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CONGENITAL DISLOCATION OF THE HIP.

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Some two years ago Dr. John Ridlon, of New York, reported a case of congenital dislocation of the hip, the head of the bone resting on the pubes. This dislocation forward and upward is unusual. However, within a year, two other cases came to my clinic at the Post-Graduate Medical School and Hospital, with the same deformity.

The deformity in each case was precisely the same. They were, in fact, anterior and upward congenital dislocations of the head of the femur. The child, illustrated in this article, had always been healthy; there was no history of injury in the case; nor of any severe labor. The mother noticed that when the child began to walk, one leg was shorter than the other, and that the feet and toes were turned out. Figs. 1 and 2 are cuts made from photographs taken of the case when first seen. They show the outward rotation and shortening seen in anterior dislocation. The case was three years old when I first saw it. I applied a long traction splint, which the child wore for a year and a half, when it died from acute meningitis. A post-mortem was permitted, and I have the specimen here, which with your permission I will now present.

Figs. 3 and 4 are drawings of the specimen made by Dr. Macdonald, and they very correctly represent the pathological condition found.

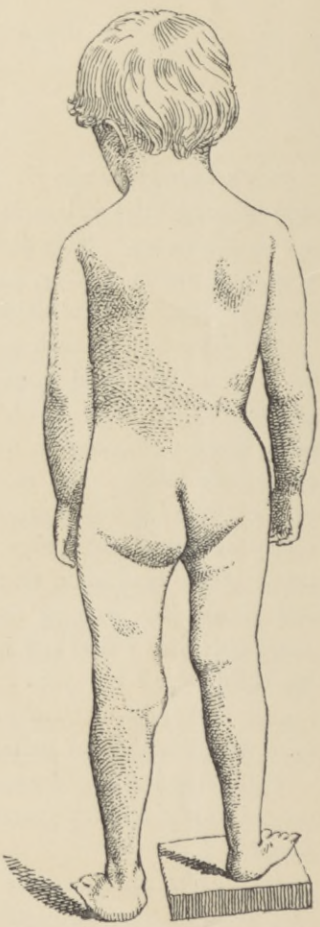
In the first specimen the head of the bone is seen above the rim of the acetabulum dislocated upward and forward. The capsule of the joint is cut away to give the view.

In Fig. 4 the acetabulum is seen to be angular in shape, small, and undeveloped, with the remains of the ligamentum teres. This specimen is of great interest, I believe, because so far as I know it is

the only pathological specimen of anterior congenital dislocation of the hip reported, and it will be found of great value in studying the etiology of this deformity. It will be observed that the pressure of the head of the bone has changed the form of the anterior border of the acetabulum from concave to convex.

Fig. 1.

Fig. 2.



Etiology.—It has been taught, and it is accepted by the profession generally in America and in England, that congenital disloca-

tion of the hip is a secondary condition, depending upon the non-development of the acetabulum.

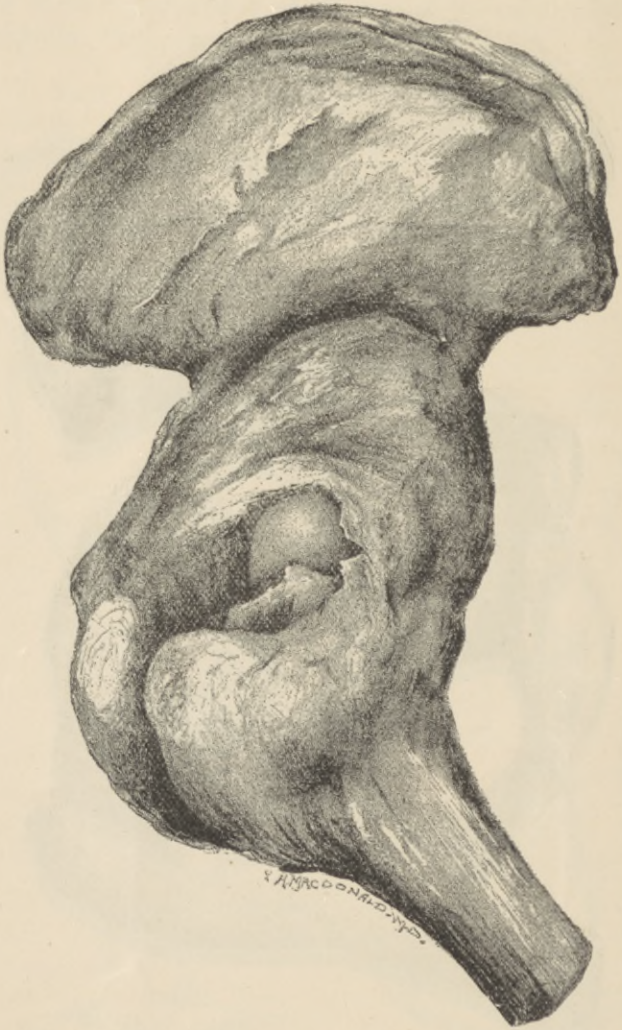
Fig. 3.

