SURGICAL PROCEDURES IN GENERAL PRACTICE

This is one of a series of articles contributed by invitation

BURSITIS

BY

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A bursa may be defined as a cavity lined by serous membrane. Bursae are formed either by dilatation of the lymphatic spaces or as a result of a localized effusion into the tissues. They contain a small quantity of serum. Their primary function is to permit of free movement and lessen friction between the hard and soft tissues of the body, especially where such movement is subjected to pressure. They exist as normal structures in many parts of the body—in the subcutaneous tissues over freely moving parts, over such bones as the patella or olecranon, or in the region of joints under the tendinous insertions of strong muscles. In the latter position a bursa may be formed by a hernial protrusion of the synovial membrane of the joint, and will then be in free communication with the joint cavity. It is important, therefore, to determine whether such a bursa has been involved either primarily, or secondarily by direct extension from the joint, by any pathological lesion.

Normal bursae occur at certain places with fairly regular anatomical accuracy, such as the prepatellar bursa and the olecranon bursa. On the other hand, where the soft tissues overlying bony prominences are subjected to exceptional and intermittent pressure secondary or adventitious bursae are formed. Structurally these bursae are similar to normal bursae except that their walls become thick and fibrous from prolonged irritation of the soft tissues, and the lining becomes shaggy and polypoid, especially from deposits of fibrin and unabsorbed blood clot. Adventitious bursae may occur in unexpected parts of the body, and are more constantly found among workers in special occupations. Thus large subaponeurotic bursae may be found under the scalp of Billingsgate porters and those who are accustomed to carrying baskets on their heads.

The so-called Covent Garden "hummy" is a bursa over the vertebra prominens. Tailors acquire bursae over their external malleoli from sitting with their legs crossed. Deal runners develop a bursa over their shoulder. Among non-occupational bursae the most numerous are those of the feet resulting from pressure by badly fitting shoes. The best example of this is the adventitious bursa which develops in association with hallux valgus. Here a bunion results from pressure by the shoe on the exposed head of the first metatarsal, and a bursa forms between the hardened skin and the calloused bone. Similar bursae occur over all bony prominences arising from malformations or displacements. For instance, a bursa may develop over the cuboid in talipes equinovarus. A particularly painful type of bursa is the one which forms under a hard corn. The typical position is over the head of the first phalanx in hammer toe or over the corresponding points of the three outer toes when these are in a flexed position. These little bursae are liable to infection, which may spread to the joint or bone. Unless the pressure is removed recurrent bursitis ensues.

The treatment is to pare off the corn, expose the bursa, and cauterize the bursal endothelium with carbolic on a sterile tapered match-stick, or excise the corn and bursa under local or gas-and-oxygen anaesthesia. Perhaps the

classic example of an adventitious bursa due to a friction of soft tissues over bone is the one which forms over the cartilaginous cap of a cancellous exostosis. This should be removed at the same time as the exostosis. A small bursa sometimes appears over the head of the radius, and results in pain. It is mentioned as one of the causes of the so-called "tennis elbow." Bursa formation may also take place when hard structures such as cartilage or bone move over soft parts. Examples of this type occur under the hyoid. A bursa here may be mistaken for a midline dermoid or a thyroglossal cyst. A bursa may also form under the movable scapula, between it and the chest wall. The bursa is apt to become very large and to give difficulty in diagnosis.

Diagnosis

As a result of continued irritation and trauma a bursa becomes distended with fluid; it is hot to the touch, and tender and painful when the part is moved. The skin covering it assumes a dusky red colour, and is movable over the bursa. On palpation there is fluctuation, and when situated superficially it transilluminates. When grasped between the fingers it is not freely movable owing to attachment to the underlying bony prominence. When bursitis is recurrent the walls of the sac become thick and fibrous, the lining membrane shaggy and polypoid. This perhaps is the most common condition. It is not unusual for haemorrhage to take place in a bursa, and deposits of fibrin and old blood clot adhere to its walls and cause obliteration of the cavity. In these circumstances the bursa becomes more solid to the touch, and fluctuation and transillumination will not be obtained. Haemorrhage is more likely to take place in the blood diseases and in haemophilia. When bursae are deep-seated and large their diagnosis may be doubtful. In these cases a needle of fairly large bore should be inserted and the typical fluid aspirated.

