

The Obstetric Significance of Untreated Congenital Hip Disease on the Navajo Reservation

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CONGENITAL hip disease is a rare complication of pregnancy. Little is found in the literature and only brief mention is made in obstetric texts of this abnormality.

It was our privilege, while stationed at Fort Defiance, Ariz., Navajo Reservation, from July 1962 to July 1965, to observe and review 27 cases of unilateral and bilateral congenital hip deformities occurring among the Navajo Indians admitted to our obstetric service. Sixteen of these cases occurred at the Fort Defiance Hospital. The other cases reviewed were principally from the Gallup Indian Hospital. Among the 2300 deliveries during the past 4 years at our hospital this condition presented itself 19 times, an incidence of 1:121 deliveries. It was also present in 10% of all cesarean sections performed during the same time period.

Many factors have been implicated in the etiology of congenital hip disease, including the position of the fetus, and maternal hormonal secretions affecting the ligaments of the infant.^{1, 2} However, the currently accepted theory is the genetic one.^{7, 12} If noxious environmental and nutritional factors¹¹ can be

considered as triggering mechanisms producing teratogenic effects, these are abundantly present on the Navajo reservation.⁹

It is known that the more than 60 Navajo clans that exist today were originally only 4. Therefore, it should be no surprise that considerable intermarriage between closely related clans has occurred. It is interesting that 5 clans account for 50% of all cases, according to a study done by Cornell University in the Many Farms Area of the Navajo reservation. The incidence of this condition was found to be as high as 5% among 1000 newborns and was higher in infants born during the winter months. However, when serial X-rays taken over several years were reviewed, almost one-half of the defects found initially had disappeared. The cradle board, a flat wooden device to which infants are strapped and rendered immobile to facilitate their transportation and handling, seems to be strongly implicated since it was used for 72% of the affected patients.

In untreated unilateral congenital hip disease in the adult, the affected leg is shortened and most of the body weight is transmitted to the pelvis through the normal leg. The pelvis on the normal side is deformed by being pushed upward, inward, and backward. Thus, we have an obliquely contracted pelvis involving all pelvic planes (Fig. 1). Engagement, if it occurs, will be in

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the oblique diameter. With descent, abnormalities in rotation may occur because of the inward projection of the ischium.⁴

When bilateral congenital hip disease is present the trunk is literally suspended by the iliofemoral and iliocapsular ligaments. Because of the lack of transverse pressure normally exerted by the femoral head, the pelvis is flattened (Fig. 2).

In labor, the effect of untreated bilateral congenital hip disease in the adult is that characteristic of a flat pelvis.⁵ Engagement occurs in the transverse diameter. If flattening

is severe, the head may over-ride the pubis; asynclitic engagements may result.⁶

Fortunately, pelvic architecture in unilateral and bilateral congenital hip disease is generally not markedly deformed, and in the majority of vertex presentations delivery may be expected to occur without difficulty. The adduction contracture of the legs may present a problem to the application of forceps but only rarely is thigh abduction so limited that cesarean section becomes necessary.⁸ However, when abnormal presentations occur, as they frequently do, elective



Fig. 1 (top). Unilateral congenital hip disease. Distortion on uninvolved side is due to upward, inward, and backward pressure of weight-bearing extremity. **Fig. 2 (bottom).** Bilateral congenital hip disease. Flattened pelvis is due to lack of normal side-wall pressure from lower extremities.

cesarean section is indicated, particularly in primigravidas with breech presentation in the presence of any pelvic deformity.¹⁰ In the flat pelvis there is a great danger of extended arms and head.

CLINICAL OBSERVATIONS

In the 27 cases of unilateral and bilateral congenital hip disease, there were 137 deliveries, only 38 of which occurred in the hospital. It is presumed that the remainder were in the hogan (at home). While great strides are being made to improve prenatal care and education among the Navajos—one-half or more of whom, in many areas, do not speak or understand English—much remains to be done.

That a large number of adult Navajo women have untreated congenital dislocation of the hip is due to several factors: in the past, many babies were delivered in the home and not seen by a physician during early life; their parents refused treatment; and health services have been generally unavailable to this group until the last few years. Even today occasional cases of congenital dislocation of the hip go untreated for various reasons.

Several of the patients had no pelvic X-rays and only the description of the bimanual examination is available. Pelvimetry was not available in many of the cases because of a lack of trained technicians. Only an estimate of the deformity can be gained by inspection of the pelvic X-rays.

A summation of the findings is shown below.