This specimen is surely a case of congenital dislocation primary, with non-development of the acetabulum from non-use.

I am not prepared to say that all cases are like this, but surely

here is a case of congenital dislocation *in utero* not due to non-development of the acetabulum.

Fig. 4.



Dr. Cornigan, who, by the way, has written an excellent monograph on this subject, believed that the dislocation was a primary one, due to reflex spasm of the muscles *in utero*, caused by some central nerve lesion in early fœtal life.

A glance at the anatomy of the hip-joint will show that the muscles pass diagonally across the body from the shaft of the femur to the pelvis, being in a line with the axis of the neck of the femur.

It seems to me that dislocation of this bone could not take place by the contraction of these muscles, but, on the contrary, that contraction of the glutei muscles, or of any of these groups, would tend to press the head of the bone more firmly into the acetabulum. A long-continued spasm of muscle, sufficient to cut away the acetabulum, would destroy the head of the bone and produce a true inflammatory disease of the hip-joint.

Heredity, no doubt, has much to do with producing this deformity Dupuytren relates the history of a case—Marguerite Cardas—who had two aunts on the maternal side affected with lameness from their earliest attempt at walking. Marguerite's father had a sister lame from birth on the right side, who died at eighty years of age. Another sister, well formed, gave birth to a child with shortening of the right inferior extremity. This woman has a daughter by a healthy man with three inches of congenital shortening of the right leg. This girl also married a healthy man, but his father had a congenital dislocation of the right femur. She has had four children, two of whom present the hereditary infirmity.

Similar cases are numerous, and it will be difficult to doubt that hereditary predisposition exerts some influence over the recurrence of this deformity in children whose parents or ancestors have been affected by it.

Ambrose Paré, 1678, book xvi., page 347, says of hereditary causes: "such as parents transfuse into their offspring; hence it is that crooked, not necessarily, but ofttimes, are generated by crooked, and lame by lame."

Also, " Hippocrates himself avers that infants in the very womb may have their joints dislocated by a fall, a blow, or compression."

Among the other causes enumerated are:

1. An original defect in the organization of the germ, or the operation of the formative power. (By Dupuytren) This hypothesis has no support in embryogeny.

2. Arrest of development of the cotyloid cavity. The pathological specimen here presented was certainly not produced by this cause.

3. Certain articular maladies occurring in the fœtus during intra-

uterine life. No doubt diseases of the joint might occur which would produce a diastasis or even the destruction of the acetabulum, leading to a dislocation.

4. Diseases of the primitive nerve centres are said to cause a perverted condition of the excito-motor apparatus of the medulla spinalis, producing a spasm of the muscle, and resulting in dislocation. This is the favorite theory of Dr. Cornigan and M. Guerin; but I have already stated that the anatomy of the joint is such that muscular spasm, independent of other causes, could not produce dislocation of the hip. It is true that in anencephalous fœtal monsters congenital dislocation of the hip, club-foot, and other deformities are found, but there must be other pathological conditions present favoring these deformities, because many of those monstrosities have no deformity of the extremities whatever.

