Movable Bodies in joints

by

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Very good
Moveable bodies in joints.

The first notice we find taken of this disease is in the works of Ambrose Pare, who mentions that having made an incision to evacuate a quantity of fluid from the cavity of the knee joint, a white body of the size of an almond was discharged. These moveable bodies in appearance generally resemble cartilages, and have a polished surface of a glistening nearly lustre, and may, or lip oval or rounded flattened form, sometimes tuberos circular and as if worm eaten, and vary in dimensions from the size of a mustard seed to a substance of considerable magnitude, the largest recorded being that by Mr. Home, which was the size of the fist, and occurred in the knee joint of a soldier. They have been found in several joints of the body, that of the knee being the most liable to this disease, but even
in this joint they are said to be of rare occurrence, but this rarity is probably due in a measure to many cases not being brought under the notice of the surgeon, owing to their causing little disturbance, the bodies remaining attached by short pedicles to the capsule, and situated out of the way of the action of the joint, and may thus even be unknown to the persons themselves, only causing a stiffness of the joint, as occurs in cases of Chronic Rheumatic Arthritis. These bodies generally occur in young persons of the male sex, seldom make their appearance before the commencement of adult life. When cut, they are found to consist generally of a gritty substance enclosed in a capsule with a horny centre. Occasionally they are of an opaques density, or of a solid non-organized structure. Their title to the name of cartilage is disputed by Quincke, who says, that although they have a cartilaginous
Cartilaginous consistence. Their structure
is fibrous. The greatest number found
in a joint at one time being forty
five, as stated by Dr. Adams to have
been found in an elbow joint, the preparation
of which is in the Museum of Richmond
Hospital, but they seldom exceed three, and
in general there is only one such body.
They may originate in various ways,
1st. As a splinter from the margin
of the articular cartilage. 2nd. As a
morbid growth from the margin of the
cartilage, or subjacent bone. 3rd. From
the synovial fluid by deposit or
otherwise. 4th. From a coagulum of blood
or effusion of lymph from the vessels
surrounding the cartilages, or contained
in the synovial membrane. 5th. From
the appendages of the synovial folds or
fringe. Let us then consider each of
these different modes of origin separately.
1st. By a splinter from the
margin of the cartilage, or cartilage —
subjacent
By inclosing bone. This mode of origin must necessarily be very rare, as the blow
necessary to the production of such an
accident would require to be very sharp
and severe, and inflicted by a body
with a narrow edge or surface, and
such being the case, the continuity of the
ligaments internal to the cartilage would
almost of a certainty be broken, and
the cavity of the joint opened into.
And such, however, may, occasionally, be
the manner of origin is shown by a
case of Dr. Benjamin Brodie, of which
he says, "In one case in which I had
an opportunity of examining the parts, by
dissection, besides some loose cartilage, having
the usual appearance, I found another body
loose body of an irregular shape, with one
smooth and cartilaginous, the other surface
surface, leaving a thin layer of bone adhering
to it, being evidently a portion of the
articular surface actually broken off
from the head of the tibia. That such
an accident should occasionally happen
from
from any sudden or violent motion of the joint, with a hard body loose in its cavity, so as more than might reasonably be expected. At the time when such an accident happens to the cartilage, it may either be in its normal state or in a morbid condition, having undergone some alteration in its texture, and that more probably a state of hypertrophy due to some morbid action in the synovial membrane or subjacent bone, such hypertrophy being not a mere increase of original structure, but a change in the texture itself, wherein along with whatever other elementary alterations may have taken place in its structure, it has become more fibrous and liable to split up, and that in a ratio with the increase of the bursa.

2nd. As a morbid growth connected to the margin of the cartilage, or arising from that part of the bone immediately
immediately below or close to the margin of the cartilage, all of which forms have occasionally been found in the dead subject, and such cartilages growths being attached either by a narrow neck or broad base, may become ossified in whole or part before being detached from their connexions. The separation in these cases necessarily taking place without any great amount of force and may, in some instances without the person even being cognizant of it, the neck having become gradually smaller, and the body finally detached, or lie way, as occasionally happens whilst performing some muscular exertion near a crack or if some particular joint, or may receive a blow on the joint, or a fall, and find or rising that progression is hindered by a loose body in the joint.

