malignant.

In light of our present knowledge, a probable diagnosis of cyst of the ilio-psoas bursa should certainly have been made.

*Operation.*—A skin incision was made below and parallel to Poupart's ligament directly over the most prominent part of the tumor. The fascia lata was easily stripped from the mass. The anterior crural nerve was carefully isolated and retracted medially. On clearing the surface of the tumor of overlying fat and areolar tissue, fluctuation was detectable. It was then perfectly evident that we were dealing with a cyst. It was aspirated and about 40 c.c. of a gelatinous material of about the consistency of thin apple jelly was withdrawn. The cyst was now opened and the remainder of its contents evacuated. The wall was tough and fibrous with an inner surface smooth and mucoid. The inner surface and contents were similar in every respect to those of ordinary ganglion.

The cyst wall was completely excised. It was found to be attached on its posterior surface over an area the size of a nickel to the pubic bone and capsule of the hip-joint. In freeing the wall, a secondary very small cyst, more deeply placed beneath the ilio-psoas tendon, was opened. Although the cysts did not communicate one with another, it was noted that there was a funnel-like dimple at the very bottom of the larger cyst, extending towards the smaller, which gave the idea that they might at one time have communicated.

The wound was closed in layers and without drainage. The patient made an uneventful recovery.

Microscopically the cyst wall was demonstrated to consist of a dense hyalinized fibrous tissue in which were sparse areas of round-cell infiltration. The free edge exhibited a condensation of fibrous tissue but no demonstrable lining mesothelium.

*General Discussion.*—We can find in the literature but two other cases of cyst of the ilio-psoas bursa in women, those of Heineke and Pisano. The other 21 cases all occurred in men.

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For all practical purposes we may divide enlargements of the ilio-psoas bursa on the basis of etiology into four classes: (1) pyogenic; (2) tuberculous; (3) syphilitic; and (4) simple chronic bursitis or cystic tumor.

Although this paper is concerned with the fourth type, it is not amiss to mention briefly the first three types.

Pyogenic affections of the bursa are either primary in the bursa or secondary to affections of the hip-joint. Gonorrhoeal and typhoid bursitis, as well as bursitis due to the ordinary pyogenic organisms, have been reported. The findings are the general and local symptoms of a pyogenic infection. The local swelling in the groin is an extremely tender fluctuant mass with all the classical findings of acute inflammation. Movement at the joint is extremely painful. Not infrequently there may be circulatory disturbances arising from the close proximity of the femoral vein to the inflamed bursa. Thrombosis of the vein has been described. Even in those cases where there is no communication between the bursa and the joint cavity, there is but a thin sheet of tissue between them, so that a pyogenic infection of the one is likely to involve the other. For this reason ilio-psoas bursitis demands prompt surgical attention.

Tuberculosis of the bursa may likewise be primary in the bursa or secondary to disease of the hip. As in tuberculous bursitis elsewhere, it may be either caseous in form or of the "rice-body" type.

Churchman, in a very complete and exhaustive article, has reviewed the subject of syphilitic disease of synovial bursæ. He tabulated 28 cases, none of them, however, of the ilio-psoas bursa. The syphilitic bursitis may take the form of a simple hygroma (this type is particularly seen in the secondary stage), or it may be of either a gummatous, ulcerative, or fungous form in the tertiary stage. The content of the simple hygroma form he describes as being "a yellowish, viscid, cloudy, coagulable fluid." This description applies to the type of material seen in the ordinary simple cyst of the ilio-psoas bursa.

Characteristics of syphilitic bursitis, he points out, are: (1) Previous history, or evidences of syphilis. (2) Slow and chronic course. (3) Absence of much pain or functional disability. (4) Symmetry of the involvement. (5) Efficiency of specific therapy.

Perhaps some of the so-called cases of simple cystic bursitis of unknown origin are syphilitic in nature.

The fourth condition, namely cystic tumor of the bursa, to which our case belongs, seems to be largely of traumatic origin. Many of the collected cases have a definite history of trauma. It is further to be noted that the condition is usually seen in men who are accustomed to doing heavy labor. However as pointed out by Durville, the exact relation between trauma and the condition is not so directly traced as in the chronic bursitis of the superficial bursæ, as for example, in housemaid's knee. It is conceivable that the constant friction from the overlying tendon traumatizes the bursa and leads to a simple synovitis with an excessive formation of synovial fluid. This leads to distention of the bursa which may extend in various directions.