It seems to me that if spasm of the muscle *in utero* produces dislocation of the hip, it ought always to produce it in the same direction, but we find that the usual form is upon the dorsal of the ilium, and this specimen which I present is one upward and forward, and Dr. Cornigan says that the dislocation may take place downward and forward, or downward and backward.

These facts, together with the peculiar anatomy of the hip-joint and the direction in which the muscles operate upon the femur, lead me to believe that this is not one of the causes *per se* of congenital dislocation of the hip.

A few years ago I saw a child one hour after it was born. The right limb was an inch shorter than the left, and there was a dislocation on the dorsal of the ilium. I manipulated the limb in the usual method and reduced the dislocation, and the head remained in place without a retaining apparatus. This was clearly a case of dislocation which had taken place during confinement. If the deformity had not been noticed until the child began to walk, any physician would have said that this was a case of congenital dislocation of the hip.

Mr. C. B. Lockwood presented at the London Pathological Society two specimens of infants illustrating the absence of the margin of the acetabulum with and without displacement of the head of the femur. (See *Transactions* of that Society, 1887, vol. xxxviii., page 303.)

The first case is one of microcephalic fœtus, probably born at full term ; a case of double breech-presentation, and after birth the thighs remained flexed upon the abdomen. The pelvis was quite well formed, with the exception of the acetabulum. The cartilaginous rim of that socket was entirely absent, otherwise the joint was normal. The capsule was capacious ; the ligamentum teres longer than usual. The head of the femur was normal, lying upon a flat surface.

The second case shows absence of the margin of the acetabulum with displacement of the head of the femur upon the dorsum of the ilium. This was a breech-presentation. After birth the thighs remained flexed upon the abdomen and the legs over-extended upon the thighs. There was an ectopium of the abdomen, with considerable protrusion of the viscera—of the liver, etc.

The brain and spinal cord seemed normal. The head of the radius was displaced on to the front surface of the ulna, and the carpus toward the flexor aspect of the radius and ulna ; both hips were displaced upon the dorsum of the ilium, with changes of all structures entering into the formation of the joint. The head of the femur was irregular in shape. The cartilaginous margin of the acetabulum was absent, although the cotyloid depression seemed exceedingly deep, but not triangular. The ligamentum teres was exceedingly long, and capsular ligament capacious.

Many of the pathological specimens reported, after excisions for old dislocations, demonstrate that the acetabulum ceases to develop and undergoes atrophic change after the head of the bone has been dislocated. It is easy to conceive of disease attacking one or both hips *in utero*, producing effusion into the joint, with or without destruction of the head ; resulting, through reflex spasm of the muscle, in dislocation of the head of the femur, which is frequently seen in hip-joint disease.

I am inclined to believe, judging from the pathological specimen here presented, and from the case of dislocation at childbirth which I saw, together with pathological specimens which have been reported by Mr. Adams, which I have personally examined in the Pathological Museum in London, that the deformity is more frequently produced by violence of some description, or by pathological changes the result of inflammation, than from any other cause.

We are all familiar with the "loose joints" in certain individuals who are capable of producing dislocation of almost every joint in the body. I now have a patient who can easily dislocate the right hip and reduce the dislocation, and it gives her no inconvenience.

Given this condition *in utero*, slight causes would suffice to dislocate the head of the bone. If this occurred early in intra-uterine life, the child would probably be born with congenital dislocation and an undeveloped or absent acetabulum.

If the head of a bone has long been dislocated, the surgeon finds when he performs an excision that the joint itself is filled with new material. I have observed this in the excision of the shoulder-joint, performed for old dislocation of only six months' standing.

If a dislocation occurs in a rapidly-growing fœtus, on account of hereditary causes (a long relaxed ligament), or by violence in child-birth, and the deformity is not discovered until the child begins to walk at the age of fifteen months, it should be expected that the acetabulum would be absent or undeveloped.

Summary. Congenital dislocation of the hip is produced, I believe, by injury at birth; injury *in utero*, or disease *in utero*; rhachitis; hereditary influences, and, in exceptional cases, if such there are, by arrest of development of the acetabulum.

