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Remarks on Excision of the Hip.

BY

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REPRINTED FROM

The New York Medical Journal

for November 28, 1885.

Reprinted from the New York Medical Journal for November 28, 1885.

REMARKS ON

EXCISION OF THE HIP.*

By LEROY MILTON YALE, M. D.

An apology is perhaps due to the society for again bringing up so well-worn a subject as excision of the hip. But, as it is one upon which surgical opinion is far from unanimous, its consideration must be always in order until the value of the operation is better settled than it yet is. The more recent views concerning tubercle and the rise of antiseptic surgery have stimulated the resort to excision in hip disease. Aseptic methods have now been long enough employed for considerable experience to have been accumulated as to their effect upon the ultimate results of the operation. This paper is the outcome of an attempt to ascertain from the periodical literature of the last six or seven years what this experience has been, and whether any conclusions could be drawn from it regarding the indications for resection in hip disease. Although tolerably familiar with the difficulties of the question, I confess I was somewhat surprised at the scantiness of the material which came to hand that was valuable for exact comparisons.

* Read before the New York Surgical Society, November 10, 1885.

The grounds upon which resection of the hip is urged as preferable to non-interference are usually three:

1. That it directly saves life.

2. That it shortens treatment, and, by so doing, lessens risks both vital and functional.

3. That it gives better functional results.

There can be no manner of doubt that the operation often saves lives that otherwise must certainly have been sacrificed. Such operations *in extremis* have been aptly compared to tracheotomy in like conditions. Under such circumstances failures should not be counted. Every success should be esteemed a clear gain, and even prolongation of life and mitigation of suffering be reckoned in favor of the operation. About such resections there is probably no question. The inquiry is rather this: Comparing cases as nearly as possible similar, at what period, or under what circumstances, do the results obtained by excision become preferable to those gained by less radical measures? And it may be here remarked that a good deal that has been said regarding the relative value of early or late operations is rather beside the question, for there is little doubt as to their comparative success. The issue is between the operation at all and conservative methods, and the former is clearly indicated whenever it can be shown to give better prospects for life than the latter.

The value to be set upon resection, therefore, depends very largely upon what is held to be the natural tendency of the disease, and upon what success can be gained by conservative treatment. And right here, at the start, we find a divergence of views so wide as to go far toward explaining the unsettled condition of opinion regarding the operation. The most gloomy statements come from German authors. Thus Billroth gave the death-rate of his cases, some of which were followed after leaving the hospital, at

31¼ per cent., taking, if I understand correctly, all cases. Hueter,* from hospital records alone, gave 26¾ per cent. The two lists united give 28⅝ per cent. Nowhere else is the death-rate set so high when all stages of the disease are considered together. From reports for several years of the Orthopædic Hospital of this city, I find that the deaths and discharges on account of incurability together make an annual average of about 4¾ per cent. of all cases treated. Gibney's† statistics from the Hospital for the Ruptured and Crippled give for 288 cases a mortality from all causes of 12½ per cent. Taylor's‡ statistics, which give (deducting one case of violent death) 2 deaths in 93 cases, or 2⅛ per cent., can not be fairly quoted here, as they were drawn from a private practice among well-to-do people.

Although exsection has of late been done quite early in the disease, yet it would be obviously unfair to make any comparison between the death-rate of these collections of cases in all stages and the most favorable operative statistics. Again, although exsection is frequently done when destructive changes are recognizable in the joint, but before suppuration is evident, I know of no extended statistics of the corresponding cases treated conservatively. A few cases will be mentioned further on. But, regarding suppurative coxitis, we have more distinct expressions of the results of experience, and some statistics. Here, again, Hueter's estimates exceed others in gravity. While acknowledging the absence of exact information, he states that he should be surprised if statistics should show that more than 50 per cent. of cases that reach the "second florescence stage" (the

* "Klinik der Gelenkrankheiten," S. 142.

† The Strumous Element in the Ætiology of Joint Disease, "New York Medical Journal," July and August, 1877.