Deliveries	
Total	137
Known hospital	38
Breech presentations (hospital)	7
Cesarean sections	
Primigravida, breech	5
Cephalopelvic disproportion	3
Average duration of labor	
Primigravidas	20 hr.
Multigravidas	7.3 hr.

Other complicating factors	
Preeclampsia	1
Fracture of femoral neck	1
Femoral head slipped through sacrosciatic notch	1
Achondroplasia	1
Pott's disease	1
Bilateral congenital hip disease	11
Left congenital hip disease	10
Right congenital hip disease	6

It is interesting to note the high incidence of bilateral congenital hip disease in this series (11 in all). As would be expected, the left hip was most frequently involved in unilateral hip disease. The average duration of labor was not unduly prolonged in the primigravidas. In the multigravidas, 7 hr. was the average duration of labor. It is certainly possible that projection of the femoral head into the pelvic cavity through the sacrosciatic notch produced some dystocia. This complication may be overcome by changing the position of the hip.

Breech presentation occurred 7 times among the hospital admissions. There were several instances of transverse lie which spontaneously converted to vertex. The primary indication for cesarean section was breech presentation in a primigravida. However, in 1 case preeclampsia was also an indication. Breech presentation occurred 3 times in 1 patient, in keeping with the observation that predisposing factors remain and exert their influence on subsequent pregnancies.

Cesarean section was indicated on 3 occasions for cephalopelvic disproportion. A trial of labor was given to 2 of the 3; in the third case the examiner felt the pelvis to be absolutely contracted.

In none of these cases did ankylosis of the hip joint represent a significant problem requiring cesarean section.

From this series it is certainly obvious that the large majority of patients with vertex presentations will deliver vaginally. In congenital hip disease, as with other obstet-

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ric complications, one must ever be mindful of the three "p's"—power, passage, and passenger. When breech presentation occurs, cesarean section is indicated if there is the least doubt about pelvic adequacy.

CONCLUSIONS

1. Untreated congenital hip disease, which is quite prevalent among the Navajo, may be a cause of obstetric complication.

2. Unilateral congenital hip disease produces the greatest pelvic derangement, and the unaffected side of the pelvis is distorted more than the affected.

3. Any suggestion of a limp warrants careful pelvic evaluation and X-ray pelvimetry.

4. Vertex presentations accompanying congenital hip disease warrant a trial of labor.

5. If pelvic deformity exists, accompanied by an abnormal presentation, cesarean section must be considered.

6. Protrusion of the femoral head into the pelvic cavity through the sacrosciatic notch may cause dystocia.

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REFERENCES

1. BADGLEY, C. E. Etiology of congenital dislocation of the hip. *J Bone Joint Surg 31A*: 341, 1949.
2. CHAPPLE, C. C., and MOORE, J. R. "Orthopedic Pediatrics." In *Textbook of Pediatrics* (ed. 8). Nelson, W. E., Ed. Saunders, Philadelphia, 1964.
3. CORNELL, E. L. "The Bony Pelvis in Relation to Labor." In *Gynecology and Obstetrics* Davis, C. H., and Carter, B., Eds. Prior, Hagerstown, Md., 1957.
4. EASTMAN, N. J., and HELLMAN, L. M. *Williams' Obstetrics* (ed. 12). Appleton, New York, 1961, pp. 953-957.
5. GREENHILL, J. P. *Obstetrics* (ed. 13). Saunders, Philadelphia, 1965, p. 901.
6. GREENHILL, J. P. *Obstetrics* (ed. 13). Saunders, Philadelphia, 1965, pp. 904-907.
7. GUTTMACHER, A. F., and ROVINSKY, J. J. *Medical, Surgical, and Gynecological Complications of Pregnancy*. Williams & Wilkins, Baltimore, 1960, p. 597.
8. GUTTMACHER, A. F., and ROVINSKY, J. J. *Medical, Surgical, and Gynecological Complications of Pregnancy*. Williams & Wilkins, Baltimore, 1965, p. 276.
9. LOUGHLIN, B. A study of the needs of the pregnant woman in a selected group of Navajo women. Unpublished master's thesis in Public Health, University of North Carolina.
10. MORGAN, H. The management of breech presentation. *Clin Obstet Gynec 5*:1013, 1962.
11. NEEL, J. V. Genetics and human congenital malformations. *Pediatrics 19*:749, 1957.
12. POTTER, E. L. *Pathology of the Fetus and Infant* (ed. 2). Y. Bk. Pub., Chicago, 1961, p. 592.