gestible food, and the sudden filling up of the irritated intestine produced such a congestion of the traffic that an absolute block resulted. I completed the operation by opening the distended bowel in three places, emptying it, and suturing the incisions, and finally I replaced the now flaccid intestine in the abdomen and closed the wound. The man made a complete recovery in spite of the very bad condition of several feet of the intestine, and I think it is quite certain that without operation he must inevitably have died.

THE INDICATIONS FOR EXPLORATORY OPERATIONS.

And now, gentlemen, I have nearly concluded all I have to say on this subject, and will only ask your attention to a few concluding words.

I have shown you that abdominal pain, vomiting, and complete constipation, which may be taken collectively as good *prima facie* evidence of mechanical obstruction of the intestine, may nevertheless all be found in certain patients in whom no mechanical obstruction exists.

I have pointed out that many acute affections of the abdominal viscera may be associated with these same symptoms, and that consequently there are many conditions which simulate intestinal obstruction, but yet need no surgical treatment at all. It is not possible in a single address to describe in detail the differential diagnosis of every class of such cases, but I think I may at least point out that the knowledge of each of these various conditions is very essential in attempting a diagnosis of cases which are very frequently difficult, and are always anxious.

There is I think a very foolish and harmful tendency to say in such cases, "Oh, make an exploratory abdominal section to see what is the matter," and a still more foolish and dangerous creed which adds "There is no risk in an exploratory incision."

For myself I regard all such sayings as dictated very largely by mere ignorance, and whilst I would be the first to urge operation where necessary, I find that the suggestion to open the abdomen is often made by those who have never seriously considered the necessity of knowing what is to be sought for when it is opened, and who are very ignorant of the difficulties they would rashly encounter and of the risk to the patient of the operation they propose.

I would urge rather that the interests of the patient and the success of the surgeon alike demand a most careful consideration of all symptoms and an attempt to arrive as nearly as possible at a diagnosis before deciding upon any line of treatment. In many patients needless operations will thereby be avoided altogether, and in others where abdominal section is decided upon it will be undertaken with some definite object in view and with a definite plan of procedure in the mind of the surgeon.

With regard to the alleged safety of all exploratory operations, I would further say that however safe they may be made when the patient can be carefully prepared and dieted, as for the performance of an ovariectomy, all the essential elements of safety are wanting when the patient is acutely ill and the intestines are greatly distended. It is impossible to exaggerate the difficulties that may be encountered in a stout patient under these circumstances, and it is only those who have had to deal with them who know how great is the risk that is run in a so-called exploration, and how difficult or impossible it may be to ascertain what an abdomen does or does not contain until many feet of intestine are withdrawn and the question presents itself as to how the bowels are ever to be put back again. Such operations are necessarily always dangerous, and I know none in which there is more need of good assistance.

In conclusion, may I suggest for your consideration a few points as to procedure when in a doubtful case it is decided to open the abdomen in order to seek for a supposed mechanical obstruction?

1. Open in the middle line below the umbilicus, because most of the causes of obstruction will be found in the lower half of the abdomen.

2. Without allowing any intestine to escape examine first with two or more fingers, or even the whole hand, the right iliac region, and pass from there towards the umbilicus to feel whether there are any adhesions there. It is in this right lower half of the abdomen that most of the causes of obstruction are to be found, for here are (1) the appendix; (2) intestinal diverticula, perhaps attached to the umbilicus or to the neighbouring mesentery; (3) the commonest site for volvulus, that is, the caecum; (4) the usual site for the lodgement of an impacted gall stone, that is, the lower part of the ileum; (5) a common place for adhesions due to caseous mesenteric glands; (6) the sites of inguinal, femoral, and obturator hernia. Further, if the obstruction be in the small intestine,

it is in the right iliac fossa that undistended intestine will be found, and if this can be secured and traced upwards it is the surest guide to the seat of obstruction.