The Principal Bursae

The following is an account of the more important bursae which are encountered in the various parts of the body. In the region of the knee-joint, a particularly movable part, they are numerous.

Prepatellar Bursa.—Normally two or three sacs lie in front of the patella. When exposed to irritation by friction, fluid is secreted and the bursa becomes distended. It presents itself as a globular swelling over the patella about the size of half a tennis ball. The skin covering it is warm and red; it fluctuates and transilluminates. It is fixed to the patella, and if the quadriceps is relaxed the patella will move from side to side when the bursa is moved. If the swelling forms over the proximal portion of the patella the condition is known as "housemaid's knee"; if the swelling appears over the distal portion of the patella or over the patellar ligament, it is commonly known as "parson's knee." These bursae arise over that part which is most exposed in kneeling. Old charwomen from their occupation are particularly apt to develop the chronic fibroid form of prepatellar bursitis: as this bursa is liable to gummatous infiltration a Wassermann test should be done to differentiate the two.

The *subpatellar bursa* lies under the patellar ligament, and partly over the head of the tibia and the knee-joint, with which it does not communicate. It shows as a bulging on either side of the patellar ligament with the knee in full extension, and the patient cannot stand with the leg fully extended. It may push the ligamenta alaria backwards into the joint and simulate the condition of an internal derangement of the internal cartilage or a loose body in the joint.

The *subcrureus bursa*, when present, communicates with the suprapatellar synovial pouch and really forms part of the knee-joint. Its secretion of fluid will therefore run *pari passu* with that of the joint, and its presence is determined by an exaggerated fullness in the region of the suprapatellar pouch.

The *semimembranosus bursa* lies between the insertion of the semimembranosus tendon and the inner head of the gastrocnemius. It presents as an oval fluctuating swelling limited on its outer aspect but more free and less defined towards the inner aspect of the popliteal space. As in the majority of these periarticular swellings, it becomes tense in extension and flaccid on flexion of the knee. Enlargement of this bursa is often secondary to an intra-articular lesion, such as osteo-arthritis or tuberculous disease, and the condition of the joint should be ascertained before treatment is undertaken. Owing to its proximity to the popliteal vessels it may push the artery superficially, but the pulsation is not expansile in character as in aneurysm.

The *popliteal bursa* is a bursa arising from the synovial membrane of the knee-joint surrounding the intra-articular portion of the popliteal tendon. It gives rise to a rounded swelling behind the external condyle of the femur deep to the biceps tendon and the ilio-tibial band. It has to be differentiated from a bicipital bursa, which lies lower down between the biceps tendon and the external lateral ligament. Both these swellings may be mistaken for a cyst of the external cartilage.

A bursa is sometimes found beneath the insertion of the semitendinosus and gracilis, and produces a swelling over the upper and inner surface of the shaft of the tibia.

The *psoas bursa* lies between the tendon of insertion of the psoas muscle and the hip-joint, with which it usually communicates. Distension of this bursa gives rise to a deep-seated swelling presenting on the inner side of Scarpa's triangle. It is tense on extension of the hip-joint and flaccid on flexion. When painful it is the cause of flexion of the thigh, one of the symptoms associated with psoas abscess and hip-joint disease. Before any question of aspiration is entertained it must be remembered that an obturator hernia produces a swelling in this region. An enlarged psoas bursa may be found in association with osteo-arthritis of the hip-joint and tuberculous disease.

Subgluteal Bursa.—This bursa lies between the tendon of insertion of the gluteus maximus and the great trochanter of the femur. It is present in the condition known as clicking or snapping hip. When painful it causes abduction and eversion of the lower limb, a symptom seen in the first stage of tuberculous disease of the hip-joint, from which it should be differentiated. Indeed, the bursa itself is apt to be the seat of tuberculous disease quite independently of this infection within the joint. Owing to the lax muscular planes in this region the bursa may become enlarged, and if abscess formation takes place it burrows extensively among the lax tissues.

Ischial bursae when painful must be removed, and the chronic form of bursitis here must be differentiated from

a gummatous bursitis, as this is one of the bursae liable to specific infection.

