Morus Coxarius.

Stanley L. Haynes.
Index.

Biology

Surgery

Treatment

Decision of operation

Decision of excision or amputation

Observations on resection

Operation of excision

After-treatment

Pathology

Muscular contraction

Pain in the knee

State of acetabulum

Severing of limb

Elongation of limb

Direction of foot

Abscess

Lipahon

Ankylosis

False joints

Differential diagnosis

History of excision of the hip

Statistics of resection of the hip

Page

2

8

19

28

29

34

37

38

40

44

45

47

48

48

49

49

50

51

57

60

67

69
This disease is one which has received great attention from many of the most eminent Surgeons and has been investigated with the utmost care by those of them who have especially devoted their time and talents to the consideration of articular diseases. This care has been bestowed on coxarthrosis, arthrotace, coxarthrosemia, arthrotace, arthrotace, morbus coxariae, per coxaria, per coxa, per coxendium or hip disease (maladie de la hanche) for all these names are used indifferently to express the same malady on account of its being one of the most severe and painful of all the ills to which human flesh is heir and of its frequency in all ages and ranks. In addition to these important reasons careful enquiry has been stimulated by the opposite theories which have been adduced as to the true nature of the disease, for, at various times, this lesion has caused the production of many very various and exceedingly conflicting opinions, sometimes most pertinaciously
cherished and defended by their authors, as to its real etiology, seat of origin, pathology and treatment by surgeons of all civilized countries. Fortunately, it is one of those diseases which, though so extremely distressing and exhaustive to its possessor, yields to its treatment in the utmost facility, in the large majority of cases, to the curative art: we have the satisfaction, and a great satisfaction, of knowing that we can cure this serious malady not only for the time, but permanently, by the adoption of the simplest and therefore easiest, treatment: it is so facile because the exciting cause of the continuance of the disease is known and can be put in abeyance.

This disease has been most improperly and unscientifically termed "coxalgia" and "femoro-coxalgia" by some, who appear to have forgotten that these terms should be limited to neuralgia or irritation of the hip joints and that they should not therefore be applied to inflammatory and organic changes.

**Pathology:**

Of all the considerations of malleus coxaginis this is one of the most unsatisfactory - it is most obscure in a large proportion of the cases, which
come under our notice.

Disposing causes: There can be but little doubt that the phthisical diathesis is clearly perceptible in the vast majority of patients suffering from hip-disease, which is usually to use the words of Dr. Coulson "a local indication of a constitutional disease, which disease (scrofula) is one of excessive activity of the secreting system." Mr. Coulson stated this constitutional origin is proved by the fact of other joints being sometimes (but, fortunately, rarely) affected with the same symptoms, varied as a matter of necessity by their position; by its sometimes being asymmetrical (this condition is rare); by its occasionally appearing in various members of a family; by the hepatic functions being almost invariably disturbed by the frequent co-existence of disease in the sympathetic glands; and by its general association with the phthisical cachexia. Of other proofs be pointing that this is when in a scrofulous patient, a disease of abnormal secretion we have them so Mr. Coulson stated in the facts that its progress is impeded by any greater secretion as by gestation, by the frequency of the co-existence of atrophy and by the swelling which appears soon after the commencement of the malady and continues throughout its entire course; lastly, the
disease is arrested by all modes of treatment which
induce absorption.

Persons of the phlegmatic diathesis are frequently the
subjects of morbus coxae—as I will afterwards remark—
under the head of Symptomatology, the disease comes
in them in a different manner than it does in
strenuous individuals.

The gouty, phlegmatic and syphilitic cachexia,
gonorrhea, variole, scurliina, mebelle, cutaneous
diseases and chronic discharges too rapidly healed
are sometimes proceeded by morbus coxanies; in some
of these cases there appears to be a metastasis.

The disease is sometimes apparently vicarious, as
it has been noticed to appear when the menses,
lochia and mammary secretion have been suppressed.

Dr. Faye regards Coxaarthrosis as "a local affection
not necessarily connected with penna;"

Exciting causes. The commencement of the disease
may now and then be traced to a fall, to sitting
on cold steps, to getting repeatedly wet, or to lying
on moist ground. I venture to think the malady
may often be induced by the mode in which the hips
of a child are clothed—that they are not kept
sufficiently warm and that cold therefore act directly
as an exciting cause.
Social position:hip disease is, as might well be expected, far more common amongst the poor than the affluent, in consequence of the former having faulty and imperfect nutrition, their want of sufficient and reasonable clothing, their much greater exposure to vicissitudes of temperature, their too-often bad drainage and their almost invariably partial ventilation. Some of these causes act generally by depressing the nervous system and therefore causing deficiency of vital power (as they do in almost all diseases), while others act locally on a part which has already a predisposition to the manifestation of the malariae modi.

Age: Alters mentioned three cases of "congenital malarial coparian"—these must have been congenital displacements simply (vide Differential diagnosis, page 60), Coulson saw it in an infant aged one month, and Ignagni met with it in a child a few months old. Campen found it most frequently at the age of one and a half year. Of 356 cases collected by Falconer 273 (or more than two thirds) were between 10 and 14 years of age. Dr. W inne, in the statistics which he has published, mentions 34 cases, in which the ages of the patients had been stated; he found that of these 13 were aged 10 years and under, 10
were from 10 to 15 years of age, 6 were from 15 to 20, and 5 were above 20 years. Albers stated it is most prevalent between 3 and 12 years, while Ford said its attack comes most frequently between infancy and fourteen years. Gross affirmed it to be most common from 3 to 7 years. Conlom thought it is more a disease of childhood than of infancy (as it probably is); he argued that phrenia is the most active at an early age, when the bones and articulations are much more vascular and contain but a small proportionate quantity of earthy parts and that therefore falls, violence or any other cause acting locally on them will induce the manifestation of the disease much more easily than in the adult. Mr. Sym's past experience leads him to say it is most common between 7 and 14. In a few cases the disease has not appeared until the patient has been 30 years of age. Its manifestation is frequent at puberty just because that is a period when any nervous tendency is liable to be evidenced.

Sex Of 71 cases of tuberculous cases at the Margate Infirmary for Consumptive Children 49 were in males and 25 in females. The ages being between 3 and 16. Professor Francis Holme mentioned 576 cases, 413 of which were in males and 143 in females.
So 1,7512 females: Falconer's experience led him to
concur in Dr. Holmi's statement of its much greater
frequency in males. Dr. Hope, in 49 cases found
31 of them pure males and 18 in females. The sex was
just stated in the remaining 1. The disease
terminates more favorably in males than in females
probably on account of the former having more vital
force and physical strength, with less excitability
of the nervous system, and therefore being better able
to withstand the great exhaustion and intense
paroxysmal pains of this terrible and insidious
malady. And found it most commonly in
men, andBoston most frequently in women. The
latter accounts for this by the fact that the phrenic
cachexia is more easily developed in than than in
men; although these latter are the most exposed to
fatigue, damp, and changes of weather, women are
more confined indoors and subject to draughts, bad
sanitary arrangements &c. He appears to be the only
observer who has thought the disease is most
common in females.
Symptomatology.

Before entering into a description of the symptoms it will be better that I should mention the principal divisions which have been made by various authors and shall briefly describe the duration of each of the different stages of the disease.

Ford divided puerperal fever into three stages: 1st. From the commencement of the disease to the first appearance of lengthening of the thighs, 2nd. From that elongation to phalering, however caused and 3rd. From phalering to the termination of the disease. Boyer and Maisonnave divided it into two stages: 1st. From the beginning of the disease to dislocation or other cause of phalering and 2nd. From that to the end of the malady. Deshler made four stages: 1st. From the first symptoms to elongation, 2nd. From elongation to phalering, 3rd. From ablation to suppuration and 4th. The suppuration stage from its beginning to its termination in recovery or death. Deshler had three stages: 1st. Commencement of the disease and lengthening, and 3rd. Phalering. In fact, his division resembled that of Ford except that he did not admit suppuration as a stage distinct from phalering. After Griller divides it into two: 1st. To elongation, from commencement of the malady and 2nd. To phalering.
and consequent deformity. Dr. Barnwell describes three stages. 1st. From the beginning of the disease to the first deformity, 2nd. From flattening of the bullock to the termination of the elongation stage, and 3rd. The flattening and subsequent progress of the disease. 

By taking a composite of these views and generalizing them it will be seen that in reality the divisions of Ford, Cheyne, and Barnwell are exactly similar, although described differently, that Boyer and Maisonneve did not recognize their first and second stages but added one subsequent to abbreviation, that Burt included all the four stages and that Professor Miller does not recognize the first stage of the first mentioned authors as a distinct one.

I will describe the disease in accordance with Dr. Barnwell's division of it.

With respect to the duration of these stages or of the whole disease little can be said—it is so very uncertain. The first stage generally lasts from one to six months; the second is generally a chronic one, while the third depends altogether upon the patient's constitution and health and the nature of the termination of the disease. Death is rarely before the eighteenth month from the commencement of the disease and very often not until after the second
year: the mortality from the disease per se is small, no statistics are known as to the proportion.