‡ Observations on the Mechanical Treatment of Diseases of the Hip Joint, "Boston Med. and Surg. Jour.," March 6, 1879, p. 318.

stage of flexion, adduction, and inward rotation) ever were healed. And he further states his belief that "suppuration of the hip joint—if the cases in which a single small abscess forms and quickly closes again, and also the cases of scanty suppuration in the granulations of synovitis hyperplastica granulosa are subtracted—is a nearly absolutely fatal process." * Volkmann † is by no means so hopeless. Ollier ‡ thinks that "the greater part of the suppurative coxalgias of children may be cured by methodical expectation, aided by the resources of hygiene." Taylor lost 2 out of 24 suppurative cases, or 8⅓ per cent. This, as before stated, was in private practice. The committee of the Clinical Society of London # set the mortality of cases of suppurative hip disease, treated expectantly, at 33½ per cent. from all causes; or, leaving out causes unconnected with the disease, at 31·6 per cent. Cazin ‖ gives the result in the cases of 80 patients treated at the hospital at Berck, sent from a Parisian hospital after they had failed to improve there. All but ten of these were grave cases, and 5 per cent. were already albuminuric when received. The statistics cover five years; 55 per cent. were cured, 12½ per cent. died, 7½ per cent. were benefited, and the remaining 25 per cent. were not cured when removed. This remarkable success for cases of such severity may, perhaps, be not fairly introduced here, as the patients, although belonging to the hospital class, were at Berck under excellent hygienic influences, and were systematically treated.

Gibney, △ out of 80 patients with hip disease cured with-

* *L. c.*, p. 641.

† Resectionen der Gelenke, "Samml. klin. Vortr.," No. 51, p. 2.

‡ "Revue, de chirurgie," 1881.

"Transactions," 1881.

‖ "Bulletin et mémoires de la société de chirurgie," Paris, 1876.

△ "Medical Record," vol. xiii, p. 174.

out mechanical treatment, found 48 that had had abscesses. No percentage of mortality can be made here, as the total number having had abscesses that were treated is unknown; but this number of recoveries under a plan of the purest expectancy shows that suppurative coxitis can not be nearly so grave an accident as some have estimated it to be. As an offset, however, may be mentioned 19 patients recorded by Caumont,* treated conservatively, of whom 12 (63·1 per cent.) died.

From these discordant figures and opinions it seems to me fair to conclude that their disparity is not the result of the bias of different observers, but that in some communities or districts circumstances may so influence the course of the disease as to make an actual difference in the facts, as well as in the interpretation of them. To express an opinion, therefore, as to the average mortality of suppurative coxitis may be hazardous, or even presumptuous. Nevertheless, my own observations lead me to accept the more moderate estimates as the more nearly correct, and I should consider that the rate set in the Clinical Society's report was amply large; that is to say, that the death-rate would not exceed 30 per cent., even among the poor, at least as we know poverty in this great city. In private conversations, Dr. Gibney and Dr. Shaffer, of this city, both of whom have had unusual facilities for knowing the results of hip disease among the poor, expressed the opinion that the estimate I have given was very liberal, and would considerably exceed the facts.

Now, as to the death-rate of excision. Leisrink's often-quoted tables set it at 63·6 per cent.,† but this high figure is reached by setting aside all unhealed cases as worthless, which is a source of error, as many such cases go through

* "Deutsche Ztschr. f. Chirurgie," Bd. xx, S. 137.

† Langenbeck's "Arch. f. klin. Chirurgie," Bd. xii, S. 177.

the same course as unoperated cases and reach an ultimate cure, perhaps by ankylosis, after a long time. If all of Leisrink's cases had been included, his death-rate would have been 57·9 per cent. Sayre's* table gives 72 cases (two being still under treatment), with 25 deaths, or 34·7 per cent. Culbertson's tables contain 418 cases, with 174 deaths, or 41·62 per cent. If uncertain cases, 30 in number, are excluded, the percentage will be 44·84. All these collections contain cases observed for quite a long time, and this death-rate is by no means that of operation. Culbertson gives only 29 deaths as immediately resulting from the operation—that is, 6·93 per cent. of all cases. This is interesting as showing that even before the advent of antiseptic surgery the operation, as such, added but little to the general mortality from hip disease.

Many lists published since the beginning of antiseptic surgery contain cases treated in both periods, and often no attempt is made to separate them. Thus, Cowell,† in reporting 65 operations of his own, says: "I now perform the operation antiseptically," but the results are all grouped together. It does not appear that these cases were followed beyond the hospital. There were seven deaths among them, or 10·77 per cent. Three patients above eighteen years of age, all died. Of the 62 below eighteen years, only 4 died, or 6·15 per cent. Here should be placed the statistics of the Clinical Society's report, before quoted, which gave a mortality of 40 per cent., or, excluding deaths from causes unconnected with the disease, 37·7 per cent. Holmes's‡ list—given in his well-known Address in Surgery—of operations done in British hospitals belongs to the five years ending 1878, a period during which antiseptic precautions were

* "Orthopædic Surgery," 2d ed., p. 347.