TREATMENT.—The treatment is divided into mechanical and operative. Complete excision of the joint has been performed and good results reported.

Cutting down and making a new acetabulum in the dorsal of the ilium and nailing the head of the bone into it, has met with some favor.

These two operations are advisable only in adults or in children over seven or eight years of age.

The operation of Hoffa, of Würzburg, in small children seems to me the most rational one to perform. He makes an incision down on to the head of the bone; scoops out the acetabulum, cutting deeply into the bone, and reduces the head to its normal condition. He claims excellent results from this.

The operation is performed only on children under five years of age, and where it is an impossibility to pull the bone down to the old acetabulum.

Operations of this magnitude are serious, and must be attended with considerable mortality. Still, the results of mechanical treatment in the past have been so discouraging that the surgeon now feels justified in performing any of the operations which promise satisfactory results.

The mechanical treatment of hip-joint disease has always been unsatisfactory until the case of Mr. Buckminster Brown, of Boston, was reported. This case was perfectly cured, with perfect motion, without shortening. It was treated in bed for two years by extension and great care in manipulation.

FIG. 5.

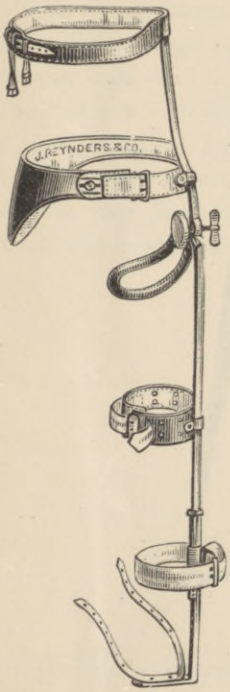
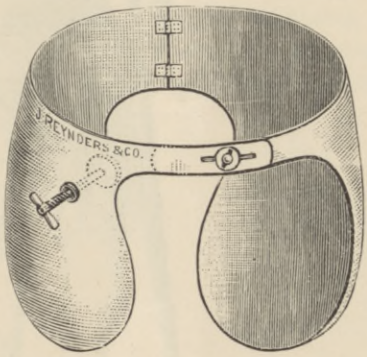


FIG. 6.



The French have long treated their cases in bed, and have reported very good results. They have also devised very ingenious appliances for making extension and still allowing their patient motion of the hip-joint. After the patients have been treated for a length of time in bed, they are allowed to exercise in a wheel-chair.

Adams improved upon this method of long confinement in bed by devising a bed in which extension could properly be applied and the limbs held in the normal position. In this the patients could be carried into the open air daily. This is simply a form of portable bed.

Sayre and Taylor, in fact nearly all of the American orthopedic surgeons, have treated such cases with the long traction hip-splint,

FIG. 7.

but I must say, judging from my own observations and those of others, that the results of this plan of treatment have been most unsatisfactory. The patient would wear the splint for years, and when removed there would either be a relapse, or one limb would be found to be considerably shorter than its fellow.

I believe that the treatment of congenital dislocation of the hip should be divided into three stages :

1. The period in bed.

2. The period with the long fixation splint with a lateral-pressure screw. (See Fig. 5.)

3. The period with the walking-splint.

The length of the period of bed-treatment should be until the limb is drawn down to the length of its fellow, if possible. During this treatment by extension the patient is put into steel breeches (see Fig. 6), which have a lateral-pressure screw fitted to a pad which makes pressure over the great trochanter; the object being to excite a certain amount of irritation which will result in the growth of new tissue around the head of the bone.

After the limb has been drawn down to its normal length, which will take usually from two to six months, the patient is put on crutches, with a high shoe and a fixation splint with lateral pressure, as seen in Figs. 5, 7.

The patient is never allowed, during this stage of treatment, to step upon the brace, but after a year or a year and a half the upper part of the brace is cut off, the high shoe is lowered, and the patient allowed to walk upon the splint.

Small children I treat with the plaster-of-Paris portable bed.