Diseases of the Joints:

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For Professor Spence.
Diseases of Joints:

As proportion to the delicacy of the structure of any piece of mechanism is its liability to derangement. A watch is more easily disturbed in its working than a steam engine, and an irritation which would be injurious to the eye might be applied to the hand or foot with impunity. It is this principle which renders the joints so susceptible to the action of disease. In their construction we find all those conditions which render living structures incapable of resisting the advent of disease. Variety of structure, delicacy of function, frequency of action and important connection with other parts of the body, reduce the immunity of these parts from disease by as much as simplicity of structure of function lessens it upon others.

The importance of the joints in the economy, the frequency with which they are attacked, the distress and danger they occasion when the subjected to meretricious action, render it imperative on the surgeon to be thoroughly acquainted with the pathological conditions to which they are liable, as well as with the most effective modes of affording relief. It is with the view of having my own attention more especially directed to this important subject that I have chosen it for the present thesis.
Acute Synovitis:

A wound of the joint, if it heal by the first intention, may produce no serious consequences, but should this indication fail, and the wound go on to heal by suppuration, the synovial membrane generally participates in the inflammation which is necessarily antecedent to this process. The inflammation thus excited is very rapid in its progress and extends over the whole surface of the membrane.

At first there is only exalted function of the part which closely resembles serous membrane. The effusion becomes of a more watery character, and after a time fibrous matter is thrown out, which adheres to the surface of the membrane. A natural result of this change in structure and increased effusion of fluid is the occurrence of pain and swelling, which appear almost simultaneously.

Occasionally it very rarely happens that the two opposing surfaces of the membrane become glued together, being kept apart by the abundance of fluid intervening. By and by this fibrous elevation becomes laminated with the synovial membrane, becomes organized, and begins to effuse a purulent fluid. This serous part of the effusion is gradually abo
we feel that people come across little who understand the sound of the tides, the rhythm of the sea, the ebb and flow of the
undercurrents. We see in this world the same kind of echoing, echoing, and pondering the
of the universe, a sort of looking at the sky, but without the
understanding of the riches and the
reflection of life. This is what
we mean by "understanding the
universe." It is a kind of
looking into the sky, a sort of
reflecting on the
universe.
Contact is possible; thus a hinged joint is kept flexed.

When suppuration has occurred, there is marked aggravation of all the symptoms. The patient is subject to rigors. Constitution; all fever is heightened; pain is increased, and a throbbing sensation is experienced in the joint. As the case advances, the skin begins to point at some part, and the matter is evacuated. When this occurs, the patient's suffering is much relieved, but when the cavity is emptied, if air get access to the joint, a reaction may set in more serious than the original, hectic may be induced, and the patient may die from mere exhaustion.

The causes which most commonly give rise to this affection are: Wounds, and bruises of the joints, the rheumatic; mercurial, diatheses, and exposure to cold.

Treatment: The treatment in these cases should be strictly antiphlogistic. Blood should be taken from the part by leeching or cupping, probably the latter will be found most beneficial. Potassium and iodine fomentations applied to the joint are often productive.
of good results. After applying the
iodine, a pad of cotton wool, then
then wrapped round the limb.
Iodide of Potassium may be given
internally, also Mercury if that be
not contra indicated, with Tartar Emetic
and Colchicum, and Succussion of Potass
if the Rheumatic Affinity is great.
More important than all else is that the joint
should be kept at perfect rest, and in
a relaxed position. In the more acute
stage tie it lightly to a pillow, and when
the severer of the symptoms has passed
off, fit it with splints. Purgatives
are not to be administered, as they are
inconsistent with the perfect rest which
is desired. The diet should be
nutritive, non-stimulant.
When the inflammation has been rel-
ived the part should be gently moved
to prevent the occurrence of stiffness.
Great caution should be exercised in full-
filling this indication, for if overdone
the inflammatory action may be re-
kindled.
Should the case, notwithstanding the
adoption of these measures, go on
to suppuration, the matter should be
freely evacuated. After this it is
necessarily again to return to the antiphlogistic treatment in hopes that the part may heal as on ordinary acute abscess.

Chronic Synovitis

This disease is marked by more slow progress and less prominent symptoms than the preceding. It is often the result of exposure to cold and chiefly in those tainted with the mercurial or syphilitic diathesis. There is little redness of surface and the pain is much less severe than in the acute form of the disease. Swelling is the chief symptom, and the shape of the tumour will be found to depend on the natural configuration of the joint. The soft parts being little involved do not mark the swelling of the membrane. There is considerable stiffness of the joint, and the muscles gradually become tense and rigid. Atrophy of the limb is a common result.