3. Examine next the left iliac region and the pelvic region, the latter especially if the patient be a woman, for there, as additional causes of adhesions, may be inflamed ovaries or tubes or some uterine trouble with neighbouring inflammation.

4. If no cause can be discovered then either open a coil of distended intestine and suture it to the skin, if the patient be too ill to bear more; or else decide to take the distended bowel out of the abdomen altogether, and if necessary open it, empty it, and suture it. It is only by so doing that you will be able to return it once you have decided to let it escape, and it is often only by so doing that you will find a deeply-seated obstruction.

These are the rules I have made for my own guidance, and I have found that it is of great assistance to have some definite plan on which to proceed. If one has been able to eliminate the various conditions that simulate intestinal obstruction, it is evident that the next thing is to have some clear idea as to how best to proceed in dealing with any mechanical obstruction itself.

THE DIAGNOSIS AND TREATMENT OF VARIOUS FORMS OF SEPTIC SYNOVITIS.*

By F. C. WALLIS, M.B., B.C. CANTAB., F.R.C.S.,

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SYNOVITIS due to sepsis has never yet received the attention that it should have in works on surgery. Most textbooks refer to it in a perfunctory manner, and only a few books written on diseases of joints refer to the subject at all. Each year it becomes more obvious to me that a very large number of cases of acute and subacute synovitis are caused by sepsis in some form or other, and the acuteness of the condition depends upon the virulence of the micro-organism responsible for the trouble. A number of these micro-organisms have been found in joint effusions—namely, streptococcus articularum, staphylococcus pyogenes aureus, pneumococcus, gonococcus, and several others. The only paper I have seen which in any way touches on this extremely interesting and very important condition is one by Dr. H. D. Rolleston,¹ in which he states his belief that it is a much more common occurrence than is generally known or suspected.

When a patient has one or more joints swollen, hot, and painful, and this is associated with a temperature, it is usual to treat the case as one of rheumatic fever. But in these cases now referred to, if attention is paid to the symptoms it will be noticed that certain clinical signs are absent, notably the profuse sweating which is, I believe, invariably present in an attack of rheumatic fever, whilst others are added, and I would particularly refer to two symptoms which are nearly always present in septic conditions, and upon which I depend to a considerable extent in making my diagnosis—namely, the dry, harsh, unpleasant condition of the skin, and more particularly the restless, distressed, unhappy mental condition which exists in these patients. These points are well brought out in Dr. Rolleston's paper.

To further illustrate this class of case, let me quote from a paper of my own which was published in the BRITISH MEDICAL JOURNAL of October 6th, 1900, on the causes and treatment of non-malignant stricture of the rectum. In this paper, three cases are described in which the patients suffering from septic ulceration of the rectum were subject to attacks of acute synovitis in one or more joints. The usual remedies for acute rheumatism were given in the first case, because I did not then know or recognize the cause, and yet it was obvious that the attacks in no way resembled acute rheumatism. After the septic ulceration of the rectum had been successfully dealt with, these attacks of synovitis ceased and have never recurred. It is now over two years since I operated on the last case, and four and a-half years since the first one was done.

These are instances of a large group of cases of synovitis, generally multiple, which in certain ways resemble acute rheumatism and yet there is practically no doubt that some septic process is the cause of it.

* Read at a meeting of the West Surrey District of the South-Eastern Branch of the British Medical Association.

Much has to be done before these cases can be classified. The fluid from such joints must be examined bacteriologically, and the condition of the patient carefully observed. The alimentary canal from the mouth onwards must be carefully investigated, with the expectation of finding some condition which on account of its septicity has caused the secondary affection of the joint. When this is cured, then the joints will cease to give trouble.

What micro-organisms cause this particular form of septic synovitis I have not yet been able to ascertain, as these attacks usually clear up with rest and simple measures, and operative aid is seldom needed. Generally speaking the form of sepsis in this group is quite mild in character, and usually leaves the large joints at all events unharmed, or only slightly impaired, even after many attacks.

GONORRHOEAL SYNOVITIS.