3rd. From a deposit in the synovial fluid.
fluid caused probably by some change either in the number, or relative proportions of the normal constituents of the fluid. The former change due to the absence of one or more of the constituents, or the presence of a new one, and arising either from inflammation, or some other morbid action in the synovial membrane, or some alteration in the composition of the blood, such as occurs in rheumatism, and this deposit, in whatever manner it is formed, may, by contracting become harder, and at some time increase in size by new layers being deposited on its surface. The latter change arising either from inflammation, as in the former case, or from a morbid action of the synovial membrane, whereby the epithelial lining throws off a greater number than usual of epithelial cells, and these not breaking down, but coloring, and retaining their vitality, may continue to grow by the abstraction.
abstraction of nourishment from the surrounding fluid. That such bodies do sometimes arise from a deposit in the synovial fluid, whatever may be the nature of the deposit, and the agent giving rise to it, is supported by the fact that amorphous gelatinous masses of varying consistence are often found in the synovial membrane lubricating the sheaths of the flexor tendons of the fingers, and also by the fact that loose bodies exhibiting no trace of organized structure have frequently been observed in the joints by Riddell and Eichhorn. In some cases in which the disease follows upon acute rheumatism, it seems probably originate from a deposit formed down in the synovial fluid by lactic acid exuded along with serum and other constituents of the blood from the vessels of the inflamed membrane.
From a conglomeration of blood or effusion of lymph, either from the planes of sepals which form a narrow vascular border around the circumference of the cartilages, or from some one or more of the sepals of the syconial membrane, and in this latter case, the deposit may be either on the external or internal surface, or in the substance of the syconial membrane, or from the sepals of the neighbouring lip and, due to inflammation, or to diseased retention of the sepals, or seepage of gum, or from rupture of sepals, the result of an accident; and when such does take place, the deposit either maintains its original position exterior to the membrane, or by degrees projects into the cavity of the joint by pushing the membrane before it, or thus becomes increased as a sac attached to the inner surface of the membrane by a neck, which gradually becomes smaller and

and smaller until it finally breaks through, and the body floats free in the cavity of the joint. The view that these bodies do in some cases project into the cavity of the joint by lodgment the membrane before them is supported by the observations of Laurence, who traced similar bodies in cases of gross tears through all their stages of development from a slight projection on the external surface of the membrane till they become isolated bodies in the cavities; also by such bodies being found upon opening the bursa joint for their extraction to be connected by a narrow pedicle to the bursal capsule, as was the case in two patients operated upon by Sir Benjamin Brodie, and finally by numerous spheruled bodies being found on section in joints that had been affected with Chronic Rheumatic Arthritis. That these are often developed from a coagulum of blood or deposit of
of lymph, seems highly probable from the fact of their being found in various serous cavities, as the serous membranes of the brain, the lining membrane of the lateral ventricles, one of the arachnoid, the peritoneum, tunica vaginalis testis, and tunica albuginea, and bursa succinea; and in these cavities, they have been found to exist, either floating free, or attached by a neck to the internal surface of the sac, and in some external to the sac. Audrah found one floating free in the arachnoid sac, and two others attached by a cellular vascular connection to the choroid plexus. Further, the occasional origin of these bodies from a conglomeration is proved by Bidder and Virchow having demonstrated four to consist of a mass of fibrine; and a case in point is mentioned by Sir Benjamin Brodie in which a body resembling a loose cartilage, contained...
contained in the cavity of the knee joint, was found to be a tissue
with one surface convex, and the other somewhat flattened and connected to the synovial membrane; it was of a
friable, fleshy structure, the general appearance of it a good deal resembled that of a
cravat which is found in the caecum of the aneurism, but it was not
laminated, and had a smooth, membranous surface, and it was manifestly organized,
and reflects might be distinctly traced ramifying through its substance.