† "British Med. Journal," 1882, ii, 360.

‡ *Ibid.*, 1880, ii, 212.

coming into use. They should probably be considered as mixed operations. It does not appear how long the cases were followed, but, of 215 cases, 40, or 18·6 per cent., ended fatally, and 57, or 26·5 per cent., failed. Caumont,* whose statistics are commendable for the care with which patients have been traced for years after they left the hospital and carefully classified, records 42 cases, with 26 deaths, 61·9 per cent. Only 5, or 11·9 per cent., died from the operation. The remaining 50 per cent. were from progressive caries, amyloid changes, and tuberculosis. His death-rate before antisepsis was 66 per cent.; since antisepsis, 41 per cent.

Of operations entirely antiseptic, Volkmann† reports 48 with but 4 deaths, or 8⅓ per cent. Two only of these (from shock) were strictly deaths from operation; the third, after two months, was from thrombosis, and the fourth, after three months and a quarter, from hæmorrhage from ulceration of an artery, due to a suppurating scrofulous gland. Volkmann estimates that 8 or 10 would subsequently prove fatal from the progress of the disease, which would run up the death-rate to 25 or 30 per cent. Korff‡ reports 16 deaths out of 33 cases treated antiseptically (48·48 per cent.), the death-rate diminishing steadily as the methods were improved, being 75 per cent. when Lister only was used, 52·63 per cent. with a modified Lister, and 30 per cent. with a bichloride and salt gauze dressing. Grosch# bases his statistics on 166 cases treated antiseptically; 120 of these were observed to the end, with 44 deaths, or 36·7 per cent. He divides his cases into three stages. The first

* "Deutsche Zeitung f. Chirurgie," Bd. xx, 1884, Heft 3 and 4.

† "Verhandl. d. deutsch. Gesellsch. f. Chirurgie," 1877, S. 59.

‡ "Deutsche Ztschr. f. Chirurgie," Bd. xxii, S. 149.

Inaugural Dissertation, Dorpat, 1882, Abstract in "Centralbl. f. Chirurgie," 1882, S. 228.

contains those operated on with unruptured capsule and slight changes in the joint; the second, cases with abscess and fistulæ; the third, cases with long suppuration, extensive destruction of the joint with great debilitation. In the first class there was for children no death-rate; for the second, it was 24·1 per cent.; for the third, 67·5 per cent. Further, he found that for the period 1876–'82, after antiseptic methods were well established, the death-rate was 9 per cent. less than for the period 1870–'75, in which these methods were forming. Quite recently Alexander* gives the results of 36 operations apparently all done and dressed antiseptically (chloride of zinc and Lister). One patient only died of operation (shock), 2·77 per cent.; 10 more from disease. Total death-rate, 30·55 per cent.

It will at once be seen that statistics gathered in such different ways, and to bring out different aspects of the question, can not be closely compared with hope of an exact result. But, if I have correctly apprehended the general import, it is this: that the mortality after resection of the hip joint has materially diminished since the introduction of antiseptic precautions, and that the diminution corresponds very closely to the death-rate formerly chargeable immediately to the operation itself. Take the extensive tables of Culbertson; setting aside uncertain cases, he had a total death-rate of 44·84 per cent.; deducting deaths from operation—6·93 per cent.—we have 37·91 per cent., which is very nearly the same as Grosch's—36·7 per cent. for 120 completed cases under antiseptic treatment. In other words, asepsis has almost abolished the risks from wound complications, and the death-rate is reduced very nearly to that from the uninterrupted disease when the operation has failed to arrest it.† And, as it has been shown that, in cases that

* "Liverpool Med.-Chir. Journal," 1885, p. 289.

† At first sight it would seem as if more had been accomplished,

heal, the period of healing is shorter than when antiseptics are not used, the danger of amyloid changes may be slightly lessened. Thus much has been gained by perfect antisepsis; in weighing the chances in any given case, we need no longer put much stress on the dangers of the operation itself, except, perhaps, the one element of shock, which the prolonged extirpation of diseased and suspected tissues, necessitated by the thoroughness of modern surgery, sometimes favors. It seems, then, fair to say that whenever the disease in its natural course assumes an aspect threatening to life, resection is indicated, provided none of the less radical operations—drainage, gouging, etc.—can remove the danger.