First stage. The disease commences by stiffness in the thigh, most felt in the morning; this is succeeded by a difficulty in stooping forward and a sense of great fatigue with occasional shooting pains shooting down the limb: a peculiar sympathetic pain in the knee generally follows, sometimes accompanied by pain in the diseased articulation. The knee itself is usually physically unaffected but it may become slightly swollen and communicate a sense of stiffness to the hand. Pain in the knee usually exists for months before the patient applies for advice; it is usually on the inner side and superficial but it may be deep; it is sharp and lancinating, or aching and dull; it is worse at night, in damp weather, after exposure to cold, when the perspiration is arrested and during disorder of the digestive system: the principal pain may be at the commencement of the disease. Gross mentions a case in which sympathetic pain was felt at the first step and in the tendo Achillis: he says it may shift from one joint to another.

In this first stage the knee pain be moved painlessly although it may be the seat of more pain during rest than the hip, but the hip cannot be moved.
without causing notice to the patient. The patient
walks with awkwardness and want of energy.
The symptoms in the commencement of the disease
are varied by the seat of the morbid changes—whether
the disease begins in the synovial membrane or in the
bone—the former is really chronic coxitis, coxarthritis
or synovitis of the hip and therefore requires the ordinary
treatment of that inflammation: the latter is the
disease to which alone the term probus coxanicos should
be confined—i.e. in the pannus, chronic and increasing
gradually malady, which always begins in the hard
parts. A child of the strumous cachexia is much
more liable to be attacked by the osteitic than by the
synovial commencement of the malady. An
"acute probus coxanicos" has been described—it is only
acute synovitis of the hip joint, the differential diagnosis
between which and true or chronic hip disease will be
found at page 64.

I adhere to Dr. Banwell's description of two forms
(coxitis and osteitic) of the disease because, although
the chronic pannitis is not at first true probus
coxanicos it becomes so and requires therefore the
same treatment: The following are the diagnostic
symptoms (modified from Dr. Banwell's description) of
each of these forms—
Gouty

The pain is a sense of fullness and distension present in the evening and after exercise but constant.

Stiffness in the morning

Limping comes on with the pain. At first it is slight in the morning; then disappears during the day and is most marked in the evening.

No pain in the knee until after deep swelling in the groin has appeared.

Starting of the joint is a late symptom.

There is tenderness behind the trochanter and at the groin — but more on pressing or rotating together, the articulating surfaces.

The swelling of the groin is deep, even with and below the pubic bone, and can be discerned by the glandular tissue. The glands do not swell at all during the first stage.

Osteitic

Pain is dull and aching, worse at night, and is permitted.

No muscular stiffness

Limping does not come on until pain has existed some time; it is then equal throughout the day.

Pain in the knee is a very early symptom.

Starting is an early symptom.

Absence of tenderness behind the trochanter and in the groin, but sometimes on pressing or rotating together, the articulating surfaces.
These distinctions cannot be drawn up to the termination of the first stage. As the disease advances, the differences between the symptoms just mentioned gradually become obliterated and no matter how the disease commenced there is now some degree of lincting, tenderness on pressure both on the synovial membrane below the groin or behind the trochanter and on the articular surfaces on rubbing or pressing them together, if nocturnal planting have not existed in the earlier stage of the disease it appears now and the pain becomes aggravated in wet or variable weather.

The patient now walks as if without a knee to the affected limb because he keeps that joint motionless. This is very characteristic: when there is a difficulty in causing lateral movement of the limb we have an important diagnostic symptom. This is proceeded by slight lameness but up to this time there is not any deformity.

It is generally at this time—the termination of the first stage—that the patient (and more especially if a child) first comes to the Surgeon, unless the disease undergo spontaneous cure, as it sometimes does.

**Second stage** Lengthening or loss of the flexor of the toes with consequent flattening of the glantal...
region and lateral rotation of the spine now become observable; the limb appears to be continually elongated in the majority of cases in consequence of the pelvis being drawn down to that side, and is really slightly lengthened where there is fluid between the bones; the thigh is slightly flexed, the knee is anterior to, abducted from and lower than its fellow and is usually rotated inwards, and the foot is generally evoked (but it may be invovled) with the heel raised from the ground, the ball of the foot and toes only touching it, but no weight is placed on that limb while the patient is standing. After the duration of several months in most cases, pain is felt in the hip joint; this pain may be at any part of the joint; it may shift from place to place, or it may be universal in rare cases the first pain may be felt in the hip. The limb is dragged along, rather than moved, in progression.

The disease now either terminates in spontaneous recovery or rapidly becomes aggravated. The disease seldom undergoes resolution if pain have come on in the hip itself. In those cases which occur of spontaneous recovery it is common to find some amount of persistent lameness is
If the patient have not been brought under the hands of the Surgeon at the termination of the first stage he is now to seek advice.

The trochanter major in this, the second, stage is directed abnormally outwards (when I come to the differential diagnosis I will show that is pathognomonic of mumps coxaries) - this causes the trochanteric fossa to be diminished; this is in consequence of the swelling in the joint, sometimes aided by atrophy of the gluteal muscles: the thigh becomes less firm than in health from the flabby and wasted condition of its muscles; the patient rests on the sound side so as to relieve the affected limb as much as possible of any weight - in fact, he stands in very much the same position as a soldier does when standing "at ease" i.e. when he is officially supposed to be doing so.

When there is shortening in the second stage it is inconsistent and is most evident when the patient is erect. There is persistent and easily noticed lameness with more or less continuous pain in the knee and hip - at night this pain is spasmodic and extends between the hip and knee in addition to being in these joints: there are powerful sonic
contractions, and wasting of the muscles. The pain in the knee is generally persistent, with the paroxysms sometimes quite free from pain. The abdomen is unusually prominent in consequence of the curvature forwards, as well as laterally, of the lumbar vertebrae.

The approach of the third stage, should the disease not terminate sooner, is indicated by great increase of pain in the knee. The disease gets worse irregularly by "fits and starts," and each attack of pain is longer and more severe than its predecessor, and at last becomes continuous and throbbing. To relieve this dreadful pain the patient lies on the sound side and, leaning over towards the foot, allows the injured limb to fall over the sound one in order that the weight of it may, when there is any fluid between the femur and the cotyledon cavity, act as a lever and lift the head of the femur from the acetabulum, and to relieve the pressure on their surfaces. It is in consequence of this position being assumed that the head of the femur becomes sometimes dislocated. The seat of the disease now becomes exceedingly tender, the constitution becomes affected and the patient becomes rapidly emaciated: if these be not
Third stage. Sometimes there is an entire remission of all the signs of the disease before the characteristic symptoms of this stage appear, in consequence of rupture of the capsular ligament having occurred and relieved the tension on all the diseased parts: this remission (in those cases in which it has been manifest) is preceded by severe attacks of pain and the spasms therefore become dreadfully exhausting to the patient. Inflammation of the subcutaneous veins causes edema of the cellular tissue around the joint. The head of the femur becomes, occasionally, dislocated—such luxation is preceded by consequent shortening and increased prominence or prominence of the malleolus of the diseased side; the pelvis, on the side in which the malady is seated, is raised, causing the dorsal and lumbar curvatures to be in the opposite direction to what they were in the second stage—i.e. in the third stage the lumbar vertebrae have their concavity towards the disease, the dorsal vertebrae are convex towards it and the shoulder of the said side is depressed. The tenderness diminishes considerably after luxation, the swelling becomes diffused and more superficial and then abscesses form and burst. Hippocrates, speaking of melanus cosarios in his
Apollonius (Sect. VI, Aph. 59) wrote "In the progress of the hip disease, the standing out of the hip bone or of its external projection and the falling in of the parts behind are prognostics of suppuration." If the patient attempts to stand, the foot of the diseased side reeds on the base of the phalanges (it may be either pivoted or rotated - most commonly the former), the knee and heel are elevated, and the thigh is flexed. The shortening of the limb is gradual when due to absorption of the head of the femur (which is usually the case) and of the acetabulum also in some cases; or sudden when dislocation has taken place. If the luxation be into the femur above the thigh and limb are even more elongated than they were in the second stage.

If the patient be a strenuous one he will probably soon become tetchy; if originally strong or of the rheumatic diathesis recovery may be hoped for by the formation of a false or new acetabulum, but it is in most cases with an ankylosed, wasted and almost always useless limb. It is strange what wonderful recoveries sometimes follow even dislocation.
Treatment.

In all cases a trial should be made with the long splint of Desault without applying when the joint contains fluid, more extension than will suffice to keep the articulating surfaces separated from each other - if there be no fluid between the bones it will be impossible to get any extension; this acts by causing absolute rest of the joint and by preventing the muscular contractions: the effects of this most simple treatment are marvellous: the night after its application the patient sleeps soundly and quite undisturbed by any painings such as he has usually been accustomed to for sometime: the surgical world and the patients are indebted to Dr. Syne for the introduction and consequently wide diffusion of this eminently successful treatment.

I do not describe the splints of Cape, Butcher and other Surgeons because, although they are excellent, they cannot secure the complete immobility produced by the common Desault splint while they are more difficult of application and are much more expensive: this last is an important objection when we have to treat poor patients and when the long splint is better. It is only right however to mention that I have been assured by one phy
has used Dr. Gayre's splint that it does preserve absolute immobility of the articulation, while it has the great advantage of letting the patient walk about without any danger to the joint—on the contrary, that it is quite as efficient as the long splint, without its great inconvenience. I am sorry I have not seen it in use.

I may here mention a case which appeared curiously to me. While a Dresser in the Royal Infirmary of Edinburgh a girl of nine years of age was taken there and was pronounced by one of the House-surgeons to have morbus coarctus: the loss of the fold of the pales and consequent flattening of the buttock, the apparent elongation of the thigh, the spinal curvature, the position of the foot and its resting on the ball of the toe, the limping of the patient and the pain on motion of the joint warranted such an opinion and I was requested to call on the patient when a long splint had been made, and to apply it. The girl could not tell when the symptoms had commenced, but her mother had only noticed them a day or two previously. I called on the patient the next day (a Saturday) but the splint had not been prepared; the patient continued on the same plate as on the previous day.

