

CHAPTER XXVII.

CONGENITAL DISLOCATIONS.

§ 1. General Observations and History.

I HAVE omitted, until this moment, to speak of Congenital Dislocations, because, whatever theory of causation we adopt, dissections have shown that they are generally, in some sense, pathologic, or are accompanied with such essential modifications of the anatomical structures as to separate them entirely from ordinary traumatic dislocations, which alone constitute the proper subjects of consideration in the present treatise. In relation to congenital dislocations, we shall find it necessary to establish systems of etiology, symptomatology, prognosis, and treatment, having very few points in common with traumatic dislocations. Exceptions to this rule will occur, in examples of intrauterine traumatic dislocations, existing at birth without either original or accidental malformations of the articulations, or of the adjacent muscular, tendinous, or ligamentous structures; yet only in sufficient numbers to warrant the intrusion of the subject in this place.

It is probable that congenital displacements may occur in all the articulations of the skeleton; and in most of them their existence has been already established by dissections. Until within a few years, however, the attention of surgeons has been almost entirely directed to congenital dislocations of the shoulder and hip.

Hippocrates, in his treatise "De Articulis," speaks expressly of dislocations of the hip occurring in the mother's womb, comprising them under the same order with the different varieties of club-foot.

Avicenna and Ambrose Paré have each mentioned congenital dislocations of the hip; but the first to record an example with any degree of accuracy was Kerkring; in which case, death having occurred during infancy, he was able to verify his opinion by an autopsy. Chaussier has reported, in the *Bulletin de la Faculté et de la Société de Médecine*, An. 1811 and 1812, the case of an infant, upon which he discovered, at birth, two dislocations, one at the scapulo-humeral articulation, and the other at the coxo-femoral. In 1788, Palletta, of Milan, published, under the title of *Adversaria Chirurgica*, a collection of observations, in which, among other things, he has described certain congenital malformations of the hip-joint; and in 1820 he published another work, entitled *Exercitationes Pathologicae*, where he enters into a more complete exposition of the nature and causes of these deformities.

In 1826, Dupuytren read, before the Academy of Sciences, a memoir upon the lameness produced by the original displacement of the femur; and in the *Leçons Orales*, published in the collections of the Sydenham Society, may be found a full record of the views and observations of this distinguished surgeon.

The writings of Dupuytren seem, more than anything previously written, to have directed the attention of surgeons and pathologists to this interesting subject, and to have given a new impulse to investigation.

From this time various treatises have been written by eminent surgeons, many of which are characterized by profound thought, careful investigation, and practical experiment.

Among those who have furnished us with elaborate treatises, or with more precise practical information upon this subject, the following names deserve to be especially mentioned: Breschet,¹ Caillard-Billionière,² Lehoux,³ Sandiforte,⁴ Bouvier,⁵ Sédillot,⁶ Wrolik,⁷ Guérin,⁸ Parise,⁹ Pravaz père,¹⁰ Carnochan,¹¹ Robert Smith,¹² Delpech,¹³ Heine,¹⁴ von Ammon,¹⁵ Pravaz fils,¹⁶ Hueter,¹⁷ Dollinger,¹⁸ Grawitz,¹⁹ Kirmisson,²⁰ Kronlein,²¹ Gerdy,²² Polinière,²³ Jalade-Lafond,²⁴ Humbert and Jacquier.²⁵

§ 2. Etiology.

Hippocrates says that the bones of the extremities may be disarticulated during intrauterine life by falls or blows, or by injuries of any kind, inflicted directly upon the abdomen of the mother.

Ambrose Paré, while admitting the efficiency of the several causes named by Hippocrates, believed also that the contractions of the womb, and violence employed by the accoucheur, were occasionally adequate to the production of the same result. He taught, moreover, that the posi-

¹ Breschet, Répertoire d'Anatomie et de Physiologie. Gaz. Méd., Paris, 1834, p. 218.

² Caillard-Billionière, Thèse Inaugurale, 1828.

³ Lehoux, Thèse Inaugurale, 1834. Paris.

⁴ Sandiforte, Thesis, sustained before the Faculty of Med. of Leyden, 1836.

⁵ Bouvier, Malad. Chron. de ap. Locomot., Paris, 1858.

⁶ Sédillot, Journ. de Connais. Méd.-Chirurg., 1838.

⁷ Wrolik, Amsterdam, 1839, quoted by Pravaz.

⁸ Guérin, Recherches sur les Luxations Congénitales; par Jules Guérin. Paris, 1841.

⁹ Parise, Archiv. Gén. de Méd., 1842.

¹⁰ Pravaz père, Traité Théorique et Pratique des Luxations Congénitales du Femur, suivi d'un Appendice sur la Prophylaxie des Luxations Spontanées; par Ch. G. Pravaz, Lyons, 1847.

¹¹ Carnochan, A Treatise on the Etiology, Pathology, and Treatment of Congenital Dislocations of the Head of the Femur; by John Murray Carnochan, New York, 1850.

¹² R. Smith, A Treatise on Fractures in the Vicinity of Joints, and on Certain Accidental and Congenital Dislocations. Dublin, 1854.

¹³ Delpech, Orthomorphie, Paris, 1829, t. 2.

¹⁴ Heine, Spont. und Congen. Lux., Stuttgart, 1842.