It has just been mentioned that very early operations, done while the changes in the joint are slight and the capsule unruptured, have given no death-rate, or almost none. But, on the other hand, the disease itself has practically no death-rate at this stage. Occasionally general or visceral tuberculosis may occur thus early, but rarely. Amyloid changes and exhaustion do not enter here as causes of death. It does not appear, then, that there is thus early any vital indication for excision. The early operation has been urged as vitally indicated in forestalling tuberculosis and the other attendant risks of morbus coxarius by cutting short the disease. If it could be proved that such prevention actually followed the operation, it would be a weighty argument. As Grosch points out, tuberculosis is still the commonest cause of death. König * maintains, as a result of a

but, as Grosch's statistics contain only early cases of a kind that scarcely appear in Culbertson's, the comparison is not quite upon an equal basis.

* Ueber die Resultate der Gelenkresektionen, etc., "Verhandl. der deutsch. Gesellsch. f. Chirurgie, IX. Kongress"; also, Die Frühresection bei tuberculoser Erkrankung der Gelenke, etc., "Archiv. f. klin. Chirurgie," Bd. xxvi, S. 822.

large experience in excision of all kinds—117 in three years and a half—that the hope for immunity from tubercular infection has not been gained by antiseptic resection. Of 25 deaths after his operations, 18 were from tuberculosis, and in addition nine patients, not yet dead, were hopelessly tuberculous; in all, 21·5 per cent. of his cases; and of 21 hip excisions, 10—47·6 per cent.—died of tuberculosis in four years. In the debate on König's paper some disagreement with his views was expressed, but Esmarch essentially confirmed them. Caumont* distinctly states that he found no preventive effect in his cases. Of 26 cases of scrofulous origin treated by expectancy, he lost 5—rather less than one fifth—from tubercular disease; of 12 resected, he lost 4, or one third. Others may have had better results, but the prophylactic effect can not be very decided if such marked exceptions occur.

Nor is it clear that destructive changes in the joint without evident suppuration often present a vital indication for excision. A vicious form of caries, characterized by great suffering and great destructiveness of tissues without much pus formation (caries sicca) is probably best met by resection. But of ordinary caries this is not true. It is a matter of common experience to find cases in which the destructive process is evidenced by the misplacement of the trochanter, which go through the whole course to recovery without any external evidence of suppuration. Caumont has taken the trouble to place such cases by themselves in his report. Of those treated expectantly, 25 per cent. died; of those exsected, 50 per cent.

It is not until suppuration has taken place that any vital indication for resection appears. Even here I believe the dictum of Hueter† is far too sweeping when he says: "I hold resection of the hip joint in coxitis to be indicated

* *Loc. cit.* † *L. c.*, p. 653.

as soon as an extensive suppuration of the joint manifests itself, or as soon as the course shows that the termination in suppuration can be no longer prevented." Such a statement, however, is the natural outcome of his extremely gloomy views of the results of suppuration. If the opinion I have expressed as to the prognosis of suppurative coxalgia is anywhere near a correct one, resection is only indicated in a minority of cases. The indication comes not from the existence, but from the persistence, of suppuration. If it persists after the drainage of the abscesses and under the best hygienic resources the patient can command, particularly if fever attends the suppuration, then exploration of the joint is indicated, by incision or dilatation of existing fistulæ, with resection or a less extensive extirpation of the diseased parts, as the condition found may demand. And this should not be delayed after the system shows distinct depression from the suppurative process. To wait until the operation is the only escape from impending death is to err on the side of ultra-conservatism. I have not mentioned necrosis or sequestra in the joint, because under such circumstances some operation for the removal of the dead bone is imperative. Likewise, if perforation of the acetabulum with pelvic abscess exists, we have no resource but resection. True dislocation of the femur with suppuration of the hip joint is of very rare occurrence in ordinary hip disease, and the indication for excision often urged in this connection is rather orthopædic than vital.

A few words may be said regarding the second claim, that, namely, resection shortens the period of treatment, and that it diminishes the risks, both vital and functional. This is true of those cases that heal promptly and soundly, but only of such. Beside those that are fatal there is a long series of cases in which the patients neither die nor heal, but live years with persistent fistulæ. In Leisrink's tables 12·5 per

cent. were "unhealed"; in Holmes's, 26·5 per cent. were "failures." Such cases now are often spoken of as "relapses." Asepsis favors prompt healing of the soft parts, but the union subsequently in many cases breaks down, and the old process is re-established under circumstances in no way improved. Just how frequent these "relapses" are I can not say, but they are often mentioned as "common." My own observations make them about 20 per cent. of all cases operated on. A friend who was in Kiel the past summer quotes Neuber as saying that "about half" of his cases relapsed. This refers, I understand, to the re-opening of the wound, with tubercular granulations of its edges. Many of these ultimately do well after excision of the diseased parts.