Rheumatism (not acute) involving the hip-joint seems to be the other big etiological factor. In this group of cases, in which the disease of the hip-joint seems to be primary, seemingly without exception there exists (or has existed) a communication between the bursa and the hip-joint. Perhaps as W. Morratt Baker describes as occurring in the knee, the increased intra-articular pressure promotes the formation of diverticuli of the synovial sac of the joint, and tends to produce a communication between the joint cavity and the bursa even if such has not previously existed.

A slow insidious onset with vague pain and some functional disturbance is the usual history of simple cystic tumor of the ilio-psoas bursa. Occasionally, however, the presence of the tumor mass is the presenting and only symptom. At the onset the pain is usually of a vague and not very distressing character, and is more or less inconstant. It may be limited to the region of the thigh immediately below the inguinal ligament, or may irradiate down the medial surface of the thigh and into the knee. Pain in the knee-joint is not at all unusual. Apart from those cases in which the disease of the hip-joint is primary and the involvement of the bursa is secondary (in which the disturbed function is really due to the diseased hip), the functional disturbance at the onset is usually slight. It may consist of a subconscious limp. Occasionally it may be noted that there is a slight tendency to keep the limb in a position of slight flexion and outward rotation.

Sometimes it is a matter of years after the initial symptoms before the tumor mass appears. With the appearance of the tumor mass the symptoms previously noted usually become exaggerated. The pain is likely to be more severe. Functional disturbance is likely to be increased. Occasionally walking is seriously hampered. Durville mentions a feeling of weakness and uselessness of the limb.

Zuelzer and others have found that the typical attitude of the limb in these cases is one of slight flexion, abduction, and outward rotation. Pain is likely to be increased by the opposite movements.

Usually there is but little interference with mobility at the hip except that incurred by the presence of the tumor mass. Adduction and rotation may be somewhat limited.

The tumor mass is nearly without exception first noted in the upper part of Scarpa's triangle, immediately below the inguinal ligament at about its midpoint. Usually its long axis is more or less parallel to the tendon of the psoas, but it is frequently parallel to Poupart's ligament. It may or may not be fluctuant. Very often fluctuation is absent when the limb is extended, and detectable when it is flexed, as pointed out by Durville. Sometimes it is unobtainable in either flexion or extension as in our case. Occasionally as noted by Durville, the tumor is reducible either from its connection with the articular cavity or in the multilocular type of tumor with other more deeply placed loculi.

Rarely as in the case of Kummer, there is interference with the circulation of the limb from pressure on the femoral vein.

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Durville points out that the pain arising from the tumor is readily explained by the intimate relation of the anterior crural nerve to the tumor mass.

The tumor increases in size slowly and may reach the size of an infant's head. With the increased size, the mass may extend in various directions. Frequently it extends upwards into the iliac fossa, and it may, as in Cullen's occupy nearly one-half of the pelvis. In Charleston's case the tumor extended down to the knee. Cases have been recorded in which the mass extended posteriorly and presented at the lower margin of the gluteal fold. Occasionally the tumor is multilocular. In Schaeffer's case there were two presenting tumor masses, one in the groin, and the other at the edge of the gluteus maximus. In this case the fluid might be forced from one into the other by digital pressure. Such extreme cases are rare, however, and more usually the projecting tumor mass is single, more or less ovoid in shape, rather sharply outlined, and the size of a hen's egg or slightly larger.

The contents of the cyst is a thick viscous fluid, of high specific gravity, and citrin yellow in color. Occasionally detached cartilaginous bodies have been found in the contents as reported by Cullen and Delbet.

It bears reiteration that the tumor mass may be the only symptom, there being no pain or interference with mobility.

*Treatment.*—All writers on this subject are in agreement that the only satisfactory treatment is excision of the cyst. In the present case this was easily accomplished by an incision parallel and just below Poupart's ligament. Lund advises a vertical skin incision with separation of the anterior crural nerve from the femoral artery, and an opening into the cyst by pulling apart the fibres of the ilio-*ps*oas muscle. The approach of course will have to be modified to meet specific conditions.