On opening into the joint, the synovial membrane will be found soft and pulpy and increased in vascularitiy. An exaggerated secretion of fluid takes place, and this is sometimes mixed
with more or less of a turbulent fluid. In this condition the term Hydrodrops Articularis is given.

The disease may have been chronic from the first, or an acute attack may have subsided into this condition. It most frequently occurs in those who have reached adult life. If allowed to go on, other structures get involved, the more fluid part of the effusion becomes ab. 

: parked and a fibrous deposit takes place in the membrane and in the surrounding structures. This renders the swelling more solid and less fluctuating. Motion becomes still more impeded, pain is increased, and the constipation.

: al tendency is towards the hectic con.

Treatment

The greatest indication here is to maintain absolute rest of the part. At first this may be only done by fixing the part gently to a pillow. When the inflammation has abated, rest may be more effectually secured by fixing it with splints.

Counter irritation is now our chief aim, but must not be adopted at once lest we aggravate the inflammatory
condition. The intensity of the inflammation is first to be reduced by local deplation and other antiphlogistics, and then by the prudent use of counter in-\text{tuants} the good work is completed and absorption is promoted. It is important not to rupture the skin with the blister, as in the course of a week or so, the external application of iodine will wonderfully hasten the cure. Blisters may be applied at an earlier stage in those cases where the rheumatic diathesis exists. If any constitutional habit exist that must be combated by internal remedies, thus in syphilitic cases exhibit the lodicule of Potassium, and Colchicum in Mercurial and Rheumatic cases. It has been proposed to puncture the joint for the escape of the contained matter. This practice seems to have been somewhat successful on the continent, but the experience of British surgery is altogether unfavorable to it. Ointments of various kinds and sometimes useful as Mercurial ointment, soap and Camphor plaster, and such like.
Gelatinous degeneration:—This disease is characterized by swelling of a soft, inelastic and doughy nature, which extends as far as the synovial membrane. There is no pain at the early stages, nor indeed until the disease is pretty well advanced. It occurs mostly in adolescents and generally in those of the rheumatic cachexia. The movements of the joint are interfered with, and this symptom increases as the disease advances. The skin is colourless and the limb is in most cases atrophied. In advanced cases, enlargement of the lymphatic glands in the neighborhood is a common result.

On examination after death the synovial membrane will be found much thickened, enlarged and vascular, with a gelatinous appearance. Fibrous deposits are found both on it and on the surrounding cellular tissue. At first there is only an increased secretion of synovia, which is thicker and darker than usual. As the case progresses it goes on to suppuration. The ligaments and adjacent
tissues are matted together by the exudation. It may be the result of a wound in a septiculous subject, or it may follow an attack of synovitis. When it occurs in the knee it is known as White Swelling, from the colourless appearance of the skin.

It may end in absorption or suppuration. In the former case, the joint gradually returns to its normal size but is impaired in its function. There is always a degree of stiffness left.

If the disease is on to suppuration, the purulent matter opens into the joint: the cartilage of incrustation ulcerates: the cancellated structure of the bone is exposed, and the patient, if not relieved, usually dies hectic.

**Treatment.** If Synovitis have preceding the gelatinous degeneration, the treatment should be mainly that recommended for Synovitis. Give nutritive non-stimulating food. Avoid depleting measures. Keep the part at rest on a level plinth and apply a lotion of acetate of lead and opinion to it.

If the disease have occurred without the previous existence of Synovitis, little
more so necessary than to keep the part at perfect rest. Be careful not to blister till all inflammatory action has been subsided. If there be any heat of surface, reduce it to the temperature of the corresponding part on the other side of the body, & then apply a blister. The skin should be untroubled by the blister so that Jodine may follow, and by its disinfectant action, hasten absorption.

If the joint have become painful on pressure the counter irritation must be given up, and lead tannin lotion, applied by means of the many pointed bandage must again be used. When the swelling shows symptoms of subsiding, the cure may be resumed by pressure applied in the following way. Long strips of adhesive plaster should be made to encircle the limb, in sufficient number to cover the whole joint, and applied so as to press equally on the whole articulation. A bandage is then to be applied, not to the joint only, but from the toes up to the very top of the plaster.

