

## The Classic

### Chapter XVIII. Operative Treatment in Chronic Articular Ostitis

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**Abstract** This Classic article is a reprint of the original work by Virgil P. Gibney, Chapter XVIII. Operative Treatment in Chronic Articular Ostitis. An accompanying biographical sketch of Virgil P. Gibney, MD, is available at DOI [10.1007/s11999-009-1166-2](https://doi.org/10.1007/s11999-009-1166-2). The Classic Article is ©1884 and is abridged from Gibney VP. Operative treatment in chronic articular ostitis. In: *The Hip and Its Diseases*. New York, NY, London, UK: Bermingham & Co; 1884:388–402.

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For the arrest of disease in its incipency surgery is not to be credited with any brilliant results. It has often occurred to me that much might be done by the judicious use of the drill. This instrument has not been used to any great extent in this country, i.e., I am not familiar with any cases published in which it has been employed. If one can feel reasonably sure that the disease is confined to the femur, then the joint might be saved by establishing a drainage on the distal side of the capsular ligament. The question forces itself on one, whether even this procedure would prevent the extension of the lesion by contiguity to the articular surfaces.

I was aware that Mr. Macnamara had drilled the head and neck of the femur in cases of serous synovitis of the hip, and in a conversation with this surgeon some two years ago I learned that he had also employed this treatment in chronic articular ostitis of the hip. The results in his synovitic cases were very encouraging, and are recorded in his “Diseases of the Joints.” Recently I received from him a summary of the cases treated, and I take pleasure in giving the substance of his communication.

During the three years ending in 1882, he had drilled the trochanter neck and head of the femur twenty-seven times

for the relief of “hip-joint disease,” and of this number he is convinced that twenty-four have made good recoveries. “Several,” he says, “have grown up into strong healthy children with an amount of compensatory movement in the spine which enables them to go about like other healthy children.” One case, a girl aged twelve years, died three months after the operation, and it was found that the drill had passed into the middle of the head of the bone, and not into the joint. The passage taken by the instrument, was filled with a comparatively soft fibro-cellular substance with islands of cartilage in which calcification of the cartilage was in progress. A layer of newly-formed articular cartilage covered the head of the femur, and a very thin layer of what seemed to be the original articular cartilage lay loose in the joint.

In two other cases of the twenty-seven, at periods varying from four to seven months, the disease was not checked by the operation, and he was compelled to excise the head of the femur.

His conclusion is that he does not now think drilling should be performed for osteo-myelitis in this locality until other treatment has failed. His management of a case at present is this:

When it is clear that well-marked symptoms have developed the patient is put under the care of an experienced nurse in such a locality that the best possible hygiene can be maintained, plenty of fresh air and light, proper food, principally fresh milk. At night the limb is secured by weight and pulley, and by day a Thomas splint is applied, while the child is encouraged to go about as much as possible, aided by crutches and high shoe. If, at the end of from four to six months no improvement follows this treatment, he resorts to the drill, dividing at the same time the adductor muscles, and it may be the tensor vaginæ-femoris. A modified Bryant's splint is applied immediately after the operation, and" secured to both limbs and pelvis by means of plaster-of-Paris bandages. No extension or traction is made, the necessity for this being obviated by the division of the muscles.

I have thus been explicit in the details of the treatment employed by Mr. Macnamara, because I believe him to combine very happily the conservative and the advanced surgical ideas of our British cousins. The question, as I remarked before, occurs to us whether with the means he employs for fixation at the time the exacerbations are at the height would not accomplish all that he gains by the additional drilling?

(Abridged)

It will be seen that my object now is to save the articular surfaces, and I am not convinced that any plan of treatment at present employed will accomplish this object in the majority of instances. One needs to know this fact whenever a case presents in its incipiency. An anatomical diagnosis is essential above all things. Drilling is the only operation, except an early excision. Early excisions will never be popular, for the reason that the operation is too grave in appearance for so apparently simple a lesion. Free incision and drainage may be resorted to, but even this is not advised unless there exist epiphysial necrosis.

