CONGENITAL LUMBAR HERNIA*

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Although there is a substantial literature on the subject of lumbar hernia, a study of it discloses disagreement over interpretation of the terms 'congenital' and 'acquired' and, indeed, over the word 'hernia' itself. This confusion is by no means confined to lumbar hernia and it has been usual for the writers of the surgical classics of the nineteenth and early twentieth centuries to devote several paragraphs or pages to discussion of these three terms without agreement as to their precise meanings (Coley, 1910; DaCosta, 1931; Iason, 1941; Macready 1893; Ogilvie, 1937; Teale, 1846; Watson, 1948; Zimmerman and Anson, 1953). With respect to the more common abdominal hernias, such as inguinal and umbilical protrusions, the commonly accepted modern understanding is that, with the exception of post-operative incisional hernias, all hernias may in some measure be said to have a congenital origin.

While the material here to be recorded does not justify an exercise in semantics, it is pertinent to note that whereas nearly 200 cases of lumbar hernia have been reported, only a small fraction of this total, somewhere between 12 and 20 cases, have been accepted as being authentically congenital in origin. Authorities differ considerably over the criteria for acceptable cases, which accounts for uncertainty over the precise number on record, and it can only be said that they are extremely unusual.

Part of the confusion stems from the fact that most of the reported cases of lumbar hernia, at any age from infancy up, can be shown to be acquired. In the earlier literature violent external trauma or sepsis, either tuberculous or non-specific, were the common causes, and many of those in infants and young children were acquired in this manner. In more recent years sepsis has remained aetiologically prominent and to this has been added surgical trauma, such as removal of a section of the inner table of the ilium for bone grafting.

As late as 1950 Thorek reported two cases of

lumbar hernia, both of traumatic origin, and collected and tabulated 124 additional cases from the literature. In the course of his review he said:

'I have not been able to find a satisfactory classification of lumbar hernia. Usually authors speak of a congenital type which is due to malformation or maldevelopment in the prenatal period, affecting muscles, aponeuroses, ilium, vertebrae, or lower ribs . . . , and an acquired type which is again subdivided into (a) spontaneous lumbar hernia, which is probably due to delayed effect of the conditions that produce the congenital type, aggravated by indirect injury from strain, obesity, extreme emaciation, hard physical labour, or other causes; and (b) traumatic lumbar hernia, which may be due to any one of a number of direct causes . . .'

The case to be presented here is unquestionably congenital in origin and is believed to be sufficiently unusual to merit publication. Comment on its embryological origin and on its anatomical and surgical characteristics will be included in the discussion that follows the case report.

Case Report

W.S. (C.H. No. 96002), a boy, now 28 months old, was observed at birth to have a large, soft, compressible mass in the left lumbar area, with palpable but inconspicuous deformity of the left lower ribs. The lesion caused him no apparent discomfort, and the only other obvious defect was an absent testis, also on the left. The mother's gestation had been normal and one sibling was healthy and free of congenital abnormalities.

The infant was referred for surgical consultation at 4 months of age, when enlargement of the mass had seemed to his parents to be disproportionately rapid as compared with his otherwise normal growth and development. Comparison of new radiographs with those taken at birth (Fig. 1) supported this observation and revealed, in addition to the costal deformities, hemivertebral defects of the lower dorsal and first lumbar vertebrae, with a compensated scoliosis that was not apparent in physical examination. In spite of the spinal anomalies, there was no neurological deficit. An apparent dextracardia was later disproved, and intravenous pyelography showed the position and function of the kidneys to be normal.

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The infant was cheerful, well nourished and active (Figs. 2A and 2B), but because of progressive enlargement of the bowel-filled mass, early elective operation was advised and was performed on July 22, 1954. In Figs. 3A and 3B the dissection of the sac is shown, before and after it was opened. It was apparent at operation that both the superior (Grynfeltt-Lesshaft) and the inferior (Petit's) lumbar triangles were affected. The muscles and fasciae forming the boundaries of these two triangles* were present, though somewhat distorted, with the exception of the latissimus dorsi which was not clearly demonstrated. An abdominal testis was found lying just within a snug internal inguinal ring, and Poupart's ligament and the inguinal canal appeared to be intact. The testis was left undisturbed.