¹⁵ Von Ammon, Die Angeborenen Chir. Krankheiten der Menschen, etc., Berlin, 1842.

¹⁶ Pravaz fils, Lux. Congen. du Femur, Lyon, 1847.

¹⁷ Hueter, Klin. der Gelenkkrankheiten, Leipzig, 1870-71.

¹⁸ Dollinger, Arch. f. Klin. Chir., Bd. 20, 1877.

¹⁹ Grawitz, Virchow's Archiv, Bd. 74, Hft. 1, p. 1, 1878.

²⁰ Kirmisson, Rev. Men. de Chir., 1878, p. 498.

²¹ Kronlein, Die Lehre von der Lux., Deutsche Chir., v. Billroth u. Leucke, 1882.

²² Gerdy, Rap. sus deux Mém. du Pravaz, etc., Lyon, 1840.

²³ Polinière, quoted by Pravaz.

²⁴ Jalade-Lafond, Deform. du Corps Humain, etc., Paris, 1829.

²⁵ Humbert and Jacquier, de Lux. Spont. ou Symptomatiques, Paris, 1835.

tion of the foetus itself might favor the displacement; and that, in some instances, an articular abscess, insufficient depth of the socket, with a laxity of the ligaments, were competent to determine the expulsion of the head of the femur from its natural position.

Sédillot regards a softening and relaxation of the ligaments as the most frequent cause.

Parise and Malgaigne are disposed to attribute a majority of these cases to hydrarthrosis, or water in the joints. Says Malgaigne: "For myself, after having long meditated upon this subject, I have come to think that inflammation of the joints enjoys a grand rôle, both in coxo-femoral dislocations and in many others, and even also in various congenital malformations generally ascribed to arrest of development." This writer admits, however, that it will not do to generalize too much in this matter, and that the etiology of congenital dislocations is probably as complex as that of dislocations after birth.

Dupuytren thought forced flexion of the thigh in utero would explain the congenital dislocations of the hip; while Roser¹ attributes it to forced adduction.

Chaussier seems to have regarded muscular contraction, or the occurrence of an intrauterine convulsion, as the cause of the example of congenital dislocation of both humerus and femur seen and recorded by him. Since whom Guérin has greatly extended the application of this doctrine, having embraced in the same etiologic formula all or nearly all congenital dislocations. Guérin ascribes to muscular contraction in one form or another, and to corresponding muscular paralysis, not only dislocations of the femur and other long bones, but also club-foot, torticollis, and various other deviations of the spine. He affirms, moreover, that he has established incontestably the dependence of this abnormal state of the muscular system upon the absence or disappearance more or less complete of corresponding portions of the central nervous systems.

Breschet and Delpech maintained similar views, especially in relation to the dependence of the several varieties of club-foot upon some morbid condition of the cerebro-spinal axis. While Carnochan remarks as follows: "It appears most in accordance with science to refer the muscular spasmodic retraction, upon which congenital dislocations of the head of the femur from the cotyloid cavity depend, to a perverted condition of the excito-motor apparatus of the medulla spinalis, and more especially of that portion of it which is in direct relation with the reflex-motor nervous fibres, distributed to the pelvi-femoral muscles surrounding, and in connection with, the ilio-femoral articulation."

Verneuil regards paralysis of one group of muscles as the direct cause; in consequence of which the normal action of the opposing muscles tends to displace the bone; whilst Reclus² applies the same theory to congenital dislocations of the femur. In effect, therefore, both Verneuil and Reclus refer the abnormalities in question to the nervous centres.

Palletta ascribes these deformities solely to an original defect of the germ; and Dupuytren also declares that, in the case of a congenital dis-

¹ Roser, Arch. f. Klinik Chir., 1879, Bd. 24, Hft. 2.
² Reclus, Rev. Mensuelle de Chir., 1878, p. 176.

location of the hip, the causes are coeval with the earliest organization of the parts, and that the displacement is due rather to a defect in the depth or completeness of the acetabulum, than to accident or disease.

Dollinger adopts essentially the same theory, attributing the imperfect formation and shallowness of the cotyloid cavity to an arrest of development, and to a premature ossification of the Y-shaped cartilage which unites its three portions. Grawitz, also, recognizes arrest of development as the essential cause, but in the seven specimens he has examined he has not found premature ossification of the cartilage.

Breschet and Delpech, both of whom, as I have already stated, refer them to some morbid condition of the cerebro-spinal axis, imagine that in consequence of this morbid condition of the nervous centres, there exists an arrest of development in the bones, muscles, ligaments, sockets, and, in short, through all the apparatus of the joint which is the seat of the deformity.

If we proceed to analyze these various opinions, we shall find that they are so far susceptible of classification, as that they may be arranged under the three following divisions:

First, the physiological doctrines; according to which congenital dislocations are due to an original defect in the germ, or to an arrest of development.

Second, the pathologic doctrines; which refer them to some supposed lesion of the nervous centres, to contraction or paralysis of the muscles, to a laxity of the ligaments, to hydrarthrosis, or to some other diseased condition of the articulating apparatus.

Third, the mechanical doctrines; which recognize no intrauterine dislocations except those which are strictly traumatic. The causes being understood to be the peculiar position of the foetus in utero, violent contractions or the constant pressure of the walls of the uterus, falls and blows upon the abdomen, and unskillful manipulation of the child in delivery.