Operations for the arrest of disease, where it has already advanced to the destructive stages, consist of free incision gouging, and excision. The latter is by far the more common, and has become a very popular operation among general surgeons. The orthopedist who relies strictly on mechanical contrivances, seldom advises such extreme measures. He can afford to await the slow processes of Nature in her efforts to throw off the effete products. He waits occasionally until amyloid degeneration, or, as Mr. Barwell prefers to call it, lardaceous degeneration, is far advanced, and then the case is considered hopeless.

The question of excision no longer turns on the mortality of the operation. True, the danger in all surgical procedures is to be considered, yet antiseptic surgery has contributed largely toward removing this element. When I say antiseptic surgery has done this, I mean that it has done so directly and indirectly. Those surgeons who oppose

Listerism have, in order to maintain their position, grown more cleanly in their operations, more careful, and more discreet. It is seldom now that a patient dies of shock from an operation, and especially from an excision. The objections that the extreme conservatives bring up against the operation are, that it does not always arrest the disease, and that it does not leave the limb so useful as when a cure takes place in the natural way. These really are the only arguments worth considering, and the first has no weight as an argument. When one decides that there is no hope left the patient—that he must surely die by exhaustion, either from the suppuration or the lardaceous disease, the operation of excision or of amputation becomes as imperative as does tracheotomy when a child is dying from laryngeal stenosis. No man—even its greatest champion, Dr. Sayre—ever claimed that excision will *always* arrest the disease and save life. It gives the patient, even *in extremis*, the last hope, and, as Dr. Yale remarked in an interesting paper before the Academy of Medicine, a few years ago, it is often the best febrifuge we can command, indiscreet enthusiasts have done as much as the extreme conservatives have in bringing the operation into disrepute, by claiming too much. When one looks over statistical tables, and sees the names of patients reported as cured, patients whom he knows have long since succumbed to the disease for which the operation was performed; when he sees other names, with the result given as a quarter of an inch shortening and a very useful limb, patients whom he knows have from one to three inches shortening, and who use a cane or a crutch; when he sees names of patients who are reported as free from disease, patients whom he knows to be suffering from draining sinuses and exacerbations as of old—when one, I say, has an experience of this kind, he is apt to condemn the operation rather than the statistician. The time has certainly come when excision can rest on its merits. Statistics are to it as a fond mother is to her favorite child.

Apart from the unquestionable relief it affords to suppurating joints, it has been conclusively proven during the last decade that lardaceous degeneration may be arrested by this means. Cases that cannot be disputed are multiplying, and before long the evidence will be overwhelming.

(Abridged)

There are many cases where the lardaceous degeneration is not arrested by the excision, but subsequent amputation succeeds in arresting this process. There are cases wherein the excision has failed to remove all the disease and where the suppuration continues.

(Abridged)

The other objection to the operation, viz., that the limb is left insufficiently strong as a support, is certainly an objection worthy of consideration. Still this is of insignificant importance when compared with death by slow, torturing suppuration.

The questions then are reached:

1. Shall we ever excise? Yes.
2. In what cases shall we excise?

To answer this question let me cite an hypothetical case or two.

Suppose one gets a case in the early stage, and learns at that time or subsequently that a tuberculous element exists in some member of father's or mother's family, near or remote. Let this point be always borne in mind for prognostic purposes. Suppose, furthermore, that the treatment adopted is treatment that is known to be attended usually with a fair amount of success. Suppose resolution does not take place, but that the disease goes into the second and then into the third stages. Suppose the suppurative process is unusually severe and unusually prolonged, and that the patient is losing ground steadily despite treatment; suppose that the urine is of low specific gravity, and that this low specific gravity persists until the child begins to complain of pain in the hepatic region. Given now a case like the above, whether the evolution have been slow or rapid, no time should be lost, when these urinary changes have thus advanced, in removing every particle of diseased bone. If excision will not do it, resort to amputation. Lardaceous disease is impending, and life is at stake.