*19th October, 1861.*
I again called two days after (on the Sunday) and was very much surprised to find all the symptoms had totally disappeared and that the girl was walking and running about perfectly well, without any lameness. Therefore did not apply the splint but left orders I was to be sent for if the symptoms returned. I was not sent for, but I have called three or four times since and have found that the girl continues and now remains quite well. The patient was not of a nervous temperament; it is not likely she had hysteria (which seldom appears so early), she was not suffering from dizziness and was a strong healthy girl. To her knowledge, she had not strained, or fallen on the part and could not account for it. This case, the cause of which I cannot determine but which I imagine must have been a blow on the hip, hence we must exercise great caution sometimes that we must not put the long splint on, unless the disease has commenced insidiously and I find the splint on the first day I called on the patient it would have been kept on about a week and on its removal I should have said it was a "case of morbus coxanum" while the case had not been one of that disease at all; in consequence of this case having occurred I would recommend that whenever
There is the least uncertainty the state of the patient should be ascertained about a week after the application of the splint, in order that a child may not unnecessarily be laid up and cause anxiety and trouble to its parents or better, that the splint should not be applied until the uncertainty is cleared up.

First stage. In numerous cases apply cold evaporating lotions to the part, in addition to the long splint, supposing these means to be unsuccessful after a fair trial. The actual cautery must be applied—we have a serious disease to treat and are bound to treat it with determination—one good sized scab is preferable to several small ones and it has the advantage of passing skin which we may afterwards require. To relieve the pain in the knee apply pressure to be grown if it continue after the use of Desault’s splint—it must not be so firm as to cause injury to the subjacent tissues. Consider the constitutional state and treat it accordingly. Give the patient as much pure air as possible—for this purpose he can be placed in pure vehicle while still on his bed (which should be a hard one) and bared out of doors: if he can get a thorough change of climate so much the better—a change to the seaside is often beneficial of the best results. If necessary,
see local, or even general, applications. If acute and phrenic inflammation come on at any time it will be advisable to use both local and general antiphlogistics. In some cases, experience alone can tell us which some recommend the application of mild counter-irritants for the pyritic nodus coxae, while they confine the actual canthery to the conical form. I think most will agree with me that if any counter-irritation is to be used at all it should be of the highest grade in the actual canthery. Some say the long splint is not necessary in this stage: if the patient be a child it must certainly is, to prevent the contact movements he would otherwise make; and even in the adult it is far safer to apply the splint because it secures absolute rest, which is perfectly essential to recovery. No doubt, it is inconvenient to wear such an apparatus but the patient will always submit to the infliction after it has been represented how necessary an one it is.

The splint must be worn as long as there is the least pain on the knee or hip; if the pain and all other symptoms totally cease remove the splint but keep the patient in bed as motionless as possible for two or three days afterwards, then have the limb gently shammed and then try the effect of careful
and limited passive motion of the joint: if the least pain result (beyond what will be due to stiffness from disease) replace the splint until all again seems favorable for a repetition of the experiment.

Mr. Heath says "A useful addition to the long splint is a small wooden cross-bar fastened below the splint and a few inches from its lower end. This both obviates injurious pressure upon the patient's heel and prevents the rolling of the limb to one side." He recommends that the perineal band is best made of a piece of soft cotton bandage pitched to form a long narrow bag and then stuffed with cotton wool. *x x x* To each end of it should be attached short hoops which will make much more easily through the holes in the top of the splint than any bandage. He also says the perineal band should be covered by thin india-rubber cloth. "A bandage laid along each side of the limb will help materially in keeping the limb 'quiet.' For additional security the end of the splint may be fastened to the foot of the bed by a bandage. To keep the bandages dry and clean it is better to varnish the apparatus from the hip to the knee with spirit varnish, which dries very quickly and is easily used."
Second stage. Opium deadens the pain through the senses but does not arrest the spasmotic nocturnal muscular contractions. Dr. Barnell says it is much better to administer diffusive stimulants at night.

If the patient have not been seen until the early part of this stage it is still easy to get the limb into its normal position and to apply the long splint; if necessary, chloroform the patient for this purpose, as it is always better to do in the latter part of this stage. In chronic cases, i.e., in which the long continued application of the long splint appears insufficient, apply the actual cautery in addition to it provided there be no suppuration; for the purpose of dressing the wound so produced a piece of the splint should be removed by two bent metal bars. If the contents of the joint refuse to be absorbed and it is manifest the presence of fluid, whether it be serous or pus, i.e., keeping up or aggravating the disease empty the cavity subcutaneously, avoiding any entry of air. Maphnia (fuss-ff) may be applied subcutaneously once or twice a day if there be great pain.
Third stage. Till by the long splint: if a fail and abscesses form excise the joint, subject to the conditions to be subsequently mentioned. Then abscesses form poultice and foment the part to relieve the pain. If the suppuration appear to be diminishing assist contraction of the abscess by the application of Scott's plaster. When the patient is pernicious exhibit iron (the form of which should be occasionally varied), provided there be no febrile symptoms to contra-indicate it; if there should be, or they should persist, employ the mineral acids: if the patient be a child give an occasional (some say prevent) purgative with these remedies. Should atheric suppuration appear endeavour to promote its absorption by a lotion consisting of Iodine gxxii, Iodide of potassium 7j and Water 7j, to be applied once daily, or an ointment containing a dram of iodide of potassium to an ounce of permaceti ointment— a drachm of this to be rubbed nightly over the suppuration (Barwell). Delay incision of the abscess as long as possible and then make it as far from the joint as may be practicable: should the abscess point it is better to make a small incision at a depending part and then allow
it to empty itself. Of the edges of wounds use warm saline, apply lint saturated in the lotion renewed by Dr. Barnell: if they become indolent and appear to be retarding recovery stimulate them by a solution of sulphate of zinc or of copper, or nitrate of silver. Obstinate pimples about the joint may be injected with a solution of iodine, iodide of iron, nitrate of silver (carbolic sulphate) or chlorinated soda.

Hippocrates, Celsus and Coelius treated the disease by counter-irritation. Hippocrates wrote thus of it in the fifth Section and 66th Aphorism: "When in this complaint the hip bone stands out, the limb wastes and the patient must necessarily fall, unless he be cantharized."

When it is thought inexpedient to operate attend to the position of the limb so that it may anchylose, if it will, in an useful position.

It is better to operate if the constitution becomes affected in consequence of the disease or the joint become disorganized but do not do so until the constitution has been rendered as fit as it can be for operative interference. This caution is mainly to prevent the development of tubercle elsewhere (supposing the patient to be phthisic) before any operation all the viscera, thoracic and abdominal,
and the entire glandular system must be carefully examined — if diseased no operation (unless one of complaisance) would be justifiable because it would only expedite death by causing a rapid development of tubercle internally.

**Question of operation.** It now becomes an important question whether we are or are not to resort to operative treatment; and, if we decide on operating, whether the joint is to be resected or the limb amputated.

An operation is called for when the joint is open, when luxation is causing fresh irritation instead of ameliorating the symptoms, when the head of the femur is just below the integument, when it is evident the disease is causing the constitutional disturbance, when the patient has not got phthisis or other constitutional malady as acute abscess or malignant disease.

No operation should be performed if there be tubercular or other constitutional cachexia intestat of the mucus coparino, when dislocation has diminished the intensity of the disease, and while the parts continue to remain quiet when the bone has a tolerably thick covering, when constitutional disturbance is aggravating the local
disease, when there is the least doubt if a pelvic abscess have been caused by anything else than by gonorrhea, and if there be any spinal lesion (therefore a satisfactory diagnosis of the previous existence of hip disease is necessary before operation).

Question of excision or amputation. Consider the constitutional state and the diathesis to as to endeavor to determine if the patient will be likely to recover best from amputation or after resection. The expression of the patient's countenance may partly assist us in forming this diagnosis. Amputation at the hip joint is fatal in two-thirds of all the cases. The expediency of excision, if it be possible and if there be any operation at all, will be readily perceived after the statistics of that operation at page have been read. There seems that only one third die after that operation, so that the patient has his chance of life exactly doubled. Dr. Weeks has reported 126 cases of amputation of the hip—60 of them proved fatal: 47 were for injuries, 35 of which were unsuccessful. Dr. H. Smith reported 10 cases performed in the Crimea—all of the patients died. Dr. Lagrange collected 30 cases which occurred in the Crimea—all of them terminated most unprofusely within ten days, except two, one of which survived twenty-one, and the
other thirty days. Boux of Toulon performed six consecutive amputations. He recovered, the other 2 patients died. Most of the 162 amputations just mentioned were performed for injuries, and not for phlegmular cataract. The mortality of amputation for this disease would probably be much higher than 66 per cent, as in those 162 cases. Professor Ballingall wrote: "Amputation at the hip joint is an operation which can never be contemplated with any vague "hopes of success"; he advised excision in preference to amputation, if it be possible.

The advantages of amputation are that the disease can be better got at and therefore more certainly removed, there being a certainty that subsequent operation will not be required (one good reason for which it appears to me, is that the patient so rarely lives to afford a chance of it), and the greater certainty with which the patient is able to get up than after excision: another advantage claimed for amputation is that the wound heals quicker, but as the wound is much larger than that left after resection I do not think this is tenable.