After a full and careful consideration of this subject, I am prepared to admit the occasional agency of all the causes enumerated, and the probable concurrence of two or more in many instances; nor do I see the propriety of rejecting, as Malgaigne has done, all that large class of malformations, which seem to depend upon an arrest of development, or those which appear to be due mainly or solely to intrauterine paralysis, of both of which many examples have been reported.

As illustrating the relation which arrest of development sustains to this class of deformities, I may refer to the facts of hereditary transmission, and to the frequency with which other forms of imperfect development are associated with congenital dislocations. Cruveilhier¹ and Voss² have referred to examples in which the dislocations were accompanied with other malformations; and Grawitz found this coincidence in seven examples seen by him, while Paré, Palletta, Schreger, Dupuytren, Robert, Bouvier, and Stromeyer have noted the marked influence of

¹ Cruveilhier, Traité d'anat. path., Atlas, liv. 2., pl. 2, fig. 23.
² Voss, Inversio Vesicae Urin., og lux. fem. con. hot samme individ., Christiania, 1857.

heredity. Kronlein mentions two infants, a brother and sister, in both of whom there existed a congenital dislocation of one hip; and also the case of a boy, who was one of seven children, and whose grandmother presented the same malformation.

§ 3. Congenital Dislocations of the Inferior Maxilla.

Malgaigne affirms that "we know of no congenital dislocation of the jaw," and that we are "not to take seriously the pretended dislocation observed by Guérin upon a dérencéphalous infant." The example recorded by Robert Smith he rejects also, declaring that he does "not comprehend how one can see in it a dislocation."

For myself, I know of no reason why we should not take "seriously" the case mentioned by Guérin, since, so far as appears in his very brief report of the same, it might have been a true dislocation. The specimen was before the Academy, and if Malgaigne, from a personal examination, had become satisfied that a dislocation did not exist, he ought to have so informed us. But since he does not speak of having made it the subject of special examination, I shall feel compelled to accept of it as reported by Guérin.

As to the objection offered to Mr. Smith's case, namely, that "aside of the complete absence of its history, the subject did not present the characteristic signs of dislocation, and the dissection discovered neither maxillary condyle nor glenoid cavity," I must reply, the dissection seems to me to have furnished such evidence that the deformity was congenital as to render its history unnecessary; the signs were characteristic, not indeed of a traumatic dislocation, but of a congenital dislocation, such as may be supposed to have been the result of an arrest of development, or of an original aberration of the germ.

The following is a summary of the very complete account of this case given by Robert Smith:

On the 5th of May, 1840, Edward Lacy, æt. 38, an idiot from infancy, died at the Hardwick Hospital, in consequence of gangrene of the lungs. While making the autopsy, a singular deformity of the face was discovered. The right and left sides seemed as though they did not belong to the same individual, the left being in every respect more fully developed. Upon removing the integuments, the muscles of the right side were found to be much smaller than those of the left, and especially the masseter. These latter having been removed also, the condition of the right temporomaxillary articulation was carefully studied.

When the mouth was closed, the external lateral ligament, instead of being directed backwards, was seen descending obliquely forwards, to be attached to a very imperfectly developed condyle situated at least one-quarter of an inch in front of its natural position. There was neither an interarticular cartilage nor cartilage of incrustation, the joint surfaces being invested by a thick periosteum alone; nor was there any distinct capsular ligament.

Nearly the whole of the right side of the inferior maxilla was smaller than the left. The condyle was short and curved, being directed nearly horizontally inwards, and resembling much more the coracoid process

than the condyle of the inferior maxilla. The coronoid process was very small and thin, and the sigmoid notch could scarcely be said to exist.

The articular eminence of the temporal bone was absent, there being in its place nearly a flat surface destitute of cartilage; which surface presented upon its inner side a shallow and semicircular sulcus where the hook-like condyle of the lower jaw had played.

The malar, superior maxillary, and sphenoid bones of the right side had also suffered corresponding changes of form and relative size.

The motions permitted in the lower jaw were more extensive than those which it enjoys in its normal condition, that is, upon the right side the ramus could be moved very freely forwards and backwards, while upon the left, the condyle underwent a species of rotation upon its axis. During life the patient was observed to be constantly performing this motion, and the right side of the face was continually affected with spasmodic twitches. When the mouth was closed, the front teeth of the upper jaw projected beyond those of the lower, and when opened the deformity was in all respects greatly increased.¹

Mr. Smith takes this occasion also to express his dissent from the views maintained by Ribes, namely, that the formation of the glenoid cavity is consequent upon the growth of the condyle, and that, were this process not formed, there would not exist either a glenoid cavity or an articular eminence. It is true that neither the glenoid cavity nor the articular eminence is found in the fœtus. Until the seventh month of intrauterine life there exists at this point of the temporal bone only a plane surface, and the glenoid cavity with its corresponding eminence is developed in proportion to the growth and development of the condyle. But Mr. Smith justly observes that although the development of the condyle does precede that of the glenoid cavity, "it by no means follows that the formation of the latter is due to the pressure of the former." The cavity, or rather the transverse eminence in front of the plane surface, does not exist in fœtal life, because, owing to the peculiar form of the inferior maxilla at this period, its existence is not necessary. The vertical portion of the jaw (vertical only in the adult) is in the fœtus nearly in the same line with the axis of the shaft, and consequently when the mouth is opened by the action of the muscles, the condyles are pressed upwards and backwards instead of upwards and forwards, as in the adult. A displacement forwards cannot therefore very well occur; and the protection of the articular eminences is not required. As age advances the angles of the jaw increase, the portions upon which the condyles rest become more vertical, and finally a displacement forwards would occur whenever the mouth was well opened if the articular eminences were not present to afford a sufficient protection in front.