If this give rise to irritation, the plaster
must be removed, or at least cut up behind so as to diminish pressure. Mr. Scott advised pledgets of lint, smeared with a stimulant ointment, as the mercurial ointment, to be applied to the joint. Over these strips of plaster were to be applied, and the limb was then to be placed in a splint to prevent motion. This dressing be allowed to remain for several weeks unchanged. It is evident, however, that if allowed to remain too long it must become useless, for when the swelling begins to abate, the part falls away from the dressing and no further pressure can be exerted on it. Another objection to this mode of dressing is that, by allowing it to remain too long, it conceals any accidental irritation or complication that may arise, which, if not attended to, may retard the cure. A simple plaster of soot and soda or potassium ointment applied to the joint and covered over with a well-applied bandage, has often proved successful in combating this disease. We have been told that it is mostly
in fulminating persons that the affection under consideration occurs, hence the constitutional treatment should never be lost sight of. Let the patient have Cod liver oil, iron, Quinine.

Under this treatment the fluid may be absorbed, and the cartilages and bones left uninjured. Great care is necessary during convalescence. When suppuration has occurred, free rent should be given to the matter, to prevent its making its way into the joint. The wounds should be treated with stimulant lotions to induce them to take on the healing action, and pressure and rest should be continued till in hopes of saving the limb. If the patient show symptoms of hectic, he must be relieved by amputation or easy excision.

If the disease occur in the knee joint, endeavor to obtain ankylosis; if this cannot be accomplished, prefer amputation to excision. An ankylosed elbow joint is useless, and excision should be preferred in such a case. If the textures around the joint are disorganized, amputation may be preferred at a much earlier period.
Ulceration of the Cartilages:

Acute ulceration generally occurs in patients of a corpulent habit. The disease commences in the bones and extends to the cartilages. When the latter structure is affected, it indicates that the morbid condition is not recent but has been going on for some time. The ends of the bones are in aarious condition, and the disease spreads to the cartilage, which by this time is thrown off. In this way the raw ends of the bones are exposed. Such a position can alone account for the onset of the pain, seeing that little sensibility exists in the cartilage. Exudation may take place between the cartilage and the subjacent structures. In this way it gets separated from the bone, which is left inflamed and bare.

The symptoms indicative of this disease are holist might naturally be expected from the above short sketch of its pathology. At first there is little pain. Very little pain is present, and is usually most severe after any slight stimulus, as taking food. This results from the
inflamed condition of the bone and periosteum. Nocturnal exacerbations occur from the spasmodic action of the muscle during sleep. The bones are more or less swollen and their markings are rather more prominent than usual. The swelling will be considerably increased if there exist any excitation, the result of ignoza. Pain is greatly increased on pressure of the opposite bones against each other. Pressure applied to the heel or trochanter major will aggravate the pain when it occurs in the hip joint, and pressure on the heel will have the same effect if the knee be the joint affected. For the same cause, locomotion is painful, and the patient avoids putting the heel to the ground, as the pain occasioned by so doing is unbearable. Suppuration sometimes occurs in the joint and if not evacuated will point and obtain access spontaneously.

If detected at an early stage and properly evacuated, the disease may lie but short, but in general the disease is pretty well advanced before we are quite sure that suppuration is
Treatment: Secure perfect rest by fixing the limb with splints. If the disease occur in the knee, for instance, the leg should be placed in a wire splint, slightly flexed, to prevent the bones coming in contact. It is a matter of no small importance in this and other cases where perfect rest is an important indication. The splint should be well fixed to the bed. If this be neglected, the object gained is only partially gained. Both splint and leg may move, and the cure, in this way, will be retarded. Soothe pain by warm applications to the joint. Keep the general health up to par if possible by nourishing but stimulating diet: Allay fibril action by powders, powders, and antimonials. If the disease be severe, apply the actual cautery at some distance from the joint. Bathe freely afterwards. By the heat, extend the limb to bring the ends of the bones into contact, in hope of obtaining ankylosis in the straight position. Should the actual cautery be applied before the disease has reached the
cartilage, it will probably prevent its extension to that structure. Such practice is good preparatory or Conservative Surgery. During the treatment it is important that the patient should have abundance of fresh air. This, however, should not be sought by any means inconsistent with perfect immobility of the joint. Carriage, exercise may be allowed with the limb retained in the proper position meanwhile.

Chronic Atrophia of Cartilage:

This form of the disease begins in the surface of the cartilage itself. So long as the disease action is confined to the cartilage there is neither swelling nor pain, nor any inflammatory exudation. As the disease progresses the bone gets affected, a synovitis is set up and new matter forms, a more rapid destruction of the cartilage takes place and the usual constitutional symptoms manifest themselves. In some cases the cartilages become much attenuated, in others, altered, while in a third class they become completely
separated from the bone. This now supercedes to the diseased condition already existing, the additional change which arises from the presence of a foreign body in the joint.