I have taught for some years now that monarticular synovitis, coming on suddenly in young people, without any known reason, is always suggestive of gonorrhoea. The onset of the effusion is not very painful, but it persists and does not yield to ordinary treatment. It is usually associated with a rise of temperature and accompanied by a rapid atrophy of the governing muscles.

The excess of synovial fluid is here due to direct irritation of the secreting membrane by either the micro-organism itself or the effect of its toxins. Such being the case the sooner this destructive and irritating condition is removed, the less damage will there be of the joint structures and the more perfect will be the ultimate recovery.

It is not necessary to procure local evidence of the nature of the synovitis. This may have entirely disappeared before the joint has become affected. Under these conditions, if after a week or ten days of expectant treatment, such as rest and strapping; internal remedies, such as salicylates, potassium iodide, and mercury, the joint still remains distended and does not show any sign of amelioration, no further time must be wasted. The joint should be opened and washed out with warm saline solution; after this has been thoroughly done the incision is carefully closed. The limb is kept at rest until the incision is quite healed, and at the end of from ten to fourteen days the joint may gradually be used again, when massage will be found of benefit.

It is not desirable to use any strong chemical lotion in washing out these joints; in fact, it is most desirable not to do anything of the sort. The synovial membrane has been already irritated and inflamed by the destructive action of the gonococcus. It is therefore obvious that any strong chemical solution will only still further act as an irritant. The peritoneum and the synovial membrane of a joint have many points in common, and one of these is the strong natural resisting and protective power of both these secreting membranes, which, if not upset by unnecessary irritation, is quite extraordinary. Although it is a fact that strong chemicals kill micro-organisms, it is also a fact that they kill or maim the natural protecting powers of the membrane. When, therefore, a strong chemical solution is used, the synovial membrane, instead of having one enemy to contend with, has two—greatly to the injury of the joint. Sterilized saline solution is used with the idea of getting rid of the septic fluid, and thus giving the synovial membrane the best chance of reasserting itself.

The fluid which comes from the joint is turbid, with large flakes of lymph in it; under the microscope various cells are seen. When examined bacteriologically the gonococcus may or may not be made out, but when it is not seen it is no proof that it is not the cause.

The immediate result of the treatment is most remarkable, even after the effusion has lasted for some little time. The temperature drops to normal, the pain ceases, the joint does not refill, and the patient proceeds forthwith to get well.

To illustrate this I have chosen the following typical cases:

CASE I.—A young girl, aged 18, was admitted to Charing Cross Hospital into a medical ward for rheumatic fever. She had a temperature ranging between 100° and 102°, and a painful distended knee-joint. She was treated for three weeks by the physician for rheumatic fever, and at the end of that time the joint was swollen and painful, and the temperature still high.—In fact, her condition was in no way improved. Under these circumstances I was asked to see her, and, after doing so, I decided to open the joint and wash it out. The day after this was done the temperature became normal and continued so. The patient made a perfect recovery, with a normally movable joint.

CASE II.—A young man, aged 26, came to my out-patients with a distended right knee-joint. There was no history of a blow or any suggested traumatism. The onset was causeless as far as the man knew; he denied gonorrhoea, and showed no sign of it. Temperature between 99° and 100°. After a week's rest with a back splint, and taking potassium iodide and mercury internally, he was seen again, when the joint, if anything, was

worse. The patient came in the hospital, and the joint was opened and washed out with saline solution. The fluid was examined, and gonococci found. The man made an uninterrupted recovery.

CASE III.—A young woman, aged 24, came to my out-patients at Charing Cross with a painful right shoulder joint, which was distended with fluid. There was no history of injury—the onset was causeless as far as the patient knew. There was no history of gonorrhoea, but she had a vaginal discharge. She was treated expectantly for a fortnight as an out-patient and was then admitted. Ten days' rest in bed making no difference the joint was opened and washed out with saline solution. The contained fluid was turbid, with flakes of lymph in it, pus was found under the microscope, and bacteriological examination showed gonococci. The patient made an uninterrupted recovery.