5th From the appendages of the process or folds which normally form a fringe
along the margin of the synovial membrane where it is attached to the
cartilages. These appendages, which are
erections of the membrane projecting into the cavity of the joint, consisting
of a distinctly fibrous connective tissue,
and in general, it is not always a number
of fat cells, true cartilage cells, and
an epithelial covering, have all that is necessary for a rudimentary form for constituting these loose bodies, so that they may on some circumstance grow, enlarge, and attain a firm consistence, and finally become detached of themselves, or by accident; and I am inclined to think that the case recorded by Dr. Alexander Monro in the Edinburgh Medical Essays, originated in this way: for I think it more probable that the body advanced from a lower to a higher organization, that it advanced from cartilage to bone externally, while it degenerated from cartilage to oil cells internally, which must have been the case if this supposition was correct, for he says, "the bone when cut had only a thin external firm plate being composed sítuate of cells which were full of oil." The depression, or absence of a part of the cartilage corresponding to the
size and shape of the loose body, in this case being due to absorption caused by pressure of the body and not to fracture of the cartilage.

When such foreign bodies take their origin from effusion of lymph, or from coagula of blood from the capsels in the substance, or on the external surface of the synovial capsule, or from the capsels of the neighbouring tissues, it will receive nourishment from the capsels of those parts in which it originated, and in substances posterior the coagulum or deposit of lymph is situated it may become a condensed semi-fibrous mass, or undergo organization and from the nature of its situation assume a fibro-cartilaginous character, and remain in that state, or become opified, and as the body becomes organized, and pushes the capsule before it into the cavity, these capsels become contained in the vesicle, and the body continues to
to receive nourishment. Here, this source until this separate becomes obliterated by a process of detachment of pedicle whether that process be gradual as from the body having assumed functions of independent life and so no longer requiring nourishment. Here this separate of the pedicle or the connection having been suddenly detached from, by accident during the progress of operation of independent life, for these bodies as they come to project more and more into the cavity of the joint, press before them a fold of synovial capsule which becomes incorporated, and forms part of the body, and gives it the anterior appearance. This fold of synovial capsule still containing its function of a secreting and excreting organ, as it envelopes the body comes to be able to supply the whole of the nourishment required, obtaining this supply from the synovial fluid, and the pedicle being no longer required as a means of supplying the separate the separate contained in it nourishment.
re nourishment to the loose body becomes atrophied into a or more thread, or entirely disappears, and the body floats free in the cavity of the joint. When this body originates from lymph, within the capsule, it becomes organized as in the former case, receives its nourishment from the capsule whence it derived its origin, and those of that part of the inner surface of the membrane to which it may have been attached. In those cases, where the body originates as a membranous growth from the margins of the cartilages, or from the appendages of the synovial folds, or fringe, the bodies may, as in the former instances become gradually or suddenly detached, and like them assume an independent life, obtaining nourishment from the synovial fluid, their epithelial covering leaving assumed the function of secretion and secretion. And where the loose bodies originate from the cartilages whether hypertrophied or not, they are covered on
on the surface with a thin layer of synovial membrane, which may re-appear its former function, and the cartilage cells also retaining their vitality continue to obtain nourishment from the surrounding fluid, as in the case of those bodies formed by an aggregation of epithelial cells. These bodies, after they have projected into the joint, would appear not only to maintain their vitality but increase in size; for patients intelligent men are not likely to be deceived on such a point. It has been stated that they distinctly observed these bodies gradually to enlarge from the date when first discovered by them in the joint, as in the case of James D. Stewart, labourer who was under the care of Mr. Lyon in the Edinburgh Hospital in October 1853. The body which was the "size of a pea when first discovered by patient," and which he often caught between his fingers, "steadily increased in size" until it was
was about the size of a flattened nut; and further such bodies would appear to grow after they are become severed from all connexion with the adjacent structures, and are free in the cavity of the joint, for these bodies have in some cases been observed to increase in size within a short time of the operation, and when such bodies extruded by operation as remnants of pedicles have been observed, and such a case occurred in the case of Robert Ferguson, who was operated upon by Mr. Lyne in Edinburgh Hospital in March 1859 by direct incision into the joint, also in the case of James Ellis, a farm servant, operated upon by Mr. Lyne's of Plymouth, and further such bodies when loose may become impacted in some part of the joint, where, latter and interfering with the free motion of the joint, still cause such an amount of irritation and inflammation that...