In the region of the *tendo Achillis* two bursae resulting from shoe pressure may be found. There is a bursa between the skin and the Achilles tendon, which is liable to infection from continued rubbing and excoriation of the skin over the heel. The other bursa is deeper and lies between the insertion of the Achilles tendon and the upper part of the posterior of the os calcis. It gives rise to a soft swelling on either side of the tendon. It is prone to tuberculous infection. It does not communicate with the ankle-joint, but may simulate an arthritis of this type in that region. The swelling, however, remains localized. In the upper limb there are only two bursae of any consequence.

The *olecranon bursa* is commonly found among miners and students. It forms a red, painful, fluctuating, and translucent swelling over the olecranon process, and does not communicate with the elbow-joint. It is particularly exposed to trauma. Septic infection may cause superficial necrosis of the bone, but it is unlikely to spread to the joint.

The *subdeltoid bursa* is situated between the deltoid muscle or the acromion process and the great tuberosity of the humerus, and does not communicate with the shoulder-joint. It causes an increased fullness to the rounded contour of the deltoid, but does not transilluminate, because of the thickness of this muscle. When painful it restricts the movement of abduction. It is liable to gonococcal and tuberculous infection.

Treatment of Simple Bursitis

In treatment the first consideration is to obviate or prevent any cause of irritation or pressure that has given rise to the bursitis, with the object of preventing a recurrence, which leads to chronic bursitis. In superficial bursae particular attention should be paid to the condition of the skin. If chapped and dirty or cracked it should be thoroughly cleaned with ether soap and disinfected with spirit or iodine for at least twenty-four hours. Neglect of this simple precaution may be fraught with serious consequences. Bursae have a rich supply of lymphatic vessels, which become dilated in simple bursitis. Organisms from a hidden focus in the skin reaching these vessels will spread exceedingly rapidly, either obtaining access into the blood stream, with consequent septicaemia, or spreading locally, involving the underlying bone or joint. Apart from these minute skin abrasions, infection may take place from lymphatics draining any area of local sepsis which may be present at the same time as the bursitis. By taking precautions against these, simple bursitis will subside with rest and fomentations or some form of counter-irritation such as blistering or painting with iodine or strapping over Scott's ointment. If the effusion is clear and painful, and it persists, aspiration with a wide-bore needle or small-sized trocar and cannula under strict antiseptic precautions may be employed.

The same treatment may be followed in dealing with chronic bursitis. For recurrent and troublesome bursitis the only satisfactory treatment is complete excision of the sac, making sure that the endothelial lining has been entirely removed. When a bursa, such as the semimembranosus bursa, communicates with a joint the neck leading to the joint should be closed by ligature. The incision should be planned so as not to leave the scar over the points of pressure. For example, in the removal of prepatellar bursa it should be made at the side of the bone.

Complications of Bursae and their Treatment

Subcutaneous injuries result in haemorrhage into the cavity of the bursa, constituting a haematoma, which may either suppurate or absorb, leaving the cavity full of adhesions from fibrinous deposits and polypoid fringes from the organization of blood clot. The skin over the bursa will be bruised and transillumination will be lost; the edges of the bursa will feel thickened, and fluctuation will only be obtained over the centre of the swelling. This part must be kept at rest and the skin be cleaned and sterilized. Threatened suppuration, as evidenced by throbbing pain, heat, and pitting on pressure from oedema, must be treated by prompt incision and drainage, and the wound left to heal by granulation tissue. In haematoma of the prepatellar or olecranon bursa it is advisable to make sure that there is no underlying fracture of the bone.

Wounds may be caused by splitting of the tissues over the bursa through a direct fall on the underlying bone, or by penetrating injuries from without. The result is the escape of bursal fluid, which may prevent adequate healing. This will necessitate removing the bursa entirely, or opening up the cavity freely, scraping out the lining tissue, and allowing it to heal by second intention.

Acute suppurative bursitis may originate in the above way, especially if the skin is allowed to heal over a small wound. More commonly this condition arises as the result of subcutaneous injury to a chronically inflamed bursa which becomes filled with blood clot. Pus forms and may track to the surface, or sepsis may become diffused into the tissues around it. There is swelling and induration round the bursa, and in these circumstances the original site of infection may be overlooked. It is important not to mistake this condition for an acute arthritis of a neighbouring joint, and to make an incision and provide drainage from the bursa as soon as possible. Neglect to do this may lead to infection into the joint or underlying bone, which may become carious and necrose.