Instead of giving the disadvantages of amputation I will now briefly mention the advantages of excision: there are 1st. Resection is proved by statistics.
69-76) take less fatal than amputation (it must be borne in mind I am speaking of resection of the hip only); 2nd, the wound left is smaller; 3rd, large vessels and nerves are not divided; 4th, the hemorrhage consequent on excision is slight and there is less dread of secondary hemorrhage than after amputation; 5th, no large portion of the body is removed and 6th, there is consequently much less shock after resection than necessarily proceeds amputation.

The length of the confinement in bed after resection of the hip is the only practical and important objection to the operation. The importance of this is considerably diminished by the fact that we preserve the limb. One reason brought forward against excision is the supposed difficulty of the operation—supposing it were difficult this reason could never have any weight with those who call themselves Surgeons— if it did they would not be worthy of the title.

The subsequent utility of the limb depends mostly on the after-treatment, the portion in which the limb is placed and the kind of person denied in the hard parts. The difficulty of selecting cases for excision which are likely to do well, or in which
The limit will not only be preserved but will be of utility depends on the experience of the Surgeon, who has to judge if the disease, the confinement or internal causes be producing the impairment of health and the hectic fever.

The patient is likely to do well after excision if there be an elasticity, so to speak, of the constitution during the day after the nocturnal attacks of pain, or occasional temporary amelioration of the disease; when the stomach is able to digest well, when there are not any deposits of tubercular matter, when the splenic and hepatic organs are of normal dimensions and when the urine is healthy.

The amount and the extent of the disease are, after all, our chief indications as to the expediency or otherwise of resection.

Amputation is preferable to resection when the patient is very young or above 45 years of age, as a general rule; there are some men of 50 who would plant the operation better than much younger men.

Excision should not be practised when the facilities for after-treatment cannot be procured (it is for this reason that few army surgeons, during...
pain, excess joints) when the patient has very restless habits, or when more than three inches of the femur require to be removed in the last case and the growth of sufficient strength could not be formed.

To facilitate the diagnosis between such cases in which it is proper to excise and in those in which amputation is preferable if any operation be performed, I now transcribe, with slight modifications, the conditions indicated by Dr. Barwell.

<table>
<thead>
<tr>
<th>Conditions favorable to excision</th>
<th>Conditions favorable to amputation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Absence of internal disease or of affections of other joints or of spine</td>
<td>Presence of internal organic disease, albuminuria, hepatic or splenic enlargement, affections of any other important joint or of the spine.</td>
</tr>
<tr>
<td>Dependence of hectic from local disease, as in the primary disease or of the spine.</td>
<td>Apparent dependence of hectic upon some cause other than the joint.</td>
</tr>
<tr>
<td>Local condition of joint.</td>
<td>Abscess extending far from locality near the original seat of disease.</td>
</tr>
<tr>
<td>Restriction of changes to the more chronic the suppuration the more.</td>
<td>The more acute the suppuration the more.</td>
</tr>
</tbody>
</table>
favourable is the case

Local plate of bone

Before beginning of operation

Confinement of disease to near locality

After removal of portion of bone

Absence of extravasation of its evidence in small spots only

Localized inflammation, whether purpurative or not

Presence of new bone, particularly in more than one part and of some extent

Absence of extensive softening

Granulations with fluid, healthy milli, surrounded by infiltrated tissue

Absence of long oseous pinnae

unfavorable the case

Before beginning of operation

Caries or florid sepsis at some distance from the joint

After removal of piece of bone

Presence of haemorrhage into its substance, especially if multiple and milage blotches

Diffuse inflammation, especially if purpurative

Absence of all new bone

Presence of oseous diffuse softening

Granulations, if any, of cancelli greenish, or straw-coloured

Long pinnae up and in the bone.

Observations on excisions: The removal of the local mischief is in many instances the remedy of the...
general disease. In pleurisy patients it is better to operate early, before tubercle is deposited elsewhere.
If it be already deposited any operation will only expedite its internal progress and therefore hasten the death of the patient. Otherwise disease requires excision less frequently than pleurisy on account of its being usually nonpurulent—until a far advanced stage of the malady at all events. Sometimes the constitution suffers so little that there is abundance of time to try the effect of simpler treatment on the disease. The operation may be performed solely to save or to prolong for a time, the patient's life. When excision is performed after luxation there is greater mortality than when the bone has not been dislocated—this I think is probably caused by the increased exhaustion of the patient at the time of operation. If no operation be performed for maltese covering the bone, unless the disease terminate favorably, becomes rough, carious and divided into pieces, sinuses form and discharge profusely and uninterruptedly, hectic comes on with its concomitant sight mens, loss of appetite, excitation, restlessness and cough, sometimes there are hemorrhages the lungs become incapable of sustaining the circulation and the patient therefore dies after a long and miserable
illness after removal of the disease the patient usually
unless these symptoms have been very formidable they
disappear in consequence of the disease having been
more severe than the operation and the patient doubly
recovers. Never excise a joint if the surrounding
parts are not quiet—reduce any acute inflammation
before operating; a leech or two may be necessary.
It must be borne in mind it is not necessary
to remove all the thickened bone: the experienced
eye alone can tell what is diseased and what is
not, but as a general rule it is safe when half
an inch of thickened bone is left— as this thickening
depends on the local irritation the removal of that
source of mischief stops the thickening, which is
subsequently absorbed.

The epiphyses, or one of them, of a bone are often
diseased while the shaft is unaffected, and vice
versa—the removal of the head of the femur
therefore in children is the removal of all the disease,
excepting perhaps, slight acetabular involvement,
which may be easily removed.

Even when there is external abscess the effects
of absolute rest and moderate extension should
be tried—if the pain diminish and ultimately
cease in the course of a few nights and the—
symptoms indicate the joint should not be operated upon unless the disease by its extension warrants such means. Boile's plaster is particularly valuable in such cases.

Operation of excision. The incisions cannot be dogmatically laid down, as they will be different in every case according to the position of process, abscess, or other complications, but the incisions should be either inside or outside the middle of the space between the trochanter minor and the trochanter major process to avoid injury of the sciatic nerve. Use a fine and light saw if possible; do not use bone forceps if they can be avoided. They damage the bone. During the excision care must be taken that the assistant does not rotate the limb while the operator's fingers are in the joint (if joint there remain) or they will be perfectly compressed; and equal caution should be exercised that the knife joint broken between the neck of the femur and the trochanter major during rotation - it spoils the look of the operator and the temper of the operator; unless the knife be well tempered it is likely to be broken. Injury the soft parts, the vessels and nerves as little as possible. Do not remove any of the soft parts remove the diseased bone only, having firm
the sound bursae just beyond the cavities of the joint. Look for and gouge out any purulent bone. Take care a depending opening is left for the subsequent discharge. If the patient be a young one it must be recollected that the development of the limb will be arrested if the epiphyseal cartilage be removed. The whole of the cotyloid cavity may be removed with injury to the contents of the pelvis; when such a removal is necessary there is suppuration inside the pelvis which has caused a separation of the bone from the iliac and obturator muscles and fascia. The floor of the acetabulum is removable by the aided use of a trephine and the metacarpal and Heip’s pins. The gouge is extremely useful to dig out any purulent lodging bone. Dr. Hancock has removed the entire floor of the acetabulum successfully for cases combined with pelvic abscess, removing the head of the femur as well.

After treatment. Fix the limb after excision by the long splint, so as to avoid all irritation of the wound. The splint should have the metal bands before mentioned: varnish all the bandages and apparatus in the neighborhood of the wound, to prevent the absorption of discharge by them; and have a hole cut through the belt so that it will not be
necessary to move the patient: The parts will
swell and shiver after the operation and will
continue to until the new union has taken on
the inflammatory process and has begun to
pussitate - apply simple water dressing now
and, as a rule, throughout the healing process.

When the patient's health is improved and the
parts get quiet and a little consolidated make
a little continuous extension to get the length of
the limb as natural as it can reasonably be.

If severe union be desired the bones must
be kept close together, but not with any force,
and perfectly immobile: if a false joint be
pushed passive motion must be instituted when
fibrous union has taken place.

If great irritation be caused by the patient
lying on the wound (which should always be
avoided) the wound may be placed over the
perforation in the bed, or the patient may be
lying in the hammock devised by Dr. Heath.
it is a "hammock sling", plus a whole opposite the
wound.
Pathology.

The greatest possible diversity of opinion has prevailed and, I may say, still continues on this subject; it is well known how easily a man can always obtain cases to advance his own theory; another man, with a different opinion, will see the same cases and attempt to prove from them that his theory only is the correct one; it is exceedingly difficult to arrive at facts and I cannot, therefore, expect to solve a question which has been so ably and keenly contested by some of the most celebrated British and Foreign pathologists.