in the parts with which they are in contact, as cause of glueing or adhesion of the body to these parts, as would appear to have taken place in two cases treated by Mr. May of Leeds, where the patients after wearing a brace cap, for a time became insensible of the presence of the foreign body, and remained so after ceasing to wear the brace cap. Mr. May also mentions other two cases in which a plaster and bandage to the knee cured the disease, and I have heard Mr. Eyree state, that he was led to the adoption of one of his methods of treating this disease, by the circumstances that on examination of a knee joint to detect the site of the loose body he found it fixed, the gentleman leaving before leaving Yorkshire applied a blister over the joint to relieve the pain, and enable him to travel more comfortably. When this glueing or adhesion has
has taken place, the body may, if pressure be moderate, continue to increase in size by 
expansion into the attached surfaces, as well as from the synovial (membrane) fluid 
until its size interferes with the free use of the joint, and it is again 
detached, and this gluing and detaching 
may be repeated several times, until the 
pressure of the body either becomes incompatible 
with the free use of the joint, being 
constantly forced between the articulating 
surfaces from want of space and in 
immediate contact with these surfaces 
sufficiently large to contain it, or the body 
having become fixed in some part. The 
amount of pressure exercised upon it 
by the neighbouring tibias may be such 
as to exclude the possibility of its growing 
and may even in some cases be such 
as to cause absorption of the body, as 
occurred in two cases operated on by 
Mr. Syme in the Edinburgh Hospital 
by subcutaneous incision into the capsule 
of
of the knee joint and application of a blister over the site of the body. In the first case that of Alexander McPherson a shepherd, operated on on 11 September 1852, fixture of the body was not only obtained but it shortly afterwards became absorbed so as not to be felt. For the report says: "On admission cartilage easily felt and after the leg walked a few steps it usually takes up its position between the inner condyle of the femur and the head of the tibia." After operation Sept 23 Cartilage seems fixed in new moved his leg a little 20th the movable body cannot be felt like less every lift his bed. Oct 5th has been walking about the ward for the last two days the movable body seems to have been absorbed as it cannot be felt." And in the second case that of Thomas Gill, a farmer, operated on in June 1853 it is reported "Cartilages diminishing before being diminished." In some cases the substance
Substance may actually become dissolved in the cavity without the application of any remedies, as happened in a case recorded by Dr. Bay of a young gentle-
man who had received an injury to the elbow joint by a fall, and on the swelling subsiding some loose bodies were found in the joint, and which substan-
tes he says "gradually diminished, and at last became entirely dissolved as I should suppose for they could not be felt in any position of the joint." In some cases the body may become opaque as in the case mentioned by Dr. Alexander Monro and that by Dr. Pernon of Dr. Andrews, which was soon covered by cartilage — many other cases. It is probable that such bodies may become opaque after they are free in the cavity of the joint by absorbing salts of lime from the synovial fluid, which may contain these abnormal constituents from change in the circulation, and nutrition.
of the tissues of the joint, due to morbid state of brain and system, as in Chronic Rheumatic Arthritis, where the blood highly charged with lactic acid and active solvent of lime salts may absorb a greater amount of these salts from the food taken into the body, and also as the result of secondary digestion, and I think that it is probably due to a greater amount of lime salts in the blood that such bodies are there. Mr. Adams speaks of in his work on Rheumatic joint as "adjuvantary lines" become opsin. Chronic Rheumatic Arthritis in some cases seems to have been the cause of origin of these loose bodies in joints, for we find cases recorded where the patient had suffered from rheumatism in the joint sometime previous to the discovery of the loose body.

Symptoms.
Symptoms. The joint is free from meals, while the body is to situated as not to interfere with the free play of the joint, but when it gets between the ends of the bones it produces a sudden relieving pain, and the patient on the account compelled to stand from all exertsion or falls to the ground and is unable to proceed until his body is again pushed back into the joint out of the way of the articual surfaces and if dryspear effusion is not excited in the joint by the first attack, it will be by the recurrence of joint and the irreparable of the knee may be mre a cure meber lost unless something be done to alleviate or cure the disease.

Treatment
This consists in galliative or radical measures.
The knee joint may almost be said to be the only joint requiring surgical interference. Its necessity for interference in any other being so rare and when necessary, palliative measures only being required, therefore it is only requisite to consider the treatment of the disease in this joint.