*Collected Cases of Cystic Tumor of the Ilio-*ps*oas Bursa.*—(Not demonstratedly tuberculous or pyogenic.) Including the collected cases of Zuelzer and Durville.

CASE I.—VELPEAU in the thesis of Joly. In this case all reducible tumors had been eliminated in the differential diagnosis except cold abscess, an involvement of the articulation, and abscess of the sub-*ps*oas bursa. The good condition of the patient removed the first possibility. The absence of evident affection of the joint, together with the position and general characteristics led to the right diagnosis. Simple puncture was done. The tumor disappeared only to appear again.

CASE II.—CHASSAIGNAC. The patient, a laborer, complained of pain in the lumbar region and thigh which would disappear only to return again at irregular intervals. After four or five months a non-fluctuant tumor about the size of a hen's egg appeared underneath Poupart's ligament, between the anterior superior iliac spine and the inferior opening of the inguinal canal. On puncture a limpid yellow fluid resembling synovial fluid was withdrawn. The tumor immediately filled up again. The case was cured by the injection of equal parts water and iodine.

CASE III.—NATALIS GUILLOT in Maisonneuve. A man, seventy years of age, who had used crutches for twenty years. Movement at the hip was possible and even easy. The limb was shortened 4 cm. In the inguinal regional was a prominent tumor mass

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lying behind the femoral artery, extending inferiorly about 3 cm. below Poupart's ligament, and superiorly for a distance not clearly delimited.

At autopsy (the man died of pneumonia) great destruction of the hip was exposed. The head and neck of the femur were destroyed, and the cavity of the acetabulum was filled up with bony tissue. The joint cavity communicated in the region of the lesser trochanter by a small canal with a cystic tumor which was located behind the ilio-psoas and extended upwards into the pelvis for 4 or 5 cm. The capsule of the tumor was composed of dense fibrous tissue. The tumor and the joint cavity were filled with a thick yellow viscous fluid.

CASE IV.—HEINEKE. Young woman, thirty-four years of age, had had for many years a rheumatic involvement of the hip-joint. Examination revealed a fluctuating tumor extending below Poupart's ligament down along the psoas muscle and pushing forwards the femoral vessels. The size of the tumor was decreased on pressure, only to be regained on release of the pressure. Passive motion of the hip was free and without pain. Active motion was limited and weak.

CASE V.—WERNER in Volkmann. The patient was a young man who developed a tumor extending from the lesser trochanter up beneath Poupart's ligament into the pelvis. It contained two litres of clear synovial fluid. The tumor was without any evidences of inflammation.

(It is questionable whether this case should be in this group.)

CASE VI.—CHARLESTON. Charleston describes in a negro, fifty years of age, a cystic tumor in the superior and medial aspect of the thigh extending from Poupart's ligament downwards to the region of the knee-joint. It was determined at operation that there was a prolongation upwards into the pelvis.

CASE VII.—SCHAEFFER. A man, aged forty, presented a tumor the size of an infant's head on the anterior aspect of the thigh just beneath Poupart's ligament. Two years previously he had injured the anterior aspect of the thigh in a fall. A year and a half after the injury, he began to complain of pain and slight functional disturbance in the thigh and hip. The tumor had rapidly become larger. Its shape was oval with its long axis following the direction of the tendon of the psoas. The limb was in a position of flexion and any attempt to extend it aggravated the pain. Fluctuation was obtainable when the limb was flexed, but absent when it was extended.

There was a second tumor of like characteristics located at the edge of the gluteus maximus. On pressure the posterior tumor could be made to disappear coincident with which it could be noted that the anterior increased in size. Evidently the tumors communicated with one another.

The fluid contained in the cysts was a thick, viscous, yellow fluid. It was demonstrated that the anterior cyst communicated with the cavity of the hip-joint.

CASE VIII.—PAGET (also Baker). The patient, a house decorator, was healthy except for rheumatism. For three years he had been bothered with pain in his left hip and knee. The affection had become progressively worse so that when first examined his hip was immovable. It was recorded at this time that there was a slight fulness below Poupart's ligament. Under treatment he was so improved as to be able to get out and do his work for six years. At the end of this time he returned with marked impairment of movement of the left knee and hip. The limb was three-quarters of an inch shortened and everted. The whole of Scarpa's triangle from Poupart's ligament to the middle of the thigh was occupied by a large hemispherical cyst of an approximate diameter of 18 cm. On tapping 42 ounces of yellow fluid were withdrawn. At a later date 40 ounces were withdrawn.