In cases then of young people with synovitis which comes on without a cause, and which persists in spite of treatment and may be associated with a rise of temperature, no time should be lost but the joint should be opened, washed out and sewn up again.

SYNOVITIS AFTER INFLUENZA.

Septic synovitis follows, or is associated with, various other conditions such as influenza, tonsillitis, and the like.

CASE IV.—A female patient, aged 32, was brought to me with the history that six months previously she had an attack of influenza, during which many of her joints became swollen and tender. All these cleared up except the left knee-joint, which remained painful and swollen. The joint had been rested for five months, but the pain on walking or in moving was so much that the patient got about with great difficulty. As there was a strong tuberculous history I decided to open the knee-joint, in case it was an unusual case of this sort, but mainly because of the pain. When this was done it was at once seen that the joint was free from tubercle, but the patella was attached to the femur, and the internal condyle of the femur was firmly ankylosed to the tibia. The patella was separated but nothing else was done. The patient made an excellent recovery and has lost her pain.

If this case had been recognized early as one of septic synovitis, and the joint opened and washed out, the result would have been very different.

SYNOVITIS ASSOCIATED WITH OSTEOMYELITIS.

The next septic synovitis I wish to refer to is one which is often associated with acute infective osteomyelitis, in which the neighbouring joint may be affected soon after the original onset or some considerable time later on. The following case is a good example of this:

CASE V.—A boy, aged 7, was admitted under my care at Charing Cross Hospital with acute infective periostitis of the femur, which had gone on to suppuration. This was opened. It was noticed that the knee-joint was slightly distended at the time. The distension increased and the temperature rose to 105° F. The joint was opened and washed out and sewn up. The wound healed by first intention. Almost exactly a year after the boy returned with fresh trouble in this joint, which was greatly distended. The old wound was incised, and the same sort of fluid escaped—namely, turbid fluid with lymph and abundance of pus cells; the joint was washed out and sewn up again, and healed by first intention. The knee-joint remained sound until the boy's death, which occurred the year before last, nine years after the first operation, from septicaemia occurring in connexion with a recrudescence of the original bone trouble.

Here the plan of opening and washing out the joint must at once be resorted to, because, owing to the greater virulence of the micro-organism in these cases, destructive changes are rapidly brought about. It may even be desirable for a day or two to drain the joint.

SYNOVITIS DUE TO STREPTOCOCCUS INFECTION.

To further illustrate what I have already said with regard to the varying virulence of the micro-organisms in these septic joints I will take the following case:

CASE VI.—A railway guard, aged 36, on September 13th, 1899, started from Waterloo to Southampton, feeling quite well. On the journey he "caught a cold," and before he arrived at Southampton his right knee was swollen and painful. (He told me that he had knocked his knee in getting into the train.) He managed to return to London, and then went home feeling generally ill, and had a "shiver." The knee became more and more swollen during the next few days, also the thigh and the calf. The pain was severe, keeping him awake. He was admitted into the hospital on September 18th, five days after the onset, in great pain, with a temperature of 102°. The knee-joint was greatly distended, in a position of semi-flexion, and any movement was extremely painful. There was marked oedema of the thigh and calf and fullness in the popliteal space. Two ounces of straw-coloured fluid were aspirated from the knee: this was found to contain a pure culture of streptococcus longus. September 20th. Knee as distended as ever; no improvement in the general condition; aspirated and washed out with saline. September 22nd. No improvement; joint opened by lateral incisions and drained. A portion of the patella was felt to be rough, and the cartilage had disappeared. October 2nd. Drainage imperfect; incisions lengthened and a Thomas's knee-joint splint applied. October 10th. Gradually-increasing fullness of popliteal space; temperature high and irregular; drainage not acting well. The joint was examined under an anæsthetic, and it was found that the cartilage had been denuded from the patella, femur, and tibia; pus had tracked down along the popliteus to the calf. The leg was amputated in the middle third of the thigh. The patient made a satisfactory recovery from the operation.