* The lumbar area is bounded by the twelfth rib above, the iliac crest below, the erector spinae muscles behind and, in front, by a line from the tip of the twelfth rib to the iliac crest. This area is subdivided into the Grynfeltt-Lesshaft (superior) triangle which is bounded by the twelfth rib and margin of the serratus posterior muscle, the posterior margin of the internal oblique, and the erector spinae muscles; and into Petit's (inferior) triangle, bounded by the latissimus dorsi and external oblique muscles and the iliac crest.

The fascial and aponeurotic margins were adequate for an effective imbricated repair which was constructed over linear closure of the peritoneal sac (Fig. 3C) after trimming off the redundant portion of the latter. Artificial re-enforcement with tantalum mesh or skin was found to be unnecessary.

Recovery was uneventful, and the patient left the hospital on the tenth day after operation. He remained well for three months but he then developed an inguinal hernia on the same side as the previous lumbar hernia, the repair of the latter remaining intact. At a second operation, the inguinal hernia was repaired and orchidoplasty was performed. The child has been examined at regular intervals during the 24 months since the first operation, without evidence of recurrence of either hernia, and the testis has remained in the scrotum, though slightly higher than its normal fellow on the opposite side. When the patient began to walk independently, a minimal scoliosis became clinically apparent and he was fitted with a light orthopaedic brace to prevent progression of the spinal curvature, but apart from this he has remained well (Fig. 4).

FIG. 1(A) Plain radiograph taken at birth. The bowel-filled mass in the left flank is well demonstrated. Hemivertebral defects are seen in the lower dorsal and first lumbar vertebrae. Supernumerary and fused ribs are present on both sides with distortion of the lower ribs on the left.

FIG. 1 (B).—Plain radiograph taken at the age of 4 months. The hernial protrusion has increased in size, out of proportion to the growth of the child.

FIG. 2 (A) and (B).—Photographs of the patient taken at the age of 4 months. The umbilicus is normal, and the protrusion is entirely in the lumbar region.

FIG. 2 (C).—Reproduction of Borchardt's illustration of his case, reported in 1901.

FIG. 2 (D).—Reproduction of the illustration of Wyss' case of 1892. In his report a detailed anatomical dissection is described and illustrated.

FIG. 3 (A).—Photograph of the dissection of the sac before it was opened. It was actually much thinner than it appears to be in the photograph. Convolutions of bowel can indistinctly be seen through the surface.

FIG. 3 (B).—Photograph of the sac after it was opened. The edge of the spleen is seen in the upper portion of the defect.

FIG. 3 (C).—Photograph of the completed repair before closure of the skin. This imbricated closure was constructed from available fascial structures, after previous linear closure of the sac in a separate layer.

FIG. 4.—Photographs taken 19 months after repair of the lumbar hernia. The period of post-operative observation has now been 24 months, without evidence of recurrence.

Discussion

Congenital lesions such as this are of interest from two standpoints, namely, the embryological mechanism which produces them, and the problem of effective surgical repair.

For the first consideration no conclusive answer can be given. The defect is plainly the result of a developmental accident that occurs much earlier than does omphalocele, and which probably takes place during the third week of embryonic life. Nachod (1901) suggested that since the elbows of infants *in utero* rest on the lumbar area, the defect is produced by trauma to the mother, but this theory is not acceptable to modern embryologists. Monro, who is credited with the earliest description of congenital lumbar hernia (1802), is quoted by various authors as ascribing the defect simply to 'congenital defects of the abdominal wall'.

We have not been able, from material available to us, to trace the original description of Monro senior, which is credited to him by his son. The following is a translation from a footnote in Professor Braun's extensively documented discussion of the subject in 1879.