Lastly, as to function. It is far from proved that resection gives better average results than a "natural" cure. In the question shortening is not the most important element. The shortening from resection is on the average greater than from natural cure, but not so very much. In a case not resected, but of such severity as to bring the operation into consideration, the growth of bone from the upper extremity will have been considerably retarded or arrested, according to the degree in which the epiphyseal cartilage has been affected. In a case resected the growth will be entirely abolished, and some bone already produced must be sacrificed. Ollier * points out that, although the total growth in length from the lower extremity of the femur amounts to about twice that from the upper, yet during the first four years of life the two ends contribute about equally, and that afterward the lower increases in activity until its work is, toward the end, about three times that of the upper. The prognosis as to length, then, will vary with the age at which excision is done, very early excision giving much the greatest

* "Revue de chirurgie," 1881.

ultimate shortening. The leaving of the greater trochanter does not much affect this relation, for what it contributes to growth in length is mainly above the joint and does not much increase the efficient length of the bone. The atrophy from inactivity affects the whole limb and is not materially different in cases resected from those left alone. If a resection was promptly successful, the advantage ought to be in favor of the operation, as permitting more speedy use of the limb.

Again, a useful joint in a lower extremity must be stable as well as mobile. And for most occupations security in the support of the trunk is more essential than motion at any one joint. Mobility with security at the hip after excision is only obtainable when very strong fibrous attachments exist between the pelvis and the remainder of the femur. The destruction from the disease and the necessary extirpation of affected tissues usually prevent the formation of attachments at once strong and flexible. Exceptions occasionally occur, and some very brilliant results have been obtained in which stability existed with very free motion.* Some very remarkable attempts at renovation of a hip joint have occurred, and interesting specimens have been described.† Nevertheless, as a rule, the motion, if considerable, is combined with such feebleness of support that the femur rides up and down on the pelvis in the act of walking. "Flail-joint," in the usual acceptation of the term as meaning uncontrollable motion in various directions, is rare, and I do not remember to have seen it. It is this insecurity that has led some operators (Ollier, Caumont) to urge that, if the operation is made very late, or in cases

* See, for example, several cases figured in Sayre's "Orthopædic Surgery."

† Sayre, *l. c.*, frontispiece, 2d ed.; Küster, "Archiv f. klin. Chirurgie," Bd. xxix, 409; Israel, *Ibid.*, p. 411.

where much local damage has been done, if the patient must earn his living, it is better to strive for ankylosis rather than mobility. *A fortiori*, the ankylosis of a natural cure, the limb on the average being longer than after excision, will give for such persons a more useful limb. The compensating mobility of the spinal articulations, if the disease occurs in childhood, is often marvelous. The most striking instance I ever saw is No. 31 in Dr. Sayre's tables of excision; the motion took place in the lumbar spine, not only antero-posteriorly, but laterally, through a wide arc. Statistics (Grosch) show no better functional results for antiseptic operation than were formerly obtained. Functional reasons strengthen the indication for the substitution, whenever possible, of the simple extirpation of diseased tissues for formal excision in that they disturb less the relations of parts. These less radical performances are by the perfection of aseptic precautions rendered safe, and the large removals of bone formerly necessary to prevent accumulations of pus and septic matter seem no longer essential. In the same direction improvement of functional results may be hoped for by the employment in proper cases of the operative manœuvres in which a partial or temporary removal of the trochanter only is resorted to, the muscular attachments being little disturbed.*

Further, it should not be forgotten that good functional results as to position and motion can only be obtained by prolonged after-treatment. Neglect in this particular constantly produces great deformity, and the care required to secure these good results quite answers the claim already alluded to—that resection is a short road to cure.

The conclusion, then, to which the foregoing brings us is, that exsection of the hip is indicated as a life-saving

* Ollier, *l. c.*; König, "Centralbl. f. Chirurgie," 1882, S. 457; Neuber, *Ibid.*, 1884, Beilage, S. 75.

operation only; and that, as it has not been shown that it can save from any dangers except those consequent upon prolonged suppuration, it is, with rare exceptions, only indicated when the suppurative process has evidently reached a dangerous point, and can not be interrupted by any less serious operation.

The New York Medical Journal,

A WEEKLY REVIEW OF MEDICINE.

PUBLISHED BY
D. Appleton & Co.

EDITED BY
Frank P. Foster,
M.D.

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