Post of Wimmer believed all articular disease commence in the bones; by our improved pathology we are enabled positively to assert this belief to have been an error; it would therefore be unnecessary to advance any evidence to disprove it. Next, Albers Sad and Doernen believed this disease to commence in the head of the femur. Professor Miller believes it begins by interstitial absorption in the cancellous of the femur, with tuberculous deposit in these in paroxysmus patients, that the disease then destroys the cartilage by continuity of texture, that suppuration then occurs
and causes the diseased action to affect the acetabulum, causing consequent disorganization of the articulation by its becoming an abscess and causing absorption of the contiguous bones, but he mentions also its commencement sometimes in the synovial membrane and states that the progress of the malady is then more rapid. By admitting the disease may commence either in the bone or in the synovial membrane he agrees with most of the recent authorities on this subject. Boyer said it begins by inflammation of the cartilages. Clasen believed it to commence by inflammation and swelling of the capsular ligament. He said the nocturnal exacerbations of pain are symptomatic of inflammation of the fibrous textures. To prove that ligaments do inflame he showed how softening, lengthening, less opacity and gouty deposit have been seen in them. Dr. Astob they believed inflammation of the ligamentum teres is the proximate cause and that it is preceded by inflammation of the cartilaginous surfaces. To prove this he adduced the facts of great pain being produced when the thigh is so moved that the round ligament is stretched and when the femur and acetabulum are pressed together; in the latter case he believed
The pain is caused by the increase in size of the ligamentum teres, preventing it from being folded into its cavity in the acetabulum and therefore being compressed: as additional proof he mentioned that the ligamentum teres is found destroyed sometimes when the cartilage is only partially ulcerated: he appears to have forgotten that the ligamentum teres is covered by synovial membrane, disease of which spreads to the ligament. De Haen thought the surrounding soft parts originated the disease. Sir Astley Cooper thought it commences in the synovial membrane. Sir B. Brodie believed it commences by ulceration of the acetabular articular cartilage followed by ulceration of the femoral cartilage, ulceration of bone and then carries: he admitted its commencement in the cancelli of the bone in numerous patients. Others have thought it begins in the pullichementous punctures, and others in the synovial fat. Mr. Barnett says the malady does not originate in the ligaments: none have imagined does because they have not noticed the disease had extended to them from the synovial membrane. He also objects to the theory (?) that the disease may begin in the cartilage - if read here correctly he says ulceration, caused by degeneration, is the only
disease of cartilage and that it does not cause any detectable disease. Dr. Barnew and Syre deny that there is sometimes tubercular infiltration in the cancellated bone of the head of the femur. Messrs. Barnewell and Cook and Dr. Gruellich agree with Dr. Gillen that the disease may commence either in the bone or in the synovial membrane. Dr. Rice says the disease may be simultaneous in both the hard and soft textures. Last, but far from least, Dr. Ely's opinion is rather in favor of the disease commencing by chronic osseous inflammation, principally pelvic, or more rarely by ulceration of the cartilage.

Leaving these theories as to the commencement of the disease, I pass now to the state to which it passes after its origin, however that may be. When it has commenced in the synovial membrane coagulable lymph is thrown out into the joint. This may change into thick muculent matter or may become gummy. Floating pieces of articular cartilage are sometimes found in the cavity when there is suppuration. The capsular ligament becomes thickened before it is destroyed by the results of the inflammatory process on its articular surface as well as by inflammation of the bursae.
immediately outside the capsule, which become adherent to it. In some cases, no bone is formed (as it is in rheumatic ones), but the extremities of the bones become absorbed, they lose their earthy salts and become filled with a clear, yellow, viscid fluid or with cheesy matter; or they are exfoliated.

Then the pani is in front of the joint it proves that the anterior part of the capsular ligament is thickened (in such cases counter-irritants should be applied in the pani). Balson thought it likely pani is felt down the thigh, in consequence of the pector femoris becoming inflamed by continuity of its deep fibrous surface with the capsular ligament. As the disease goes on, the soft surrounding tissues become inseparable from the joint and none of the former articula partexteriori. Their normal structure abcess causes all the adjacent parts to become a conflated mass.

Muscular contraction. The flexure of the thigh may be very slight, or up to 45°; it is usually adducted, is rarely more or less over the sound limb; it is sometimes abducted. Flexure of the leg is caused by contraction of the hamstring muscles, and extension of the foot by the so-called
The disease causes a continuous contraction of the muscles, which draw together with spasmodic strength, increased by the irremovable state of the disease the femur and the condyle only and so keep up the previously existing inflammation and induce, as a necessary consequence, ulceration of the cartilage in the first instance and of the bones in the second. It is on this account that ulceration has been evident, when patients have died during an early stage of the malady, at the upper part of the acetabulum and of the head of the femur; as the head is pulled up, in monstruous patients at least, there is a formation of new bone around the seat of the disease—this projecting, effectively prevents dislocation.

The muscular contractions are organic and permanent; by this means the Habit pressure is continually kept up and the muscles continue to contract; subsequent elongation is therefore greatly diminished or becomes impossible—when the disease has existed a long time the gluteal muscles often undergo a fatty degeneration.

Pain in the knee. Whenever this occurs in a patient it should lead to a careful examination;
and especially if there be limping, increase of pain after slight exertion and disturbed sleep.

This is due to three, possibly four, causes: 1st. Direct irritation of the obturator, sciatic, gluteal and perhaps also the anterior crural nerves; 2nd. Sympathy between the ends of the femur; 3rd. Spasm of certain muscles; and perhaps, 4th. A continuity of inflammation from one extremity of the femur to the other. The first cause (irritation of nerves) is evidenced by the pain being relieved on firm pressure being made above the knee; you will sometimes see the patient instinctively grasping his thigh and terrified to let go of it because he has experienced that the pain will return when he does so. The second cause (sympathy) is the critical but is nevertheless very probably a true one. The third cause (spasm) like the first, admits of proof—the pains are spasmodic at night i.e. when the patient is attempting to sleep and has less control over his muscular system; the muscles made in proportion to this pain. This atrophy is not a softening, it is a change of the muscles into light rope-like masses: it is the contraction of the tensor fasciae latae and gluteus medius that causes the pelvis to be rotated and depressed.
and hence to produce apparent elongation of the extremity. Fourthly, continuity of osseous inflammation is rendered probable by the knee in some cases participating in it, becoming boggy and swollen in the diseased action.

State of acetabulum: Dr. Samuel Cooper said the disease always affects the pelvis more than the femur. He remarked that in all the fatal cases he saw of hip disease the acetabulum was more extensively diseased than the femur.

In 27 operations performed by Dr. Hancock the acetabulum was diseased in 19: in 2 hardly a trace of it was left; in 3 it was filled with a fibro-gelatinous mass; in 6 the gouge was used; 3 were perforated; the other 5 were more or less affected.

Dr. Winne (in the American Journal of Medical Sciences for 1861) gives the state of 32 cases in which the acetabulum was noticed, to be diseased (out of 49 total cases): the acetabulum was healthy in 2 cases only (1 died, 1 recovered); the acetabulum was found to be absorbed, altered or filled up with plastic matter in 7 cases (3 recovered, 2 convalescent, 1 unknown, 1 died); the cavity was not diseased enough for operative interference in 3 cases (2 recoveries, 1 improved); a small part of
The acetabulum was removed in 10 cases (1 recovered, 1 convalescent, 4 improved, 3 died, 1 result not known). The cotyloid cavity was extensively diseased in 6 cases (4 recoveries, 2 deaths); there were perforation and pelvic abscess in 4 cases (2 recovered and 2 died).

Shortening of limb is from one inch to an inch and a half, rarely 2 (or even 3) inches—sometimes half of this shortening is due to elevation of the pelvis on that side. When it occurs in the second stage it is probably due as much to preponderating muscular contraction (of the flexors and adductors) drawing the head of the femur firmly into the front of the acetabular cavity, as to elevation of the pelvis.

Elongation of limb appears to be from half an inch to an inch and a half usually, but it may be so much as two and a half inches. There has been great dispute as to its causes—without entering into all the various arguments which have been raised on the subject, it appears to be caused by the pelvis of the diseased side being drawn and rotated downward so that the os prominetum becomes almost perpendicular, its distention of the joint causing stretching of the ligamentous structures and also by the comparative or actual disease of the
extremity. There can be but little doubt that the elongation is much more apparent than real. Mr. Gross says it is apparent only, without any absolute lengthening. Dr. Wickham explains elongation by supposing there is "sphincteric action of the gluteal and external rotators, by which the limb is drawn a little from its fellow."

I have already mentioned (page 18) elongation will be produced in the third stage when the femur is inserted into the foramen ovale.

Dorsiflexion or eversion of foot. About the causes of these there has also been some diversity of opinion. Dorsiflexion is probably due to acetabular destruction being more extensive than that of the femur; and eversion by the destruction being principally of the os femoris. In the former case the anterior part of the gluteus medius and the tensor fascia latae are the chief rotating muscles, twisting the limb downwards; in the latter the external rotators act.

Abcesses in connection with morbus coxaris. Abces of the joint may become septic by opening through the foramen ovale or the acetabulum—it may then open into the abdominal cavity (this is happily very rarely the case) or perforate the peritoneum or vagina. Mr. Gross mentions abscesses opening into the bladder.
occasionally, on both sexes: the presence of pus
has caused difficulty of urination. Sometimes
the abscess does not burst at all.
The formation of abscess is not a drawback to
excision; the cause being removed, the effect disappears.
The situation of openings of abscesses can be
regulated very much by the position of the patient.
When pelvic, the patient's position will determine
at what part they should be opened. If the
patient be made to lie on the diseased side the
weight of the intestines and organs inside the
pelvis assists to diminish the size of the sac.
In children, prior to ossification together of
the bones of the innominate bone, the acetabulum
has been separated into its three primitive pieces.
Abscess of the pelvis may form in consequence
of acetabular disease, irrespective of abscess
in the hip.