'This case of Monro is often cited, but never with an exact reference. I found the above report in A. Monro: *The Morbid Anatomy of the Human Gullet, Stomach and Intestines*, Edinburgh, 1811, p. 379, where the statement is made that this case was observed by the father of the author. There are probably still older reports of this case.'

Mastin (1890), whose patient had harboured the

visible defect since birth, offered no embryological explanation, saying 'To account for three congenital cases (among 32 reports of lumbar hernia which he collected in 1890) is not possible, since there is nothing in the development of the abdominal wall to account for the formation of a gap in the lumbar region.' Modern students of developmental anatomy can do no better than to fix the time of the accident at a very early embryonic stage, and its precise mechanism remains unsolved (Patten, Warkany, Wilson, personal communications).

The remarkable thing is that a developmental error, whatever its nature, at such an early stage can result in such a comparatively small deformity, or group of deformities, in the full-term infant. The monstrosities of this region in stillborn infants, which Potter illustrates (Potter, 1952), are relatively easy to understand. She attributes them to abnormal cleavage in the mesoderm, between the amniotic sac and the wall of the blastocyst, but no acceptable data are available to explain what has gone wrong in the case reported here, or in others like it.

From the surgical standpoint, mild controversy exists. Borchardt (1901), whose illustration is reproduced (Fig. 2c), preferred to classify his case, which was very much like ours, as a 'pseudohernia'. Johnathan Macready, of Leeds, who also illustrated a similar case (1893), makes an arbitrary distinction between congenital lumbar hernia and 'congenital defect of the abdominal wall with bulging of the affected area'. As suggested earlier, such distinctions appear to us to be largely a matter of semantics. All three of these cases, Borchardt's, Macready's and our own, as well as that of Gage (1889), seem to us, after careful comparison of the definitions of many authorities already cited, to fall within accepted criteria for congenital lumbar hernia. The case described by Professor Wyss of Zurich in 1892 (Fig. 2D), for example, has never been challenged, although his patient harboured many more associated congenital anomalies than did ours, or the others we have mentioned. The deformities of the ribs and spine were almost identical with those demonstrated in our patient and the only difference, insofar as the hernia is concerned, seems to be that both the defect and the 'bulge' in Wyss's case were smaller than in ours.

It is impossible to describe a standard operation for the repair of these defects, because of the considerable variation in the degree and structural characteristics of the anomaly. Mr. Owen, of London, in 1888 repaired a lumbar hernia in a 5½-year-old girl without opening the sac, but this case was definitely the result of sepsis. The technique most frequently cited is that of Dowd

(1907) whose case was apparently congenital in origin, and in which the hernia was 'the size of a goose-egg'. He employed flaps from the aponeurosis of the gluteus maximus and latissimus dorsi muscles and, at the time of his report, eight months after operation, the repair remained intact in spite of a severe wound infection. On our case, although the defect was considerably larger, a flap from the gluteus maximus was not needed, and if the latissimus dorsi muscle was present, it was not recognized. It appears that the technique of repair must be improvised on the basis of the findings in the individual case. Needless to say, a strong overlapping reconstruction, employing available intrinsic fasciae and aponeuroses, is preferable to artificial splints such as tantalum mesh or skin. It is, no doubt, advisable to have these materials available, but they should only be used if a satisfactory repair is impossible without them.

Since this type of hernia is apparently so extremely uncommon, experience with it is usually limited to a single case, and constitutes a stimulating challenge to the surgeon who encounters it.

Summary

A case, believed to fulfil acceptable criteria for a diagnosis of congenital lumbar hernia, is presented, with a brief review of the literature and with com-

ments on the embryological, anatomical, and surgical aspects of this unusual anomaly.

The senior author is greatly indebted to his co-author, Dr. Mattheis, for meticulous and painstaking translation of German reports, including the full text of Prof. Wyss' lengthy paper which was available only on microfilm; and to Miss Alice McCaffrey, Medical Librarian of the Cincinnati General Hospital, for her tireless efforts in tracing and making available original sources and texts.

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