In the case of Lacy the fœtal condition of the bones upon one side remained during life, there being neither cavity nor eminence, and the condyle itself being only imperfectly developed; but the angle of the jaw had assumed the form which belongs to the adult, and the ascending ramus was vertical, consequently the condyle became somewhat displaced forwards.

¹ Robert Smith. *op. cit.*, p. 283.

Chronic rheumatic arthritis is occasionally found in the temporo-maxillary articulation of old persons; and it may be important to distinguish it from congenital dislocation, with which, owing to the absorption of the articular eminence, and the consequent displacement of the condyle, it might possibly be confounded.

Says Mr. Smith: "In a majority of instances, this remarkable disease attacks those of advanced age, and is symmetrical; but occasionally it occurs during the period of adult life. In the latter case it is generally more rapid in its progress, is accompanied by greater pain, and is more liable to implicate the neck of the condyle, and the ramus of the jaw."

When the condyle is implicated it becomes enlarged, and can be felt beneath the zygoma, in front of the meatus externus. The lymphatic glands of this region are sometimes enlarged, and the progress of the malady is attended with a constant but not generally severe pain.

The deformity of the face varies according as one or both articulations are affected. When the malady is confined to one joint, the chin is thrown slightly forwards, but chiefly to the opposite side, and when both are implicated, the chin is simply advanced so that the teeth project beyond those of the upper jaw.

As the disease progresses, the glenoid cavity enlarges by absorption, and at length a considerable portion of the whole of the articular eminence disappears and the jaw becomes gradually displaced through the action of the external pterygoids. The disease does not extend in the temporal bone beyond the articulating surface of the glenoid cavity. The condyle assumes a variety of forms, sometimes being greatly enlarged in all its diameters, while its upper surface may be flattened, or conical. The articular cartilage disappears; but Mr. Smith has never yet found any foreign bodies in the joint, and in only one instance have the surfaces been polished or eburnated as we often see in examples of chronic rheumatic arthritis occurring in the hip, knee, and other joints.

The following is an excellent summary of the diagnostic marks between congenital, accidental, and rheumatic dislocations, given by this writer:

"1. In the congenital dislocation, the mouth can be freely opened and closed; in chronic rheumatism these motions can be performed, but not without uneasiness to the patient, an uneasiness which sometimes amounts to severe pain; in dislocations from accident, the mouth cannot be closed.

"2. An involuntary flow of saliva accompanies the accidental dislocation alone, although in some cases of chronic rheumatism there is an increased secretion of that fluid.

"3. In congenital dislocation, the teeth of the upper jaw project beyond those of the lower; the reverse is observed in accidental dislocation and in chronic rheumatism.

"4. In congenital dislocation there is no fulness in the cheek, such as the coronoid process produces in cases of accidental dislocation, and the condyle is not enlarged, as in some instances of chronic rheumatic arthritis."

¹ R. Smith, *op. cit.*, p. 292.

§ 4. Congenital Dislocations of the Spine.

Says Guérin of the subluxation occipito-atloidean there are two varieties: "First. Backwards, consisting in an exaggerated flexion of the head upon the front of the neck and chest, with a commencement of sliding backwards of the occipital condyles upon the articular facets of the atlas. Here are two examples in fetal anencéphalous monsters. Second. Forwards. Those who follow my consultations can recollect having seen last year an infant, about two or three months old, who offered a remarkable example. The head was exactly applied against the posterior part of the neck, and upper part of the back. There was probably a sliding of the condyles forwards, with elongation of the anterior ligaments."

The existence of the first of these varieties has since been denied by Guérin himself;² and it will be noticed that he only speaks of the second as a *probable* subluxation forwards. Neither of them can therefore be regarded as established.

Guérin further remarks that he has observed subluxations in the other regions of the spinal column many times; and he showed to the Academy a foetus in which the spine presented, besides the occipito-atloidean displacement, a series of angular flexions in the antero-posterior direction, with sliding of the articular surfaces.

In attempting to appreciate the value of Guérin's observations upon this point, it must be remembered that he regards all cases of congenital torticollis, and other deviations of the spine, as examples of subluxation; and, in some sense, I think the theory of this distinguished surgeon may be regarded as correct. The amount of articular displacement between each of the adjacent vertebræ may be very inconsiderable in any such case, yet, however trivial, if it exceeds the limits of natural motion, it may properly enough be regarded as the commencement of a dislocation.

§ 5. Congenital Dislocations of the Pelvic Bones.

Bassius speaks of a diastasis or separation of the sacro-iliac symphysis, observed by him in newly born children, and infants; but, according to Malgaigne, his account of these cases is not such as to warrant any conclusions as to the true nature of the displacements.