The indications here for the urgent need of a much more effective treatment as soon as the man came in were the pain, inflammation, swelling, general temperature, and the condition of distress.

A condition such as this must be met by the most energetic measures to prevent a disastrous result. The joint must be

opened freely, drained, and frequently irrigated. The question of a movable joint here is of secondary importance. The main thing to aim at is to keep the limb and preserve the life of the patient.

PYAEMIC SYNOVITIS.

The wonderful recoveries which occur when a patient suffering from pyaemia gets pus in a joint are well shown in the following case:

CASE VII.—A woman, aged 25, was admitted to the Metropolitan Hospital under my care, suffering from pyaemic suppuration of the arm and left knee-joint. The pus had formed very rapidly. The knee-joint was opened and drained. All wounds healed, and the patient left the hospital six weeks after the operation able to bend her knee and walk. Seen often since, and she has now practically a normal knee-joint.

The rapid production of pus in these cases, and the great urgency with which the conditions appeal to the surgeon, are in a way preservative to the limb because the joint is opened promptly, drained, and irrigated, with results that are quite remarkable.

This last case emphasizes better than anything one of the objects of this paper, which is to show the necessity for early and more effective treatment in certain cases of synovitis the origin or progress of which in any way suggest sepsis. It also proves my statement with regard to the recuperative and protecting power of the synovial membrane.

Here a joint is distended with pus, but because of its rapid formation and early recognition the joint is freely opened and drained before the synovial membrane is disorganized, with the result that the membrane reasserts itself, and a good joint is preserved to the patient.

In cases of synovitis, then, which are not associated with rheumatic fever, some septic source must be carefully looked for, and if found, treated.

In the other group of cases, which it will be noticed are mainly monarticular, my experience goes to show that when, without any adequate known cause, a joint becomes distended with fluid, often associated with a rise of temperature, unless in a very few days improvement takes place, the joint should be opened, washed out and sewn up.

In cases of injury followed by increasing temperature, great distension, local pain, and general distress, no time should be lost, but the joint should be opened, the fluid if possible then and there examined, and the joint should if necessary be drained. By this means the septic fluid is got rid of before much damage has been done, the synovial membrane recovers itself, and the movements of the joint are unimpaired. When once the synovial membrane has been overcome and the cartilage eroded, a stiff joint is the best that can be expected. Early incision and washing out will prevent many of these. No harm can happen to the joint when this is properly done, and no joint can be properly washed out through a trocar. An incision sufficiently large to admit of an examining finger should be made, in order that the condition of the cartilage and membrane may be felt.

There is no hesitation on the part of the surgeon to open the joint freely for the removal of a loose body or cartilage. And there should not be any at all, in opening the joint, in such cases as have been described above, having regard to the good results obtained when this is done, and to the disasters that occur when some form of "expectant" treatment is carried out. Great good may be done, and a definite advance made in their surgical treatment by the early recognition and treatment of these conditions of septic synovitis.

REFERENCE.

¹ *Clinical Journal*, March 1st, 1899.

BEQUESTS AND DONATIONS TO HOSPITALS.—Mr. W. W. Astor has given £50,000 to the Great Ormond Street Hospital for Sick Children as a fund for the building of a new out-patient department, to be dedicated to the memory of his little daughter, Gwendoline Astor, who died last autumn. Under the will of the late Mr. Henry Maitland, of St. Andrews, the sum of £2,000 each has been bequeathed to the Edinburgh Royal Infirmary and the Edinburgh Medical Missionary Society, £1,000 each to the Ventnor Hospital for Consumption, the Edinburgh Royal Hospital for Sick Children, and the Longmore Hospital for Incurables, and £500 each to the Craigleith Victoria Hospital for Consumption, the Royal Infirmary, Dundee, and the Edinburgh Royal Maternity Hospital. The Chelsea Hospital for Women has received a donation of £1,000 from the estate of the late Mr. Francis Thomas Freeman, allotted under the discretionary powers of the executors, and the North-Eastern Hospital for Children, Hackney Road, has received a donation of £750 from the same estate.