Suppose, again, in this same patient you can get no evidence at any time of a tuberculous element, but that suppuration has existed long enough to induce an exceedingly low vitality and is accompanied by unexplained attacks of diarrhoea; the operation should then be done. These cases die by exhaustion, and these little disorders of the intestinal tract are but the precursors of a general dissolution.

Suppose, still again, that you get a case that has reached the advanced stages without treatment, and that the above conditions exist; it is useless to waste time with any forms of mechanical treatment.

It will be seen that I have placed the operation on the basis of a necessity—a last resort. If time be an important enough element in the case it may be performed even before the third stage is reached. I do not know but that the remarks of Mr. Holmes fairly represent my own views, and I take pleasure in quoting them, as does Mr. Macnamara:

“I would sum up what I have to say about excision of the hip in a very few words, by the simple statement that it ought to be very rarely indeed required if the disease were treated properly at its commencement. In cases seen at an advanced stage of the disease, it is chiefly when sequestra exist that the operation is *necessary*; though it may be *advisable* as a means of shortening the treatment in other cases, also, when the patient cannot obtain the prolonged surgical care which is essential to natural recovery.”

There are many cases, be it understood, that go the same way after excision, and if lardaceous disease be still present amputation should be performed. After all, this question must be left to the good sense of the intelligent practitioner, and he must be guided in addition by correct surgical principles. The chances of life and death, of prolonged suffering and relief from suffering, must be carefully weighed, and judgment be rendered accordingly.

Given then the cases, how shall the operation be performed? There are several incisions, the semilunar, the vertical, the transverse, and the T. The mode of operating, as practised by Dr. Sayre, seems to be the most generally accepted, and, with antiseptic precautions, this should be done as follows:

“Select a strong knife, and drive it home to the bone at a point midway between the anterior-superior spinous process of the ilium and the top of the trochanter; then, drawing it in a curved line over the ilium, and the top of the great trochanter, extending it, not directly over the top of the trochanter, but midway between the centre and its posterior border, and complete it by carrying the knife forward and inward, making the whole length of the incision from four to six inches, according to the size of the thigh. In this manner a curved incision is made through all the soft parts down to the bone and *through the periosteum*. If you do not feel certain that the periosteum has been divided over the femur by the first incision, carry the point of the knife along the same line a second and, if need be, a third time.”

Dr. Wyeth has, by anatomical research, demonstrated that in the above mode of making the incision no hemorrhage of any significance is encountered.

The parts being held aside by retractors, the operator is in view of the trochanter. A narrow thick knife is now used for a “second incision through the periosteum, only at right angles with the first, at a point an inch or an inch and a half below the top of the great trochanter, as the case may be, just opposite the lesser trochanter or a little above it, and extend it as far as possible around the bone.” The periosteum is detached by means of a periosteal elevator separating the attachments up to the digital fossa. The rotators of the thigh at this point are usually divided with the knife. Dr. Sayre lays special stress on the smallness of the incision in this locality, and upon the necessity of elevating enough periosteum in order that the muscular attachments may be preserved.

With a slight adduction movement the head or what remains of it can be thrown out of the acetabulum, the section being made with a saw. Some prefer the chain, some the finger. Bone forceps are undesirable. With a proper base a chisel would be preferable, as no sawdust would be left as an irritating substance.