Congenital exstrophy of the bladder is accompanied always with a deficiency of the central and upper portions of the pubic bones, the result manifestly of an arrest of development; but these cases, of which I have seen several examples, are not properly examples of congenital dislocations, but only of diastases, the separated portions remaining in their normal position with reference to each other, except that they are not prolonged sufficiently to meet in the median line.

Guérin declares, however, that he has seen congenital displacement, or overriding of the iliac bone upon the sacrum, accompanied with coxofemoral dislocation and curvature of the spine. The same writer men-

¹ Guérin, *op. cit.*, 1841, p. 29.

² *Ibid.*, *op. cit.*, p. 32.

tions an example, in a foetal monster, of diastasis of the pubic bones, and of the sacro-iliac symphysis, accompanied with a turning out of the pubes upon the external face of the ischium.¹

§ 6. Congenital Dislocations of the Sternum.

Seger alone has reported one example of dislocation of the xiphoid cartilage from the sternum.

A woman in the fifth month of pregnancy fell and dislocated her shoulder. Just four months after this she was brought to bed with an infant, well formed, except that, soon after it was born, the ensiform cartilage was observed to be remarkably movable, especially when the child hicoughed, to which it was very subject. The cartilage was separated from the sternum by the breadth of the little finger. No treatment was employed; the cartilage gradually became restored to its place, and in about one year it was firmly united to the sternum.²

§ 7. Congenital Dislocations of the Clavicle.

Malgaigne says that a congenital dislocation at the sterno-clavicular articulation has never been observed; but Guérin declares that he has established the existence of three varieties, namely:

1. A dislocation of the sternal end of the clavicle inwards and forwards; this extremity of the clavicle lying in front of the sternal fourchette. In illustration of which he presented to the Academy a plaster cast of a girl eight years old, in whom the displacement existed upon both sides.
2. Inwards and upwards. Observed by him in a girl eight years old; but which displacement took place only when the arm was moved, and through the contraction of the sterno-cleido-mastoideus muscle.
3. Backwards. Of which he presented two examples in the corresponding sides of a foetal monster.

Shaw³ reports a case of congenital dislocation of the sternal end of the clavicle upwards in a girl two and a half years old.

I believe I have already referred to Fergusson's case of dislocation of the sternal end of the clavicle forwards, which occurred during birth. The end rested in front of the sternum, and could be pushed into its place with great ease; but when left alone it immediately slipped out again. Nothing was done; a new joint formed, and the child afterwards possessed as much power in the one arm as in the other.⁴

Nadaud⁵ also met with a dislocation of the sternal end forwards in a newly born child which had been delivered rapidly by the breech. The arm was immobilized by a sling, and the cure took place without deformity.

Guérin says that he has seen a dislocation upwards and outwards at

¹ Guérin, *Gaz. Méd.*, 1851, p. 227.

² Seger, *Ephem. Nat. Curios.*, 1677, from Malg., *op. cit.*, p. 410.

³ Shaw, *New York Med. Record*, Aug. 18; *Virchow und Hirsh's Jahresbericht für 1877*, p. 338.

⁴ Fergusson, *System of Surg.*, 4th Amer. ed., 1853, p. 209.

⁵ Nadaud, *Bordeaux Médical*, 1874, No. 42.

the acromial end of the clavicle in a foetus of three months. And I have mentioned, in the chapter on Traumatic Dislocations of the Bones, one case seen by me at the end of the fourth week of life.

In regard to the treatment of either of these displacements of the clavicle, I need only remark that a reduction ought to be attempted; and, if practicable, without much confinement to the little patient, it should be maintained until the bones have become fixed in their natural positions. It is quite probable that this can never be accomplished, at least perfectly; but it will nevertheless be proper always to make the attempt.

§ 8. Congenital Dislocations of the Shoulder. (Upper End of the Humerus.)

Guérin affirms that he has established the existence of three varieties of congenital scapulo-humeral dislocations, namely:

1. Dislocations of the head of the humerus downwards; of which variety he presented to the Academy a plaster cast taken from a boy ten years old. The displacement existed in both arms, but much more pronounced in the right than in the left arm. It was due wholly to paralysis of the muscles about the joint, and to elongation of the capsule.
2. Downwards and inwards; complete upon one side and incomplete upon the other, in the same person. The head of each humerus was applied against the ribs, and the arms maintained in an abduction almost horizontal, under the influence of the retraction of the deltoid muscles. "The same case," Guérin remarks, "has been confirmed by Roux."
3. Subluxation upwards and outwards; seen on both sides in a foetal monster, which was offered to the Academy for examination; and in one arm of a young man fifteen years old, of which Guérin presented a plaster cast. "It is characterized by a sliding of the head of the humerus in the direction indicated; this sliding being favored by a corresponding displacement of the coracoid and acromion processes."¹

Malgaigne, who regards "all luxations in consequence of paralysis as essentially posterior to birth," will not admit the first example mentioned by Guérin; but, as I stated before, the objections made by Malgaigne have failed to convince me of the propriety of rejecting all of this class of reported examples. Of the second case, mentioned by Guérin as having been confirmed by Roux, Malgaigne declares that he has consulted Roux upon this matter, and that he affirms that "he has never seen a congenital luxation of the shoulder."