Dislocation: This only occurs in those
cases in which there is not a deposit of new
bone thrown out around the acetabulum, and
in which the acetabulum has not been deepened
by the disease: the former is usual in arthritic,
and the latter in prolapsus patients; luxation is
much more exceptional than is commonly imagined.
After dislocation, if the disease cease, the remains of the head of the femur may be bound down to a new acetabulum on the dorso-

ili (on to which it is generally impales) or may ankylose by bone or by a false joint: it is more usual for the bone to act as a fresh exciting cause and thereby produce a renewal of the inflammation. By this necrosis of the head of the bone is frequently produced; many of the so called excisions of the hip have been merely the removals of the separated bone.

Luxation is usually on to the dorso-ili (as has been already mentioned), more rarely into the foram ovale and very seldom on to the pubis. The cotyloid cavity usually becomes filled up in the course of time by a fibroid mass.

ankylosis. This is true or osseous-ankylosis or false.

Ossuous ankylosis is rare: Dr. Brodhurst has seen only two cases of it in the hip: Dr. Little has seen but two, also, without luxation. It is through the whole extent of the adjoining surface of the bones, or by ossification of the remains of the capsule, or in the course of the capsule, only these two means together. Ashburney writes
"Sometimes on making a section of an ankylosed joint in which there has been no previous loss of substance in the bone a streak is seen which represents the compact articular surfaces but of that have been destroyed by suppuration. The thorny substance of one bone pierces and penetrates continuously with that of the other" as in long united fracture of the piece of a long bone.

Treatment of ankylosis. Three operations have been proposed. 1st. To divide the bone and then obtain a false joint, 2nd. The excision of a wedge shaped piece, and 3rd. Fracture of the ankylosis. Only remove a wedge shaped portion of bone when there is deformity. Dr. Barton of Philadelphia removed such a piece of bone from a true ankylosis of the hip (by which the thigh was firmly flexed on the abdomen) of a sailor; he then treated the case as one of removal of the head of the femur and caused passive motion in six weeks — the patient had an useful limb in consequence. Stabbed the new joint as near to the original one as possible so that the muscles may resume their functions. Lowsir first proposed fracture — which would be, to use the words of Wellcome..."
"ornelle et barbarae" besides being dangerous, as it has been proved to be.

False ankylosis is 1st. By changes of extra capsular structures or of the capsular ligament, 2nd. By contraction of muscles, causing immobility, and 3rd. The formation of false or fibrous "joints."

Long continued contraction of muscles may cause true ankylosis by disease of a joint.

I think the division of non-osseous ankylosis into spurious and false i.e. outside the joint, or ligamentous within the joint is, though convenient in theory and pathology, unnecessary and even perplexing in practice because the difference between an extra-capsular, a capsular and a ligamentous and intra-capsular ankylosis frequently cannot be made during life.

Dr. Brodhead writes that the characters of the inflammation, the alteration in the shape of the joint, the character of the impediment to motion and the results of examination after chloroformation enable the surgeon to diagnose between extra and intra-capsular false ankylosis, which are often co-existent.

Diagnosis between true and false ankylosis.

Dr. Brodhead advises deep chloroformation of the
patient: even then the distinction cannot sometimes be made except by the "tactus eructus". The adhesions are pronounced when they resist of the least motion or when the muscles can be thrown into contraction, so as to render the tendons tense and prominent.

False ankylososes are divided into five classes by Dr. Brodie's: 1st. Intra-capsular adhesions without alteration in the form of the articulation; 2nd. Intra-capsular adhesions with muscular retraction, or with cicatrices, but without alteration of the form of the joint; 3rd. Flight intra-capsular adhesions; 4th. Flight intra-capsular adhesions with muscular retraction and cicatrices; and 5th. Intra-capsular adhesions with alteration in the form of the articulation. The treatment of each varies with the pathology: in some forms the adhesions will yield to simple forcible extension; in others tenotomy also is necessary while in others gradual extension should be practiced. Dieffenbach was the first to divide the tendons before rupturing the ankylososis. Sourier was followed by Valzacchio, Cornet, Schuh, Berend, Breuning, Leinsen and others, all of whom advocated or practiced rupture of the
achylasia.

Rules for rupture of false achylasies. 1st, Complete chloroformation of the patient; 2nd, tissues, muscle fasciae, and tendons must be simultaneously divided, and the punctures allowed to heal before rupture; 3rd, moderate force alone should be employed by the hand alone, without instruments; 4th, rupture the adhesions in flexion of the limb; 5th, the adhesions should be simply ruptured and no attempt be then made to restore the position of the limb or to ascertain the condition of the joint. A gutta percha splint should be moulded to the limb before extension—after rupture it is to be worn until tenderness about the joint has ceased; then have passive motion every day, every second or third day or even once a week according to the effect and amount of pain produced—it will probably excite less pain each time it is tried. 6th, No motion should be allowed till some days after the operation: it may be necessary to chloroform the patient the first time the limb is moved, or even subsequently: (the hot air bath removes the muscular pain and is a most valuable auxiliary in aiding restoration of motion: the ceasing of the
Patient to Kreutzgärtner to bathe in the spa there will very often be found extremely beneficial—so much so that mobility may be restored after all other means to remission it have failed. 7th. After division of any tendons the limb must be gradually extended so that loss of power of those muscles whose tendons have been divided may not occur. Imitating the thighs: some muscular rigidity always exists. The rupture is usually more or less audible.

The motion obtained after osteous ankylosis is not of the hip (it tends to reason it cannot be) but of the sacro-iliac synchondrosis, which becomes wonderfully mobile. After osteous ankylosis (when it is desired to keep it) great care must be taken that the union be not-jointed until it be quite firm—this may take many years and is not therefore generally recommendable. Occupations which cause great exertion, especially of the legs, on concussions of the parts (as in rowing, tailoring, much walking, &c.) must not be followed at any subsequent time.

When the trochanter major has united with the ilium it will be sufficient to cut through the great trochanter, instead of excising or amputating.
False joints are expressed by many synonyms, as pseudarthrosis, diarthrosis, articulos process, epimys, pel pseudarthrosis, new or spurious joint, and articulation perniciosa of Blandes.

No operation should be performed on an unyielded joint until the parts are perfectly quiescent and the patient is quite restored to health—i.e., not for a considerable time after the morbus exarum has left.

When it is desired to convert a false into a true ankylosis it may be broken up and the parts then kept perfectly motionless, but excision is often required to effect any radical good. Before excising the extremities of the bones Professor Gillies' operation of cutting boldly into the fibrous tissue between them should be tried, simultaneously of course; it seldom fails if the joints are afterward kept motionless. In breaking up a false ankylosis care must be taken not to fracture the bones. I mention this because this accident is one that happens more readily than would be thought possible. Dr. Brodie, from his work I have taken most of the observations under the head of "False ankylosis" had, up to the time he wrote on this subject, broken up 27 ankylosed
hips he cured them all by forcible rupture, according to the rules already mentioned: he finds it occasionally necessary to perform myotomy or tenotomy before he can divide the ankylosis.

The formation of a false joint is often preceded by effusion of lymph, which follows a curious change in the cartilage cells and hyaline (when these exist) into fibrous bands (vide diagram 1); if these are not interfered with they will sometimes form a true ankylosis.

There are five varieties of "false joints": two of them are not really joints, structure being continuous between the bones, as in diagrams 1 and 2; the others (vide diagrams 3, 4 and 5) are lined by a synovial membrane which is without fringes and also in some cases by a low form of cartilage (which is intended to be represented in the diagrams by the yellow colour, while the synovial membrane is represented by the pink tint). In the first there is a simple fibrous union which might have become osseous if undisturbed: in the second there has been an investing fibrous capsule, like that of the fifth, with a prolongation inwards between the bones, but the spaces between this meniscus and the bones have become filled by
fibrous tissue (this also might have become osseous if motion had been prevented): in the third and
fourth (the only difference between which is that
one bone—in diagram 4—has a depression in which
to receive the other) no osseous union could take
place, the bones being rounded off and separated by
[cartilage and] synovial membrane of the kind above
described—I have represented diagram 3 as
without any cartilaginous formation: while in the fifth
the joint is the most perfect—it resembles that of the
lower jaw in having a prehensile, which may or may
not be perforated.

The pathological changes after excision of
the hip are known in seven cases—at least, these
are all the cases so far as I have been able to
ascertain after considerable research: in the first
the joint was fibrous (in three of these the union was
pure and fibrous, as in diagram 1, and in two it was
capsular— as in diagram 2): in the seventh a true
false joint was formed, its having the surfaces of
the bones tipped with cartilage, and provided with
a synovial membrane—as in diagram 4.
Differential diagnosis.

Congenital displacement of the hip. The head of the femur is in the external iliac fossa and the thigh is shortened from the first. The morbus coxaris the limb is of normal length in the first stage; it is elongated in the second and shortened in the third—and this shortening is greater than in congenital displacement. In congenital displacement the limb can be painlessly lengthened and returns to its original length on being liberated: not so in hip disease. The fold of the nates is natural, or a little flatter than natural in congenital deformity; in morbus coxaris it is flattened when the limb is elongated, but tense and projecting when shortened. The limb is not wasted and the motion is free—only lameness, and painless in the natural displacement: the sole of the foot is on the ground and the person bears his weight on the shortened limb as much as one the other; in morbus coxarisci the foot is rested on the ball of the toes.