Palliative Treatment. This is available when the annoyance is unconsiderable, as merely occasional, on where the patient is afraid to submit to an operation, and consists in applying a prepuce to the joint so as to prevent the body from moving about, and getting between the articular surfaces. The prepuce may be applied either by a bandage or leaded threes cape as proposed by Dr. Hey of Leeds, in whose hands it proved very successful. Should swelling of the joint arising from droussial effusion prevent the effectual application of prepuce, absorption of the fluid may rarely be accomplished.
accomplished by blistering the joint, or applying dissonant lotions. The patient being at same time kept in the recumbent position.

Radical Treatment. Several methods of operating have been proposed, and are still in use. The oldest of these is that of opening the joint by direct incision, extracting the body, but this operation is attended with the great risk that the subsequent inflammation may run so high as to endanger not only the limb but the life of the patient. It occurred to Mr. Beyne, and nearly at the same time to a French surgeon, Dr. Goyrand, that

the object of this operation might be attained more safely by merely displacing the movable body from the joint by

puncturing the thrie with a needle or narrow-bladed knife, and opening the

synovial membrane by a subcutaneous incision through which the body could

be pushed into the cellular substance. Dr.
Mr. Lister afterwards proposed a modification of this operation, making two punctures instead of one, first entering the tumour by knife at a distance below the body, and having prepared a bed in the cellular tissue for its reception, advancing the knife, and cutting the capsule over the body, then entering the knife at another point, and making an incision through the capsule at right angles to the former, extending the body thus the crucial opening there made in the capsule, securing it in the bed prepared for its reception. Mr. Miles then advocated securing the body in a favourable situation by transfixing or entangling the body by means of a horse-lip pin or needle but the difficulty in accomplishing this, and the unfavourable symptoms which appeared in a case so treated caused him to abandon this method of treatment. Mr. Rymer having
found (as he then thought) that his operation required a dangerous amount of manipulation, proposed "making a free incision subcutaneous through the synovial membrane and cartilage, and applying a blister over the part where it is retained." His method albeit very successful still in some cases proved tedious in accomplishing its object, and Dr. Lyne finding that his former operation had proved remarkably successful in the hands of Mr. Squares, has again taken up his joint operation, and by the introduction of a long double edged tenotomy knife very much facilitated the operation both as regards the free incision into the capsule, or extirpation of the body from the joint into the neighbouring cellular tissue. That the operation is free from all hazard is shown from Mr. Squares's statement as to the cases operated on by him. "Thus in the treatment of these nine cases of loose cartilage, the knee joint has been opened by subcutaneous"
acutaneous excision thirteen times. It is
worth of remark that without pain,
reinflammatory action, or any serious
symptoms lies in any one instance
arisen. Mr. Lister's subsequent practice has
also proved this absence of serious symptoms.
The rapidity and ease with which this
operation can now be performed, and the
very small amount of pain to which
it gives rise to, and the certainty of
the cure, renders this operation much to
be preferred to any of the others. Mr.
Lister's second operation is no doubt
equal to the first in respect of the
absence of serious symptoms, but,
deficient in comparison with the first
operation as regards the rapidity of cure.
Mr. Lister's modification of Mr. Lister's
operation is merely a complexity without
any redeeming point. Considering the ligature
which attested the direct excision into the
joint the operation ought not to be
least reverse to.
Before operating the patient's joint, the patient's diet should be regulated for a day or two, and the secretions and evacuations put into proper order. Any excitement which may exist in the joint subdued, the loose body secured by a bandage in the extremity where it is to be operated upon. In operating the double edged tenotomy knife is made to penetrate the skin at a short distance from the loose body, advanced through the capsule where the body is situated, by a lateral movement of the knife first in one direction, then in the other a free exit is made through the capsule, and as the knife is withdrawn the body is urged through the opening into the cellular tissue, and a young placed on the track of the cartilage to prevent its returning into the joint, and another placed on the continuous opening. The joint is then allowed to return to bed, and a splint applied to the back.
back of the brain if thought necessary, and in a period varying from one to two weeks the body is extracted from its position in the cellular tissue by a direct incision.