The parts most liable to this disease, are those on which greatest pressure is exerted. The disease may end in resolution or in suppuration. In the former case, union is effected between the bones, by means of a fibrous or bony membrane, or a deposit of a peculiar kind, known as the porcelainous deposit, covers the ends of the bones and is a substitute for cartilage. When cartilage has once been destroyed it is never reproduced. The porcelainous deposit is peculiarly hard and ivory like, smooth and proved, so that the motions of the joint are facilitated, though confined to one direction.

If the fibrous union have taken place, something may be done in the way of ameliorating the consequent stiffness, but if osseous union have occurred, it is beyond the reach of surgery to improve its insidious.
If the case goes on to suppuration, there may be such a drain on the constitution, that hectic may follow and amputation may be necessary to save life. If, however, we can pull the patient through without amputating, a cure may be obtained by amytalosis.

Symptoms. Pain of a deep, dull character is the first symptom that attracts attention. This may exist for weeks before any swelling is perceived. The motion of the joint is impaired. By and by, the pain becomes aggravated, chiefly at night, increasing in intensity as the inflammation reaches its height. The pain is now felt as if confined to one particular spot, not diffused over the whole joint. When the bones have been exposed, a grating sensation is perceived from friction of the bare surfaces. Pain is now felt in other parts, as in the knee when the hip is affected, in the leg when the knee is the subject of the disease.

During the pain experienced in motion the joint is kept at rest and consequently the muscles acting on it get atrophied. The limb, too, beyond the affected part, gets flaccid and edematous, weak and considerably diminished.
in temperature.

When the disease has extended to all the textures about the joint, swelling becomes pronounced. The synovial membrane and structures about the joint become the seat of purulent effusion. The textures are disorganized and the ligaments if not already destroyed become much relaxed. This abnormal relaxation allows the bones very easily to be dislocated, and such dislocation is no rare symptom in advanced articular disease.

The constitutional symptoms at first are slight, but as the disease advances, the symptomatic fever becomes very great. Startings of the chills, intensifying the patient's sufferings follow, and when suppuration has occurred, hectic may ensue and cut off the patient.

The diagnosis between this disease and Synovitis is pretty well marked. In Synovitis the swelling and pain appear contemporaneously, whereas in the articular affection the disease may lie present weeks or months before any swelling is seen. From the peculiar nature of the exudation, which is both within the synovial membrane and external to it there is a degree of swelling
which is more regular than in Chronic
Synovitis, where the configuration of the
joint determines the form of the tumour.
In Acute Synovitis, the swelling is somewhat
uniform, but it is known by the date at which
the swelling appears, by its rate of increase
and by its extent. In Chronic Synovitis,
there is a doughy elastic feeling that dis-
tributes it from the above, fluctuating
swelling which follows destruction
of the cartilage.
Both forms of Synovitis are intolerant of
pressure, but the other is markedly tender
to the touch, and can't bear the least
degree of pressure without the patient
experiencing great aggravation of suffer-
ing.
The disease is generally traceable to
external agencies as exposure to Cold,
Strains, rheuses. The Syphilitic and
Mercu ri al diseases predispose to its oc-
currence.
Treatment. Constitutional treatment should
at first be anti phlogistic, followed
by tonics and strengthening remedies when
the inflammation is subsiding. Locally
the great and paramount indication is to
secure the most perfect rest for the
part. This must be obtained by means of splints. Local depletion paves the way for counter irritation, which must be of the most active and effectual kind. The actual cautery is generally preferred for this purpose. The issue opened thus must not be allowed to close, but should be kept discharging by means of some caustic application. If the issue lie too near the joint it does not act as a counter irritant, but tends rather to aggravate the inflammatory condition. The counter irritation is to be continued till all signs of active inflammation have disappeared. When this happens the part bears pressure without the same degree of pain. Constitutional symptoms abate, and though the swelling may remain it is softer and more indolent. The issue should now be healed. Motion is still prevented by means of splints, and absorption is promoted by the use of the adhesive strips as described in the treatment of Chronic Synovitis. When the swelling has subsided, motion of the part may be partly resumed
but care should be exercised, lest in the too early or too active resumption of motion reaction ensue. Should this unfortunately occur, return must immediately be made to the antiphlogistic treatment, and the case most sedulously watched, and treated as ab initio.

In the open condition of the joint the same treatment is to be adopted, expecting a cure, though probably with impairment of motion. Formerly it was considered necessary to amputate in such cases. We now know, however, that by the diligent use of antiphlogistics, with proper rest and counter-irritation, the inflammatory condition may be subdued, and the part put in a position for the absorptive treatment by pressure and stimulating lotions. It sometimes happens that, despite our best endeavours, the inflammatory condition cannot be got rid of; that instead of subduing it advances and engrossing every texture, involves them all in a process of destruction, which, if allowed to remain, is almost certain to prove fatal. In such cases, where possible the part should be amputated. If this is impossible, as when the hip joint is
 Diseased, rest is still to be maintained & palliatives administered as the symptoms show themselves.