Abnormal length of muscles causes various degree of lameness: the patient often has to relax the knee and therefore to rest on the toes, so that the shortened muscles attached to the posterior surface of the femur may be flaccid.
Natural differences in the length of the respective limbs, old fractures &c produce lameness also.
Congenital shortening of the toes and fingers produces lameness. In these cases it is impossible to extend the thigh beyond a certain point, and the resistance opposing this motion is elastic and resilient: when extension is attempted the lumbar vertebrae are inclined forwards and when this is done there is more flexion than there was when the individual kept his spine straight. The patient prefers sitting to standing, and a low seat acts to relax the living muscles.

Hysteria often simulates hip disease very closely. The catamenia are often irregular. The patient can be induced to assume pain in any part by attracting the attention to it. By mentioning any supposed symptoms the girl will state she feels them. There is not any hocharacteristic change. There is great liability to real contractions of the hip and knee on this account every attempt must be made to get the patient speedily into good health. The bowels are usually constipated. Attend to the prime vice and do not indulge the patient's fancies. If the patient's attention be directed from the part the pain in it diminishes or ceases: pain is
increased on pinching the skin as much as when
the articular surfaces are moved on each other. It
must not be recollected there is often exquisite sensibility
of the joints imagined to be diseased in hysteria.

Definition. In this also morbus coxanix may
be closely imitated, but there is not any pain in
the hip.

General irritation of the system causes a wasting
of the limb in the young, the other signs of morbus
coxanix are absent.

Radulitis may cause lameness by deforming the
femur and femur.

Neuralgia, trocaulalgia, coccyalgia, ophthalalgia,
opthalmalgia and femoro-coxalgia are other names
for this disease in the hip. It is distinguished
from morbus coxanix by the absence of the symptom
peculiar to that disease, by the neuralgie and
periodic character of the pain and by neuralgie of
other parts affecting the patient at the same or
some previous time.

Sciatica. Pain is increased on tightening the
nerve by flexure of the hip and is in the course of
the nerve. The patient is usually asthmatic; he
places his fingers, when asked to point out the
exact seat of pain, precisely on those parts to which
we know the nerve is anatomically distributed. There is total absence of all physical signs of movement. It may cause shortening of the limb by the excessive contractions of the muscles, but there is absence of any history as to any antecedent elongation. It is further known by being removable by linctures, acupuncturing, ophagastics.

Rheumatic arthritis. The foot is always strongly sized; the pain and stiffness diminish after massage. Exercise; there is often a cracking sound (a kind of creaking) on moving the articulating surfaces on each other. No severe postural pain, never any pain in the knee; shifting pain on percussion, passive and motion. Rheumatic pains are usually felt, or have been, in other joints and parts alike, which, rheumatism in children is uncommon. All these distinguish rheumatism from muscos cost.

A bruise or fall is frequently the cause of it: the patient must be warned that in a few weeks there may perhaps be half an inch of shortening (this is in consequence of interstitial absorption of the head or neck of the femur, especially in the aged) or he may think he has been malreated for fracture.

Alteration of cartilage. The pain comes on
suddenly and is intense in the hip on the least
motion quite preventing the patient from attempting
to walk; the patient's sleep is very much interfered
with; there is not any swelling at first.

Sympotms, Cxitis or Cxarthritis. The acute onset
is usually directly traceable to some exciting cause;
it commences suddenly, progresses rapidly, causing an
uniform and quickly formed swelling; there is usually
a good deal of hypeia, there is intensely acute pain
in the joint, down the thigh and in the knee, which
is considerably aggravated by any pressure or motion
so that the patient cannot possibly assume the erect
position without a great increase of pain, no matter
what position the limb is placed in whether it is allowed
to hang unsupported resting on the ground—even when
the patient is in the horizontal position the slightest
motion increases the pain, which is continuous;
plastic muscular contraction causes flexion of the
thigh; in many cases there is rotation of the pelvis
and consequent spinal curvature and apparent
abbreviation of the limb. If in a rheumatic person
there is little ahead of it going on to suppuration (and
especially if it occur during rheumatic fever) but if
it be not naturally or artificially arrested in other
persons the joint suppures. Chronic
synovitis has been described in the list of symptoms of synovitis makes case at page 12

Periostitis of great trochanter. Persistence of gluteal
jernal fold, the coexistence of groin or phrenotomy
in other regions, and the fact that it appears, usually
later in life than makes cocarthritis distinguish this
disease.

Sprain. The absence of pain in the knee,
greater latitude of motion, general absence of
constitutional disturbance and the fact that the
foot is easily rotated distinguishes this from
cocarthritis. The foot is usually inverted.

Abscess in neighborhood of joint. The parts are
swollen, elastic and fluctuating, the skin is shining
and tight. The pain is not relieved by rest and
not attended by flattening of the pales, but is
succeeded by swelling there

Other abscess unconnected with joint. No pain on
rotating the former, in the knee or at the posterior part
of the hip joint.

Boas abscess. Similar pain, increased on erect
posture being assumed, and particularly on
extension of the thigh. No change in the
position of the trochanter major or in the length
of the lower extremities. Forced inspiration
causes increase of pain. Crying, crying & cause
looseness and impulse of the abscess. It always
diminishes or even disappears under pressure or
when the patient is recumbent and quickly reappears
when pressure is removed or the patient assumes the
erect position. Finally the abscess abscess nearly always
attains after puberty.

Spinal cases. Pains like those of mobius case
are sometimes felt in the hip, but the muscles are
not completely under the control of the patient when
away: it is distinguished by the absence of other
signs and symptoms of hip disease.

Osteochondritis. The patient keeps the body
very stiff, takes very short spaces, lifts the foot as little
as possible; he has pain on pressure over the seat of
the disease, but none in the hip.

Neurosis, when it exists, at the articular extremity
of a bone has rendered itself early diagnosable before
it has affected the joint. Forcible exertion
of the pain over the joint is an almost invariable
symptom of osteous disease—whether recession or caries.

Exfoliations of the pelvis often cause obsolete
stances about the hip—they may be very small
and on this account are too often unnoticed by the
probe; a very searching examination should be made.
Bursitis. No flattering of nodes and no increase of pain on causing pressure together of the articular cartilages. Bursion of trochanter major remains unaltered.

Inflammation of anterior crural nerve, increase of pain on pressure on the femur bursa. No physical symptoms of prodrugs coxaries.

Druction of the rectura, hemorrhoids and renal diseases sometimes cause sympathetic pain in the neighbourhood of the hip: remove the causes and these pains will disappear.

A careful consideration of the history of the cases will, in the great majority of instances, cause an easy diagnosis to be made between pubis coxae and any other form of disease, real or supposed. The addition of a local examination will leave no doubt in the mind of the Surgeon as to the real nature of the disease.

History of Excision of the Hip

Excision was proposed by Hippocrates, Celius, Paulinus Aquitana and Phases. The two latter only mention hip disease and denounced all operations on it. In these times we do not think their advice very valuable. In modern times Dr.
Charles White of Manchester first suggested excision of the hip for disease.

The first time (so far as we know) the head of the femur was removed was in 1730, it is not known by whom the operation was performed; it was not repeated from that time until 1818 (some accounts say 1822), when Dr. Anthony White performed the same operation successfully, the patient perfectly recovering. He and Sir Philip Grampton revived the operation.

Dr. Horn of Dublin repeated the operation in 1820, removing the head of the femur; the patient died three months after from acetabular disease and abscess.

Sir Benjamin Brodie excised the hip about the same time as Horn, also unsuccessfully. Schlichting, Höfler and Heine performed excisions a little time after all successfully. Armandois, Bony and Waehler experimented on animals and advised the operation. Poulton and Schwalbe excised the hip for an abscess, the latter in 1816 (on the statement of Federn). Excision was then allowed to drop until Sir Ferguson restored it in 1845. So Dr. Ferguson, Roe, Stanley, Price, Hancock and others are the credit of having extended this excellent operation, having shown its success, which I now attempt to do by the following...
Statistics of Resection of the Hip

Of the following cases the majority of them have been removals of the head of the femur only. Dr. Barnewell suggests that such operations should be termed "partial resections; decapitation of bone or decapitatio ossium" should be followed out and the word "resection" confined to those cases in which both the bones constituting a joint have had a portion taken from them.

Dr. Hancock, up to 1857, had collected the results of 26 cases of partial resection (i.e., removal of the head of the femur) performed in England. Of these there were 15 perfect recoveries; 6 died within three months; 3 others died at various times (2 years, 18 months, and 16 months) after the operation, while in two the result was not known. In 10 of these 26 cases the acetabulum was diseased as well as the femur: at the time of the operation the acetabulum was scarcely traceable in 2 cases; it was filled by a fibro-gelatinous mass in 3; the gouge was used for carrying it; in 1 the acetabulum was enlarged by absorption; in another it was devoid of cartilage and in another it was perforated; in 1 it was partially obliterated. Of the three remaining cases one died 2 years and another three months after operation.
The result of the last I do not know.

Dr. Winne gives a most valuable "Statistical inquiry as to expediency of removal of the head of the femur." Of 10 excisions for gunshot wounds 1 recovered — this even is better than when amputation at the hip has been performed for the same class of injuries; of 62 such amputations only 5 recovered.

Of 49 cases of excision for malabsorption 20 recovered, 5 were convalescing or doing well, 6 were improved, 15 died and 13 the result could not be ascertained. The period of death ranged from 3 days to 3 years after the operation, as follows: from operation 1, pneumonia 2, gangrene 1, secondary hemorrhage 1, death not attributable to operation 1, leech 1, typhus 1, typhoid 3, hepatic disease 1, and malabsorption Bright's 2; the 15th death was after amputation for recurrence of coxitis.