CASE IX.—PRENGRUEBER (Perier's case). The patient, a man of fifty-four years, had gradually noticed the development of a tumor in the inguinal region. There was some interference in movement. Pain was presented along the course of the anterior crural nerve. The tumor occupied the superior and external portion of Scarpa's triangle behind the psoas muscle, and was definitely prolonged up under the inguinal ligament.

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It was sharply circumscribed and both its intra- and extra-pelvic portions were easily outlined. In consistency it was hard, and gave the idea of fluid under great pressure. Anterior to the tumor on its medial aspect could be felt the pulsating femoral artery. The content of the tumor was the typical yellowish viscous fluid of such tumors.

CASE X.—SPRENGEL. A man, age fifty-one, had been suffering for a year from pain in the right knee. For the last five months he had noticed a swelling in the inguinal region, together with a feeling of weakness in the right leg. The patient limped markedly, but his pain was insignificant. The tumor was ovoid in shape, and located in the superior part of the thigh anterior to the hip-joint. It extended upwards beneath Poupart's ligament a little way into the pelvis, downwards for a distance of 6 cm. below Poupart's ligament, medially as far as the junction of the medial third with the outer two-thirds of the ligament, and laterally as far as the anterior superior spine of the ileum. Fluctuation was present. There was no limitation of movement at the hip except that induced by the presence of the tumor mass. At operation one-third of a litre of thick yellow fluid was withdrawn. The sack had extensive communication with the hip-joint.

CASE XI.—DAGRON (Le Dentu's case). A man, aged sixty, had had a right inguinal hernia for two years. He noticed some vague pains in the right inguinal region, coincident with which was the development of a tumor (other than the hernia) the size of a walnut. The tumor was oval in shape, with the great axis corresponding to the fold of the thigh. It measured 8 x 5 cm. The beating of the femoral artery could be felt over the medial part of the tumor. Fluctuation was easily obtained. Movements of the hip were not painful. On aspiration 250 grams of thick, transparent, yellow fluid, rich in albumin, was obtained. At a later date an equal amount of the same sort of fluid was withdrawn. At operation no opening between the cyst and the joint cavity was seen. The patient died of purulent infection. At autopsy a connection between the two cavities was demonstrated.

CASE XII.—HOFFA. A man, complained of pain in the region of the right hip and even extending down to the knee. A year previously he had injured the limb, but it had given him no trouble until this time. On examination the limb was seen to assume a position of partial flexion, with slight abduction and lateral rotation. Movement at the thigh in the opposite of these directions, *i.e.*, adduction, flexion, and medial rotation, was limited and painful. A tumor mass in the upper part of the thigh underneath Poupart's ligament was easily demonstrable.

CASE XIII.—SONNEBORN. A man, forty-six years of age, had been treated for a year for a rheumatic affection of the hip. There was no history of traumatism. Standing and walking were impossible. No signs of coxalgia. On the anterior aspect of the hip, in the neighborhood of the articular capsule, was a slight swelling, painful, and questionably fluctuant. Under the local treatment the tumor disappeared.

CASE XIV.—HERDTMANN. The patient had had his left leg crushed between two cars. A painful swelling of the ilio-psyas bursa developed. Flexion or medial rotation caused a great deal of pain.

CASE XV.—MOMMSEN. The patient had a painless tumor projecting from the region of the ilio-psyas beneath Poupart's ligament. The femoral artery was carried forward by the mass. The tumor was fluctuant and on pressure decreased in size.

CASE XVI.—MOMMSEN. A man, aged fifty, complained of difficulty in walking due to a swelling in the right inguinal region. It had increased in size until it was as large as two fists. It was firm in consistency, non-fluctuant, and but slightly movable. Pre-operative diagnosis was sarcoma of the fascia of the hip. At operation its true nature was determined.

CASE XVII.—COUTEAUD. A man, thirty-one years of age, had acquired syphilis six years previously. On the inner side of the thigh was a regularly outlined tumor mass, the size of an egg. Fluctuation could be obtained, and it was determined that

the fluctuant mass extended up into the pelvis. The hip-joint was normal. Puncture revealed that the contained fluid was of a clear yellow viscous nature.