**Morbus Coxaris**: This disease, though by most believed to be included under the head of ulceration of the cartilage, is so serious and frequent as to demand special attention. The pathology of it is probably the same as that described when speaking of articular disease in general. Some, however, hold that it is disease of the bones coming the joint, not disease of the cartilage.

It has already been stated that in ulcerative disease of the cartilage, the disease does not originate in the cartilage but in the bone, and that the marked action spreads from the seconis tissue to the incrusting cartilage, which becomes eroded and is thrown off from the bone. This opinion would seem to reconcile the conflicting theories regarding the pathology of this joint disease. Far, while affirming that the disease originates in the bones, it still declares that wh-
the essence of the disease is destruction of the cartilage.
The disease has been divided into two stages, each of which presents its own train of symptoms. In the first stage, there is little destruction of tissue, the synovial membrane is entire and the limb is elongated. As the disease advances and the second stage sets in, the limb becomes distorted, there is destruction of tissue and the leg is shortened.
In the first stage, the limb we have seen, is lengthened. This appearance is partly apparent only, and partly real. The appearance is deceptive in so far as it depends on a peculiar twisting of the pelvis which inclines to the affected side: at the same time the muscles are atrophied and the ligaments relaxed allowing the limb to fall away from the pelvis. The flattening of the hip from wasting of the muscles destroys the field of the nates. Instead of being deep and transverse it is joint and sloping downwards and outwards. The limb is thinner and softer than usual; it is weak and cannot support the weight of the body. To avoid pressure it is advanced and the
patient rests on the toe and ball of the foot. Whatever presses the head of the bone against the acetabulum causes pain; thus resting on the heel, a blow on the heel, or on the trochanter major, or upward pressure applied to the heel or knee will give pain. Smart pain is also felt in the knee and has been mistaken for disease in the knee joint. This is only a nervous pain as is indicated by its not being increased on pressure. It probably depends on the obturator nerve passing beneath the hip flexor.

Abduction and rotation of the limb cause pain and there is uneasiness in the pain and loss of the trochanter. From this first stage the patient may completely recover. This however is very seldom is the case. The more common result is that the symptoms become aggravated, destructive change is induced and the case passes on to the second stage.

In the second stage the limb is shortened from organic change in all the structures of the joint. The foot is turned inwards in most cases, but may be everted. The foot may not reach to the ground, the toes resting on the dorsal aspect of the opposite foot. Wasting of the
limb causes the hip to appear swollen and large; though it is in reality smaller than usual. Increased relaxation of the joint predisposes it to dislocation. When this does occur, the head of the bone is displaced on to the top of the acetabulum on the dorsum illii, so increasing the distortion of the limb.

Suppuration goes on in, and around the joint and may be evacuated at various points. Sometimes it ulcerates through the acetabulum and escaping into the pelvis proves fatal, or it may escape again externally through the Sciatic notch. The matter is sometimes evacuated from the groin, hip or outer side of the thigh.

After a somewhat protracted illness the patient may recover with an ankylosed joint, but when the acetabulum is affected, the more common result is that hectic supervenes and a fatal termination follows.

The disease occurs in weak tuberculous patients, particularly if exposed to cold and moisture. It rarely occurs for the first time after 30. When it does occur in the adult it will generally be found on inquiring into the history of the patient.
that the disease had occurred in childhood and had been recovered from. Treatment. From the earliest times, rest, local blood letting and fomentations have been used in the treatment of this disease. The chief indication is most certainly feet. During the whole progress of the case, keep the patient in the recumbent posture, lying on the sound side. In the first stage it is not necessary to put on splints. It is sufficient to tie the knees to a pillow, with a pad betwixt them. Afterwards, as the disease begins to recede, apply the long splint, not for the purpose of extension, but merely to keep the parts perfectly still.

In the acute stage local depletion and fomentations are to be used, lest general depletion is contraindicated by the weak and often anaemic condition of the patient. Give Cod liver oil and iron internally.

If the disease continue to advance, and the pain increase, counter irritation should be practised. This is most ef-
fectually done by applying the Calcar
tpenny. This should be done behind the trochanter. As trodd eschae of one
or two inches length should be formed, and the wound should be kept open by caustic ointments. If the abscess subsides we should heal the parox as quickly as we can.

If an abscess forms outside the joint, it should be evacuated. If suppuration occurs inside the joint interfere with the knife would only increase the mischief. All we can do in such a case is only to palliate the patient's sufferings.