So far as the operation was concerned (excluding the three cases in which the termination was unknown) it was successful in 38 out of 49 cases — i.e. in 75 per cent.

With regard to the influence of age on recoveries after resection Dr. Winne ascertained the following facts: 10 years and under, 8 recoveries, 4 improved, 1 result unknown, 1 died; 10 to 15 years, 5 recoveries, 2 convalescing, 1 result unknown, 2 died; 15 to 20 years, 1 recovered, 2 convalescing, 1 improved, 2 died.
Above 20 years, 1 recovered, 1 improved and 3 died.
So that the younger the patients the larger the
preponderance of recoveries, a result which one would not expect.

It appears (from the cases mentioned at page 47) that when the acetabulum was diseased 13 recovered,
3 became convalescent, 5 were improved, and 2 the results were not known and there were 9 deaths, in the 32
cases in which the acetabulum was found to be abnormal at the time of operation: supposing the two
unknown cases died, that would be a mortality of one in three, or 33 per cent.

Dr. Price collected the results of 59 cases up to
1861, of these there were 39 recoveries, 11 partial recoveries,
14 deaths in one less consequent upon the operation,
and 1 case the result of which continues unknown.
The mortality of these cases was therefore 23 per cent.
British Surgeons performed 53 of the operations, 5 were
by American Surgeons, while only 1 was done by a
French Surgeon. 16 of the cases were for
dislocation of the femur without pelvic disease; 10 of
these were perfectly successful, three were partially so,
and 3 were deaths (1 by pyripelias and 2 by pulmonary
disease). In 18 of the 59 excisions the femur was
dislocated and there was pelvic disease; 6 of these
were quite, and 6 partially successful, 5 died from
the operation and 1 from erysipelas: of the 5 deaths two
were in consequence of tubercular disease of special
agamus, 2 were from renal disease and the other was
from cardiac pulmonary lesion. I cannot agree with
Dr. Price that any of these deaths were "from the
operation" it might have expedited the patient's end,
but it was not the proximate cause of death in any
one of them. The disease was confined to the
synovial and cartilaginous structures (the bone not
carios or necrosing) in 5 cases. 3 resulted in complete
cure, 1 died fifteen months after operation from some
other malady and 1 died from increasing debility.
In 14 cases there was no dislocation or rupture of the
capular ligament; 11 recovered with more or less useful
limb, and 3 died. Lastly there were 5 cases in
which nothing is known as to the extent of the
disease; 3 of these recovered, the other 2 died.

In one of the excisions by Dr. Price the operation
made the limb an inch and a half longer than
before operation, when it was two inches shorter so
that the patient recovered with his limb only half
an inch shorter than the other one.

Of 7 cases reported by Dr. Dickson all recovered
from the operation 3 completely, 2 were lost sight of
and two died of subsequent (11 months, and 2 years) constitutional disease

Professor Parrie of New York got together the results of 70 cases - death followed in 25 of them, i.e. almost two thirds of the operations were unsuccessful.

Dr. Page of New York is strongly opposed to excision of the hip. He found that of 30 cases there had been 20 recoveries (and yet he does not consider it justifiable), of the 10 deaths four were in a week of the operation. In 1869, in his work on "Dysbus Equinus," he gives the results of 110 cases of excision for disease, 18 of which are doubtful, leaving 92 authentic cases, of which 72 recovered, 13 were under treatment, and 77 died.

The late Dr. Jones of Jersey excised the hip 5 times - I believe in all cases successfully.

Mr. Barwell wrote in 1861 the results of 92 cases (in all of which joint disease was the cause of the operation): 56 of these recovered from the disease, but some of them ultimately succumbed to internal maladies, 32 died, and 4 cases were of uncertain termination. As far as the operation of resection is concerned, 56 out of 92 certain and authenticated cases recovered from it. The successful cases are therefore at the high ratio of 63.63 per cent. Of the 56 recoveries there were 36 useful limbs, 6 of them
were useless, and of 14 cases no reliable information could be obtained.

Mr. Holmes at the Hospital for Sick Children, has had 5 excisions. One was for the result of an accident 2½ years before, from a girl of 11½ years; the case is interesting because it shows how soon a false joint is fully formed. The excision was in May 1862, the patient was dismissed cured (there being plenty of motion and she being able to walk) in November, and she died of double pneumonia in February 1863, when the end of the femur was found to be tipped with a cartilaginous structure, between which and the acetabulum were fibrous bands. Of the other 4 cases death resulted in 2 months in one, and in about a year afterwards in another, while in two life was saved but the wounds did not close.

So far as I have been able to ascertain the operation of resection of the hip for amblyo coxa has been performed in 12 cases only in Scotland.

Mr. Edwards of this Town, has removed the joint in 2 instances: the first was from a girl of 12 who recovered perfectly, so that she could walk; the acetabulum was perforated, and some of it was gouged away; other Surgeons had given the case up hopeless.

The second was from a boy of 5, who died on the
fourth day from pyaemia.

Dr. Lyon of Glasgow, has excised the hip thrice. The acetabulum was not touched in any of these cases, and in all three spontaneous luxation had occurred. The first case was that of a boy of 8, in whom the disease had lasted 15 months: the result was so bad that amputation at the hip, from which the patient recovered, became necessary. The next was in a boy of 12 who had been long ill and had many pimples: when he was sent into the country the wound was nearly healed: the boy, a considerable time after, died from want of proper food. The last case was in a man of 23 who had been ill his whole life: when the man was taken away by his friends the wound was nearly healed: he has since been lost sight of.

Dr. Catell of Glasgow, has also excised for morbus coxae: his patient was a stramous boy of 12 years old and who was becoming daily weaker. The femur was divided below the trochanter major, the acetabulum was slightly cavious but was not interfered with: 3½ months after operation he was dismissed with excellent health and the wound was healed: the patient could walk, but with considerable lameness. 4½ years afterwards the patient was medi...
walking with a crutch because he was too poor to obtain
a high-heeled boot. In progression he rested on the
heels of the formerly diseased limb. He could walk
without the crutch and the wound was quite healed.

Dr. J. J. Muhlen, also of Glasgow, removed the hip
joint from a case of coxasizes from a girl of 14 or 15. She
was dismissed in 2 or 3 months after the operation doing
well and is now working in a mill. Her hip was
excised three years ago.

Adding all these cases together, and each report
was of original cases, I find there are the records of
350 resections, 231 of which were successful, so that the
operation succeeded in two-thirds of the cases—nearly
almost 66 per cent.

The diseases which kill the patient soon after excision
are violence of inflammation, excessive suppuration, secondary
hemorrhage, erysipelas, pyemia, or phlebitis.

Dr. In, extra-pelvic abscess, caries or necrosis,
phthisis, hepatic disease, tubercular meningitis or some
other chronic disease often supervenes after the removal of
caries and caries of the patient within a year or
two of the operation.

Dr. J. Watson, of New York, strongly deprecates
excision of the hip on the ground of its rarely killing
the patient; in the last 25 years he has seen only three
fatal cases (he does not say how many fatal cases he has seen).

Many surgeons are opposed to excision of the skin for morbus coxarii, because that disease partly kills the patient, so far as the local disease goes. Some of those surgeons seem to forget that internal diseases are too often produced by the local malady not being eradicated and is killing the patient indirectly, while others prefer a certain confinement of the patient, who recovers at last with an almost always useless limb.

The information I have been able to collect with regard to the results of excision is not very satisfactory. In consequence of surgeons having used the terms incubus, convalescent, doing well, partial recoveries, &c., none of which afford any reliable information as to the real state of the cases—all such terms simply that the patient recovered from the operation per se, and I have therefore pensioned them as recovered.

I have said that luxation is an unusual occurrence from morbus coxarii, out of Dr. Price's list of 59 cases there were 3 4 of dislocation; it must be recollected many of these cases gave strumous ones, in which it will perhaps be remembered I mentioned there is not generally any formation of new bone to prevent a dislocation.

I regret I cannot tabulate the cases given in
These statistics I have not been able to ascertain, hence some of the authors above cited have obtained their results and if some of them have not therefor reported each others cases, as is highly probable the cases being intermingled in this manner I cannot disentangle them and am therefore unable to give a correct percentage of the totally successful, the partially successful and the unsuccessful cases as I would have liked to have done.

The mortality of resection of the hip is large because the operation is seldom performed without the patient being much debilitated. It has frequently been performed as a dernier resort, and has often saved otherwise hopeless cases.

In conclusion, I do not and cannot claim any originality in the construction of this Thesis, which I feel is imperfect and badly arranged and which I must admit is a compilation of all I have been able to gather on the subject which I considered would be of any interest in the present day: I might have entered into the old treatments by sea and spring bathing; hot, tepid, cold and medicated baths; the employment of various caustics; the elaborate series of experiments which have been made as to
elongation in the second stage being real or apparent or a mixture of both; &c. &c. but such details would have only burdened my thesis with a mass of obsolete theories which have now no interest, except as curiosities of Surgery. I endeavoured, during its construction to describe the pathology of malocclusion before its symptoms and treatment but I found I could not do so without a considerable amount of repetition: I therefore arranged it in the way I thought the least obtrusive, as I could not do it scientifically and can now only hope that my statements of my time having been more than sufficiently occupied and of my having tried – I know not if with any success – my best to collect all the facts really useful for a proper understanding of cacosynthesis will be favorably taken into consideration. 

Stanley L. Haynes