Tuberculous bursitis occurs in two forms. There is either a fluid bursitis—characterized by the formation of melon-seed bodies, which can often be felt as a soft crepitus in the swelling—or the dry type, in which the lining membrane becomes transformed into a mass of tuberculous granulation tissue that may lead to the formation of a cold abscess. In those bursae which communicate with joints the infection will be common to both cavities. Secondary infection should be guarded against. Tuberculous disease most commonly attacks the subdeltoid, subgluteal, Achilles, and semimembranosus bursae. Treatment should follow the rules laid down for tuberculosis in general, with rest to the affected part in particular. Scott's strapping may be applied to the part, and any form of passive hyperaemia if it is practicable. Softening when it occurs is dealt with by aspiration, but if distension becomes excessive, incision, washing out the melon-seed bodies, bipping, and closing the cavity may be used; it is undesirable, however, that any extensive operative treatment should be performed. In burrowing bursae which become secondarily infected, such as the subgluteal, it may be necessary to open the area and scrape out the granulation tissue, pack with bipp, and allow it to heal from the bottom.

In *syphilis* a symmetrical bursitis with effusion may appear during the secondary stage, or, later, a gummatous infiltration of the bursa. The walls of the bursa become thick, presenting as a hard fibrous tumour with a small cavity in the centre. This variety occurs in the pre-

patellar or ischial bursa. In the secondary stage anti-syphilitic remedies will clear up the condition, and may help in the gummatous condition, but the gummy material tends to break down with involvement of the skin, giving rise to sinuses. Under these conditions removal of the whole mass is necessary for cure.

Gouty deposits sometimes occur and often involve the olecranon bursa. They consist of chalky masses of biurate of soda, which can be seen under the skin. As a rule gouty bursitis calls for no local treatment, but the overlying skin tends to break down and the mass should be excised before infection takes place.

In *gonorrhoea* a sudden bursitis may occur as a septicaemic manifestation of that disease. It is uncommon, and treatment should be directed towards the cause of the condition.

OPHTHALMIC MALINGERING

BY

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Claims for injuries to sight after motor accidents and injuries at work are frequent, and are generally referred to an eye surgeon for examination and report.

Having first heard the history and seen all relevant documents, make a note of any visible defects or injuries, judging their possible effects on the sight. A small nebula at the edge of the cornea can have little or no effect on the vision, whatever the claimant may say. Should he obviously be malingering, do not let him know he is suspected, as that only raises opposition on his side, while it is so easy to find out whether he can or cannot see. Examine the front parts of the eye through a loupe, using a good light and noting the pupillary reactions. Generally speaking, the older the patient the smaller the pupils; while short-sighted people have larger pupils than normal. It is the reverse with the long-sighted; the latter have more focusing to do. Excluding tabs, in which there is no direct reaction to light, if a light from a small torch is shone on a healthy eye the pupil contracts with that of the other eye. Should the eye be blind or partly so, there is no reaction in the former and very little in the latter case. Adhesions, too, may affect contraction of the pupil. Take the distant and near vision of each eye, then by means of retinoscopy the effect of any error of refraction can be settled.

Methods of Testing

Should the patient claim loss of sight in one eye, ask him to read small print, held a foot away, then hold a ruler a few inches from his eyes, between them and the print. If he reads without hesitation, he is doing so with both eyes. Next take a strong prism, say 16 degrees, holding it base up or down in front of his bad eye. Ask him to pick up a pin, a penny, or a pen and to write with the last. If he sees with both eyes, objects appear about three inches apart, and he has the utmost difficulty in doing these things, while his attempts to do so give him away at once. Care must be taken that both eyes are kept open.

In the Friend test letters alternately red and green are looked at through a red and a green lens. The red glass lets only red rays through and the green only green rays, so if he reads all the letters he sees with both eyes. If the refraction and other things appear normal but he only admits seeing the top letter at twenty feet, he should see the second row at half the distance, and other rows in proportion. Place a plus 3 lens in front of the good eye and a weak minus, say -0.25, which will make no appreciable difference to the sight, in front of the bad eye. If he reads the letters at the end of the room he is doing so