Robert Smith has met with but two of the forms of congenital dislocation of the humerus described by Guérin, namely, that in which the head of the humerus is displaced forwards, and that in which it is displaced backwards. Of the first variety he has seen several examples.

The first was in the person of Alexander Steele, æt. 29, who presented both a dislocation of the head of the humerus under the coracoid process of the left scapula, and pes equinus in the foot of the left leg. The muscles of the arm and shoulder upon that side were feeble and greatly

¹ Guérin, *op. cit.*, p. 30.

atrophied. The humerus was shortened; its head being of the natural size and form, but when the arm hung by the side it dropped so far from its socket as to permit the thumb to be placed between the head and the acromion process. By pressing the humerus forwards, the finger could be placed in the outer part of the glenoid cavity; and although the head could be moved about thus freely, it seemed naturally to occupy only the anterior half of the glenoid fossa.

Robert Smith's second example of subcoracoid congenital dislocation was presented in the person of Mr. H., *æt.* 20, the condition of whose left shoulder resembled almost precisely that of Mr. Steele. "The deformity had existed from his birth, but became much more obvious and striking as he increased in age and stature."

In the third example the child had attained nearly the age of one year before the condition of the limb attracted attention, which was then excited, not by the deformity of the shoulder, but by the atrophied condition of the muscles of the arm. The child had never complained of pain about the joint, nor had he ever met with any accident. No doubt this also was an example of paralysis, and it is not improbable that it was congenital, but the evidence upon this point is not very conclusive. When seen by Mr. Smith, he was nine years old, the shoulder and arm presenting the same appearance as in the other cases mentioned.

The fourth was also subcoracoid and symmetrical, the same deformity existing in both shoulders. This was in the person of a female, *æt.* 21, who had been for many years a patient in a lunatic asylum, and who died of chronic inflammation of the meninges of the brain.

Mr. Smith, who himself made the autopsy, first noticed the condition of the left shoulder. The muscles were atrophied; the head of the humerus could be felt lying under the coracoid process; the elbow projected from the side, but could be readily brought into contact with it. The right shoulder presented the same appearance, but the deformity was somewhat less, and the head of the humerus was not so directly underneath the coracoid process.

From the external appearances presented by the two shoulders, Mr. Smith did not doubt that these deviations from the natural state of the parts were not the result of violence.

Proceeding to remove the soft parts upon the left side, scarcely any trace was found of a glenoid cavity in its natural situation, but immediately underneath the coracoid process, upon the costal surface of the scapula, was formed an oblong socket completely surrounded by a capsular ligament, which ligament included also that small portion of the original socket which remained. The head of the humerus was changed in form, being oval, and fitted, in some measure, to both the old and new sockets, upon which it seemed to rest alternately.

Upon the right side, although the condition of the bones was somewhat different, the characteristic features of the deformity were similar.

Malgaigne, who quotes Mr. Smith as saying that these dislocations must have been congenital, and for no other reason than because they were symmetrical, has scarcely done this author justice. Says Mr. Smith: "The position of the glenoid cavity, the remarkable form of the head of the humerus, the presence of a perfect glenoid ligament, the ab-

sence of any trace of disease, and the existence of the deformity upon each side, *all* indicate the original nature of the malformation."

The only example of backward dislocation seen by Mr. Smith was also symmetrical, and seems to be equally well authenticated. This was in the person of a woman named Doyle, *æt.* 42, a lunatic also, who died February 8, 1839, in Dublin. She had been a patient in the lunatic asylum fifteen years, and was subject to severe epileptic convulsions, which ultimately proved fatal.

Mr. Smith made the autopsy on the day following her death. The convolutions of the brain were small and atrophied, as is frequently observed in idiots.

The two shoulders resembled each other so perfectly, both in external appearance and in their anatomy, that Mr. Smith has only found it necessary to describe particularly the condition of one.

The coracoid process was remarkably prominent, but the acromion was not so prominent as in accidental dislocations of the shoulder. The head of the humerus could be seen and felt distinctly moving with the shaft, upon the dorsal surface of the scapula. On removing the integuments, muscles, etc., no trace of a glenoid cavity was found in its natural situation; but upon the external surface of the neck of the scapula was a well-formed socket, which received the head of the humerus. This socket was covered with a cartilage of incrustation, and surrounded by a perfect capsule. The tendon of the biceps arose from the top and internal margin of the socket. The form of the acromion process was changed; the capsule smaller than natural; the head of the humerus irregularly oval, its anterior half alone being in contact with the glenoid cavity; the great tubercle natural, but the lesser was elongated and curved, forming a process of an inch in length, around the base of which the tendon of the biceps muscles played.¹

Gaillard² relates the case of a female child whose left arm was discovered to be deformed a few days after birth, and the elbow separated from the side. Later, the arm was found to be nearly immovable, and only at the end of four years was the dislocation recognized; but no attempt at reduction was then made. When sixteen years old, she was seen by Gaillard, who found the head of the humerus in the infraspinous fossa. The scapula, clavicle, and arm were preternaturally small; the forearm, although well developed, could not be completely extended nor supinated.