CASE XVIII.—DE WECK and DUPREZ. A man, thirty-seven years of age, twenty-six years ago had suffered a fracture of the femur near its superior extremity. On healing the limb was shortened by two centimetres, and a certain amount of diffuse tumefaction persisted in the region of the groin. Four or five months previous to operation this tumefaction became painful and its volume decreased. On puncture a limpid, syrup-like liquid, very rich in albumin, was withdrawn. At a later date on reappearance of the tumor it was exposed and excised. It was about the size of an egg and fluctuant. The fluid contained was similar to synovial fluid. In addition to the fluid there were two whitish-yellow bodies composed of fibrous tissue, cartilage and bone contained within the sack. The tumor was in the position of the ilio-psoas bursa.

CASE XIX.—DELBET describes the presence of three foreign bodies, each having the volume of a large nut, in a hygroma of the psoas bursa. They were not detectable previous to operation. The bodies had the appearance and structure of articulated foreign bodies, but the hygroma did not communicate with the joint cavity.

CASE XX.—PISANO. A woman, sixty-two years of age, had for two months been bothered with cramp-like pain in the left thigh, particularly on the posterior aspect, and in the hip-joint. About a month later she had noticed a swelling in the left inguinal region. Examination revealed a fluctuant, non-expansile tumor, in the upper part of Scarpa's triangle the size of the head of a full-term foetus. Thigh slightly flexed. Active and passive movement painful. Operation under local anaesthesia disclosed the cystic tumor beneath the psoas and pectineal muscles, extending upwards for a considerable distance into the iliac fossa. The cyst wall was fibrous and contained about 400 c.c. of lemon-colored, slightly viscous fluid. On the inner surface of the sac there were several places where an endothelial lining was microscopically visible.

CASE XXI.—CULLEN. A man, aged forty-six, had had a limp for ten years. He had been told that he had a tumor of the left hip. His left leg was stiff, and in walking the left hip-joint was held as immobile as possible. In the left iliac fossa was a mass perhaps 8 × 10 cm., which seemed to occupy the greater part of the left half of the pelvis. This mass was continuous with a smaller mass which passed below Poupart's ligament. The tumor was made more prominent on extension of the thigh. At operation the tumor was found to contain a clear viscid fluid, yellowish in color, together with six irregular cartilaginous masses lying free in the cavity. The wall of the tumor was composed of fibrous tissue through which were scattered plaques of cartilage and bone. The sac communicated with the synovial cavity of the hip-joint.

CASE XXII.—KUMMER. A man, aged fifty-nine, had been perfectly well until four years before. At that time he was bothered with a sharp pain in the antero-superior region of the hip. The pain frequently radiated to the knee. This gradually increased in severity. A year later there was noticed a slight swelling in the inguinal region. The articular movements were free. Under local treatment, the condition improved, only to recur four years later with the same inguinal swelling. The limb was in a position of slight flexion and outward rotation. Walking was painful and accomplished with the aid of a cane. In the inguinal region was a fluctuant tumor extending upwards beneath Poupart's ligament, and downwards as far as the region of the lesser trochanter. The femoral vessels were crowded inwards and forwards. The limb showed evidences of circulatory disturbances in the form of diffuse oedemas, varices, and purple patches. Movement at the hip was quite free except that extension and flexion were slightly limited, and internal rotation was almost abolished. The integrity of the bones was demonstrated by X-ray. On aspiration a viscous, mucoid fluid, yellowish in color, was obtained. As much as 250 c.c. were aspirated at one time. At operation the fibrous sac was seen to communicate with the hip-joint.

CASE XXIII.—LUND. A man, aged seventy, entered the hospital with a lump in his right groin, which caused considerable pain and stiffness of the leg. There had been no



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movement of the bowels for two days. A diagnosis of strangulated hernia was made by another physician. The man was emaciated and showed osteoarthritic deformities of the finger joints. In the inguinal region behind and external to the femoral artery and just below Poupart's ligament was a fluctuating tumor half the size of an egg. A tentative diagnosis of deep abscess in front of the hip was made. Operation revealed a thin-walled cyst lying to the inner side of, and beneath, the ilio-*psaos* tendon. The cavity contained an ounce of serofibrinous fluid. The sac communicated with the hip-joint.

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