The place of section should now be subjected to careful inspection for disease of the shaft, and if any is found

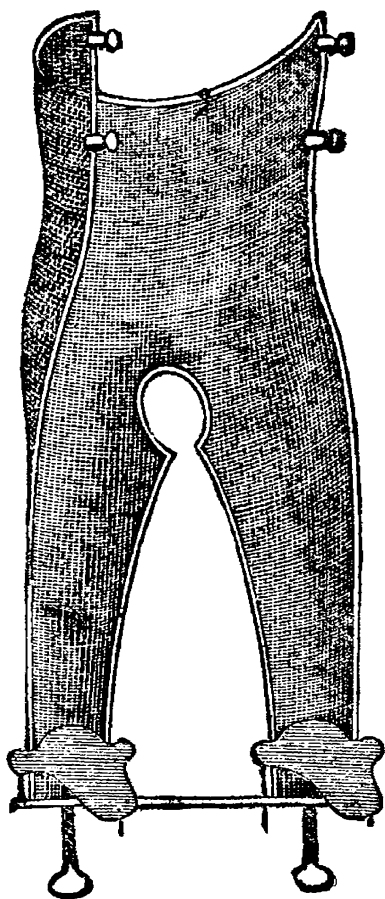


Fig. 64

section must be made at a lower point. It will naturally suggest itself to the operator that the acetabulum should be carefully explored and all necrotic bone, so far as practicable, removed. Thorough cleansing antiseptically, rectification of deformity, drainage tubes, and appropriate dressings comes next in order.

Dr. Sayre again lays stress on the avoidance of cotton or lint as plugs. He uses oakum soaked in balsam Peru.

As a splint for securing immobility, the most convenient is the modification of Bonnet's *grand appareil* (figured as No. 64). This is well padded, and the patient is placed in the apparatus the sound limb being strengthened and secured by making the foot fast to the foot-piece, which moves by an adjustable screw. The diseased limb is secured with pads about salient points to prevent excoriation. This can be worn continuously for a month if the full Lister dressing be employed; otherwise it will be necessary to change the dressing in from twenty-four to forty-eight hours. At the end of a month or six weeks the apparatus can be removed and other splints substituted.

In England the Bryant splint is used, with modifications. Indeed splints which preserve the parallelism and secure

immobility may be extemporized and the cuirass can be dispensed with. Works on surgery give the dressings and appliances in detail; but, for a complete description, Dr. Sayre's work on Orthopedic Surgery is the best for reference. This operation is successful in proportion to the care in execution and subsequent nursing given the patient.

Some surgeons obtain permission to remove the limb, before attempting the operation, in case the disease is found so extensive as to make the removal of all portions impracticable. One never knows just how much caries he will meet. Sometimes, as in one or two of Dr. Poore's cases, the whole shaft is diseased.

The remaining operations are for the correction of deformity, and to Dr. W. T. Bull I am indebted for assistance in the preparation of the remaining portion of this chapter.

The operation for bony ankylosis consists in division of the neck of the femur with a saw subcutaneously, and it has been done, without question, with good results.

It has also been done with a chisel by Volkmann, Maunder and Macewen. It makes very little difference whether the bone is divided with a saw or chisel. Of late years most surgeons prefer the chisel to the saw. In either case the operation is practically the same: sink the knife right down to the bone above the upper border of the great trochanter, and then either pass a saw or a chisel through this opening and divide the bone.

Theoretically, the saw is open to the objection of leaving sawdust behind, but both means give uniformly good results. The wound generally heals perfectly, or with very moderate suppuration. Some wounds, when the bone is divided with the saw, heal subcutaneously. It is desirable to do such operations antiseptically as far as possible.

Adams's operation is only practicable in cases of bony ankylosis where the head of the bone is in its place, and these are cases of ankylosis from rheumatism or rheumatic arthritis, ankylosis from long-continued rest, and Adams includes pyæmic inflammation of the hip-joint—in fact any inflammation where the head of the bone remains in place; as long as the head is there, the operation is feasible.

But cases of hip-joint disease where the head of the bone has been absorbed, where there is a high position of the trochanter above Nélaton's line are not amenable to Adams's operation.

Such cases require an operation first performed by Barton, but which should be done nowadays after the manner made more precise by Volkmann.