Despite these unfavorable circumstances, Gaillard determined to make an attempt to accomplish the reduction. Four times in the space of eight days he submitted the arms to extension made at right angles with the body, by means of sixteen-pound weights, the extension being continued from twenty to twenty-five minutes, and occasionally his own exertions being added to the weights. On the fourth attempt, the head of the bone was drawn gradually forwards, and by a rotary motion it was finally made to slip into its socket; but became immediately displaced. The next day Gaillard reduced it anew, and retained it in place one hour.

¹ Robert Smith, *op. cit.*, p. 256.

² Gaillard, *Mém. de l'Acad. de Méd.*, 1841, from Malgaigne, p. 569.

Six days later it was again reduced, and, by the aid of bandages, permanently retained in place. The slight pain and swelling which followed soon disappeared; and, by the aid of careful exercise, at the end of two years the arm had increased in length, and the patient could use the arm and hand so much better than before, as to encourage a hope that the recovery would be complete.

Aristide Rodrigue, of Holidaysburg, Penn., in a letter to the editor of the *American Journal of the Medical Sciences*, gives the following brief account of a case of intrauterine dislocation of the shoulder, complicated with a fracture of the forearm:

"The woman, when about four months gone with child, fell on her left side, striking a board, and felt herself much hurt at the time; at the full period she was delivered of a full-grown large boy with the following deformity: dislocation of the humerus into the axilla; fracture of both bones of the forearm of left side, lower third. Dislocation could not be reduced; union of the bones of the forearm by ossific matter complete; bones passing each other, and hand at an angle of about 40°; the child did well otherwise; now, four years old, strong and healthy; humerus has grown nearly apace with the other; forearm has not, and remains short and deformed as at birth; the hand is of the same size with that of the sound side."¹

I was asked to examine the arm of Joseph Heins, æt. 7, May 12, 1878, who had a subspinous dislocation of the left humerus. The parents stated that the birth of the child was premature, and that he was delivered with forceps, and as a head presentation. On the following day a swelling was noticed over the shoulder. On examination I found the head of the humerus resting upon the dorsum of the scapula below the spine. The scapula is smaller than the opposite scapula, and the arm is one and a half inches shorter than the other. The coracoid process is very prominent, and the humerus somewhat rotated inwards. He uses the arm nearly as well as the other, and in this respect it is yearly improving.

It is difficult to say positively whether this was strictly a congenital displacement, or whether it was caused by some violence employed in the act of delivery.

Jenni² has recorded an example of congenital dislocation into the axilla of the left arm in a girl six years old. The child at birth occupied a position across the pelvis, demanding the intervention of the accoucheur. From the time of birth the arm hung inert beside the body. Both the left arm and forearm were somewhat smaller in diameter and shorter than the same portions of the right. Jenni reduced the dislocation ten times in succession, but it was as often reproduced. He then applied a plaster dressing and left it on fifteen weeks, when he substituted a roller bandage, which was permitted to remain some time, after which the dislocation was not reproduced.

Küster,³ in a case of double congenital dislocation seen in a child one year old, and whose arms were seriously maimed in consequence, pro-

¹ Rodrigue, *loc. cit.*, Jan. 1854, p. 272.

² Jenni, *Corresp. Blatt für Schweiz. Aerzte*, No. 19, p. 580, 1er, Oct. 1879.

³ Küster, *Berliner Klin. Wochenschrift*, No. 1, p. 9, 6 janv. 1879.

posed to open the articulation and restore the bone to place. We are not informed whether he carried his intention into effect.

§ 9. Congenital Dislocations of the Radius and Ulna Backwards.

It is not uncommon to meet with examples of a slight subluxation backwards of these bones in feeble and newly born infants; which condition is probably due to a relaxation and elongation of the capsule. It is characterized by a preternatural mobility of the joint, and especially by the circumstance that the limb is capable of abnormal extension, or flexion backwards, as it is sometimes called. Guérin has seen this condition more advanced, the bones of the forearm having actually overlapped somewhat upon the lower end of the humerus, so that the articular surface of this latter presented itself in the fold of the elbow. This was especially observed in a girl of fourteen and a boy of thirteen years, and also in the two arms of a fetal monster.¹

Chaussier relates that a young woman, at the commencement of the ninth month of pregnancy, perceived suddenly movements of the fetus so violent that she almost lost her consciousness. These movements were repeated three times in the space of six minutes, after which everything returned to its natural order, and the accouchement took place naturally and at the usual term. The infant was pale and feeble, and presented a complete backward dislocation of the radius and ulna.²

§ 10. Congenital Dislocations of the Head of the Radius.

Examples of this dislocation have been reported by Dupuytren, Cruveilhier, Sandiforte, Adams, Dubois, Verneuil, Deville, Robert Smith, Guérin, and Hayem, most of which were in the direction backwards, some outwards, but only one of them forwards; some were double, the same deformity being presented in both arms, and others were single. In a few examples the dislocations were complicated with a consolidation of the radius to the ulna, and in others with a deficiency of the ulna or with some deformity indicating its congenital origin.

Of the symmetrical or double dislocation backwards Dupuytren furnishes the following example, presented to him in 1830, by M. Loir:

"The abnormal position which the head of either radius had assumed was at the back part of the lower extremity of the humerus, beyond which it extended for the space of at least an inch. This disposition of parts was absolutely identical on the two sides, and had all the characters of a congenital affection."³

In January, 1866, John Fitzmorris, æt. 19, was admitted to the Bellevue Hospital, laboring under a general scrofulous cachexy, in whose person I found a congenital dislocation of the heads of both radii, outwards. The dislocations are complete. The ulna are in place and of natural form, but their articulations at the wrist are loose. The same remark applies to all other joints in the body. The power of pronation

¹ Guérin, *op. cit.*, p. 31.