A Lecture

ON THE

USE OF PARAFFIN FOR SUNKEN NOSES.

Given to the Post-graduate Students of the West London Hospital, December 1st, 1902.

By STEPHEN PAGET, F.R.C.S.,

Surgeon to the West London Hospital; Surgeon to the Throat and Ear Department of the Middlesex Hospital.

GENTLEMEN,—The history of this method of treatment is a curious chapter of surgery, for the method was not invented for the treatment of sunken noses, and it has been used over a very wide range of surgical deformities. There has been, perhaps, a certain extravagance, an excess of zeal, in the treatment of this or that case; but we have by this time plenty of evidence that the injection of paraffin has done good in cases of prolapse and of fistula, even after the failure of the ordinary operations. It is worth while, therefore, to note the original use of the method.

In May, 1899, Gersuny of Vienna was consulted by a young man who had undergone the removal of both testicles for tuberculous disease, and now was obliged to submit himself to medical examination as to his fitness for military duty. Gersuny, in the course of some experiments on animals, had observed that hard vaseline melted and injected under the skin remained there unchanged as a rounded swelling; and he bethought himself that he could in this way produce the appearance of the testicles in the scrotum. He therefore injected 11.6 c.cm. into the right half of the patient's scrotum, and 10 c.cm. into the left half; not all at once, but five injections in all. The patient passed his medical examination without detection. A year later, in May, 1900, the lumps of paraffin were unchanged, and felt as hard as cartilage. In the autumn of 1900 the patient had typhoid fever, and his temperature rose to the melting point of the paraffin, 104° F. According to his own account, the lumps at this time became softer, and seemed to run together; but in May, 1902, they were as they had always been, perfectly hard.

Gersuny's next case was that of a girl, aged 18, who two years previously had undergone operation for cleft palate. The cleft had been closed, but the palate was too short to reach the back of the pharynx, and the patient could not sound hard *g* or *k*. Gersuny, with some difficulty, succeeded in enlarging the soft palate by injecting paraffin into it, and by this method he made some improvement in the patient's speech. His third case was one of the same kind, and was improved; but the injection gave severe pain. His fourth case was a sunken cicatrix, and his fifth was a sunken nose; and each of them gave an excellent result.

In 1900 he published these five cases, with suggestions for further uses of paraffin. It might be used, he said, to raise the cheek after the removal of the upper jaw; to fill a cavity in bone after operation for necrosis; to make good a defect in the brain; to obtain a movable joint after resection, by filling the space between the ends of the bones with paraffin till a sort of capsule was formed, and then letting the paraffin work out through a small incision; to support the weight of the blood in varicose veins, by making a firm swelling of paraffin round a vein; to cure incontinence of faeces, or incontinence of urine in the female, by injecting paraffin under the prolapsed mucous membrane; to keep back a hernia that could not be kept back with a truss; and to conceal the flatness of the chest wall after the removal of the breast. Some of these suggestions may sound extravagant and beyond good surgery; but Gersuny had already reported, in 1900, a successful case in which he had cured, by his method, a case of incontinence of urine in a woman who had undergone seven operations for vesico-vaginal fistula, and all of them in vain.

Then, came a disastrous case. On November 23rd, 1900, Pfannenstiel used this method on a woman suffering from prolapse of the bladder, with vesico-vaginal fistula, after an operation for cancer of the vagina. He chose a paraffin having a higher melting point (115°) than Gersuny's (104°); he injected no less than 30 c.cm., all at one time, into the loose sub-mucous tissue of the prolapse; he gave no anaesthetic, and he sent the patient straight back to the railway station. It is no great wonder that on the way there she had pulmonary embolism. She recovered, but this disaster hindered the general adoption of the method. Moreover, she was not in any way improved; the prolapsed mucous membrane had been left unreduced after injection, and, though the opening