Barton's operation consisted in cutting through the femur below the trochanter minor. An incision was made sufficiently large to separate the periosteum from the bone, and then a chain-saw was passed around the bone, thus dividing it. Several American surgeons repeated this operation. Sayre modified it by making one end of the bone

convex and the other concave, and claimed to obtain motion by this artificial joint, which persisted for two years (reported on page 420 of his work). There is an objection to this operation proposed by Barton, from the fact that the bone is cut completely across, and when the effort is made to straighten the limb, it is likely to throw upward or forward the upper end of the lower fragment. One case occurred in the practice of a surgeon in this city, in which the femoral artery was pressed upon and gangrene took place.

The Volkmann operation is the one Dr. Bull performs. In this the bone is not sawn or chiselled entirely through, but a wedge-shaped piece is removed from the outer surface of the bone, the apex of which extends nearly to the compact tissue on the inner surface of the bone. This leaves a thin layer of compact tissue on the inner surface to be fractured through in the effort to straighten the limb, and serves to hold the lower fragment in place.

In addition to removing the wedge-shaped piece of bone, it is generally necessary to divide the sartorius, tensor vaginæ femoris, and sometimes the rectus where the thigh is strongly flexed; and in addition to these muscles the adductors also should be divided when the limb is adducted as well as flexed.

The operation to which Volkmann gave the name "Subtrochanteric Osteotomy," is performed as follows: An incision is made directly over the long axis of the femur on its outer side, about one and a half inches in length, directly down to the bone. The middle point of this incision should be from one to one and a half inches below the top of the great trochanter. The periosteum is separated from the bone over the outer and posterior surface, and with the chisel a wedge-shaped piece is removed embracing the whole thickness of the bone, with the exception of the inner layer of compact tissue. The width of the base of the wedge should be greater or less according to the amount of flexion, and the base of the wedge must be sufficiently large to permit the cut surfaces of the bone to come in contact when the limb is straightened. This varies from one half to one inch.

After removing the wedge of bone, the pelvis should be steadied by an assistant, and the limb brought down to a straight position by fracturing the layer of bone which has not been cut through, and before the limb can be perfectly straightened it may be found that division of the adductors

sartorius and, sometimes, the tensor vaginæ femoris is required. This may be done by subcutaneous incision or by an open wound; probably the former method will suffice in the majority of cases, and is to be preferred on account of the smaller or insignificant character of the wound. If, however, extensive division of these muscles should be found necessary, some surgeons prefer to accomplish this by the open method.

The subcutaneous tenotomy (myotomy?) is easily performed, by putting the muscles on the stretch by straightening the limb, entering the skin close to their origin with a sharp-pointed tenotome, then passing a blunt-pointed tenotome underneath the muscle, taking care to keep close to the point of insertion in the bone and cutting toward the skin while the fibres are kept upon the stretch.

The wounds should be kept open and covered merely with a Lister dressing, which should reach from the lower third of the thigh to the crest of the ilium. Over this a plaster-of-Paris bandage should be applied from above the knee, embracing the pelvis, and a weight-and-pulley extension applied to the limb, a weight of five or ten pounds being sufficient. In place of the extension and plaster-of-Paris, a long external splint, reaching from the axilla to below the sole, should be used in young children.

This operation has yielded perfectly satisfactory results only where antiseptic details have been strictly carried out; and while it is no longer considered necessary to use the spray upon a wound during operations, it is certainly desirable that the parts to be operated on, the instruments, and hands of the operator and his assistants, should be carefully disinfected, and a typical Lister dressing should be used. In view, however, of carbolic-acid poisoning in children, especially those of a strumous diathesis, it seems to Dr. Bull at least preferable to substitute for carbolic acid in the wound a solution of bichloride of mercury, of the strength of one part to one thousand.

The dressing need not be removed unless a discharge appear at its edge, or there be some constitutional disturbance.

At the end of six weeks union will have occurred at the point of section of the bone, and a week or two later the patient may be allowed to go around on crutches. In many cases the wound in the soft parts will be reduced to a mere granulating surface, or entirely cicatrized at the end of three weeks, and a more simple dressing may be substituted for the Lister gauze.