² Chaussier, from Malgaigne, *op. cit.*, t. ii. p. 268.

³ Dupuytren, *Injuries and Dis. of Bones*, p. 117.

and supination is unimpaired, as well, also, as the power of flexion and extension.

In the example of outward dislocation mentioned by Deville, there was an almost complete absence of the ulna, the head of the radius mounting upwards more than three centimetres above the level of the articulation.¹

Guérin, who has described an example of a forward dislocation, says it was observed by him in a girl of seven years, and that it was symmetrical. The two radii lay in front of the humeri, near the coronary fosses.² Hayem³ has also reported an example of double forward dislocation, which he believed to be congenital.

§ 11. Congenital Dislocations of the Wrist.

Guérin thinks he has seen three forms of congenital dislocation of the wrist. First, a dislocation forwards, characterized by a sliding of the wrist before the bones of the forearm, and by the projection posteriorly of the lower ends of the radius and ulna; seen in an infant of six months, and in two adults. Second, backwards and upwards; seen in a child of six years, and accompanied with an incomplete paralysis of all the muscles of the forearm and hand. Third, backwards and outwards; in a girl of fourteen years, accompanied with incomplete paralysis.⁴

Guérin has also seen three examples of dislocation outwards in foetal monsters, and one of dislocation inwards, as the result of arrest of development.

Robert Smith believes that the case of simple dislocation of the wrist or of the carpus forwards, mentioned by Cruveilhier in his *Anatomie Pathologique*, was an example of congenital dislocation; and he relates two other cases equally remarkable which came under his own observation. One was in the person of Deborah O'Neil, a lunatic and epileptic, who died when thirty-six years old. Both upper extremities were deformed from birth; the right presenting an example of dislocation of the carpus forwards, and the left of dislocation of the carpus backwards. The dissection showed that there had been an arrest of development, especially in the bones of the forearm and carpus. The second was in the person of a young woman who died of phthisis in the Richmond Hospital; the right wrist presenting an example of congenital dislocation of the carpus forwards from arrest of development also.⁵

Marrigues describes a very singular congenital displacement which he found upon a newly born infant. The radius and ulna were widely separated below, and in the interspace was lodged the whole of the first range of the carpal bones; the hand being strongly turned inwards.⁶

¹ Deville, Bulletin de la Soc. Anat., 1849, p. 153.

² Guérin, op. cit., p. 31.

³ Hayem, Bull. Soc. Anat. de Paris, 1864, p. 56.

⁴ Guérin, p. 717. ⁵ R. Smith, op. cit., pp. 238, 251.

⁶ Marrigues, Malgaigne, from Journ. de Méd., t. ii. p. 31, 1775.

§ 12. Congenital Dislocations of the Fingers.

Chaussier found in a fœtus the last three fingers of the left hand dislocated at the metacarpo-phalangeal articulation. The thighs, knees, and feet were also dislocated.¹

A. Bérard speaks of an incurvation backwards of the last two phalanges of the fingers as having been occasionally seen in newly born children of the female sex; and Malgaigne adds that he has himself seen a woman who had, from birth, all the *phalangettes* carried backwards to an angle of 135°, leaving the heads of the phalanges projecting forwards under the skin.²

Robert has seen, in a girl six years old, a congenital lateral dislocation of the *phalangette* of the index finger, which was inclined outwards at an obtuse angle. The external condyle of the lower extremity of the proximal phalanx was slightly atrophied, and the internal presented a corresponding projection. Robert cut the internal lateral ligament by a subcutaneous incision, but without any favorable result.³

§ 13. Congenital Dislocations of the Hip.

Dupuytren thought that double dislocations of the hip-joint, as congenital accidents, were more common than single dislocations, but in the experience of Pravaz the rule has been reversed, he having met with but four double dislocations in a total of nineteen.

They have been noticed much oftener in females than in males. Of forty-five examples mentioned by Dupuytren and Pravaz, only seven or eight were males.

The following table, constructed by Poinot from statistics gathered by Drachmann, Pravaz, and Krönlein, respectively, ought to be accepted as conclusive evidence that unilateral dislocations are more frequent than bilateral, and that these deformities are much more frequent in females than in males; while as regards its occurrence in the right or left limb, no marked preference exists for either.

Observations.	Limits of observation.	Males.	Females.	Unilateral.			Bilateral.
				Left.	Right.	?	
A. G. Drachmann (77),	1865-1880	10	67	24	24		29
Pravaz (107),	1863-1878	11	96	27	29		51
Krönlein (90),	1875-1880	14	76	32	22	5	31
		35	239	83	75	5	
			274		163		111

Congenital dislocations of the femur may be complete or incomplete. Of the complete dislocations, four varieties have been noticed.

¹ Chaussier, Malgaigne, op. cit., t. ii. p. 751.

² Bérard, Malgaigne, op. cit., p. 773.

³ Robert, from Malgaigne, op. cit., p. 773.