

Surgery for hip dislocation in cerebral palsy

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In 10 children seriously disabled by cerebral palsy, 12 dislocated hips were surgically reduced. The main indications for surgery were impaired perineal care, decreasing sitting balance, and pain. Furthermore, the operations were considered in order to anticipate major problems in the future, such as the wind-swept hip phenomenon and pain in the hip. At follow-up, it appeared that all the children had profited from the surgical procedures.

Hip dislocation in cerebral palsy occurs almost exclusively in nonambulatory spastic children with marked neurologic immaturity. The greater the neurologic immaturity, the higher the risk of dislocation of the hip, usually present by the 7th year of life (Samilson et al. 1972). As a rule, the dislocation is associated with a flexion and adduction deformity, which causes nursing problems, orthotic problems, and skin ulcerations in the tuber region.

We report the results of surgery for hip dislocation in 10 children with cerebral palsy.

Patients and methods

From January 1980 to July 1984, 10 patients (8 females, 2 males) were operated on for spastic dislocation of the hip (Table 1). Neurologically, 5 patients had a total body involvement, 4 patients were spastic quadriplegics, whereas 1 patient was spastic diplegic. According to Hoffer's criteria (1973) for functional ability, 1 patient was a household walker, 2 patients were independent nonwalkers, and 7 dependent nonwalkers (Table 1).

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Bilateral operations were performed in 2 patients, giving a total of 12 hips for evaluation. The indication for surgery was a completely dislocated hip, which had existed for less than a year. Four patients suffered from pain in the hip, 8 had perineal nursing problems, and 1 had problems with fitting of the orthosis. Two children had not been operated on before, 6 had had an adductor tenotomy performed, and 2 an adductor tenotomy combined with an obturator neurectomy. The average age at dislocation was 8 (6-9) years.

The surgical procedures included release of the adductors and proximal femoral osteotomies to correct the excessive valgus and anteversion in all the hips. Four children with five dislocated hips (Figure 1) required open reduction. Acetabular reconstructions were not considered necessary because the hips were sufficiently covered. The hips were immobilized for a period of 6 weeks postoperatively in a hip spica cast. There were no serious postoperative complications. One superficial wound infection healed spontaneously.

Results

The 4 children with pain were painfree at follow-up. The children's appetite, weight, and general condition had improved. The preoperative function was restored within 3 months in all the children. Orthotic support was possible again in the child who had problems with fitting of his orthosis.

All the hips had considerable improvement in abduction at follow-up (mean 25°), which made

Table 1. Data from 10 patients with cerebral palsy and hip dislocation

A	B	C	D	E	F	G	H	I	K	L	M	N	O
1	7/9	F	R	Sq	Iw	—	Pc	At+Dv	3	Lo	175/120	30/23	5/25
2	7/7	M	R+L	Tb	Dw	R+L: At, No/6	Pc	At+Dv+ R+L	4	SI	R 175/130 L 175/130	45/30 45/25	R 5/30 L 5/30
3	7/9	F	R+L	Tb	Dw	R+L: At, No, P/6	Pc, P	At+Dv+ Fs+Or	3.5	Lo	R 165/120	31/25	— 5/25
	8/2	F	L	Tb				At+Dv+ Fs+Or		Lo	L 165/130	32/27	— 5/30
4	8/6	M	L	Sq	Iw	At/5	P	At+Dv	3.5	Lo	175/135	30/25	10/20
5	10/8	M	R	Sd	Hw	—	Of	At+Dv+ Fs+Or	4	Lo	170/115	40/30	0/25
6	9/7	F	R	Sq	Dw	At/6	Pc, P	At+Dv	3	Lo	180/125	35/25	— 5/25
7	7/6	F	L	Tb	Dw	At/4	Pc	At+Dv	3.5	Lo	175/130	35/25	0/25
8	8/2	M	R	Sq	Dw	At/3	Pc	At+Dv+ Fs+Or	4.5	Lo	170/135	40/25	10/25
9	7/3	M	R	Tb	Dw	At/4	Pc	At+Dv	3.5	Lo	180/135	40/25	10/25
10	9/0	M	R	Tb	Dw	At/5	Pc, P	At+Dv+ Fs+Or	3	Lo	175/130	40/30	0/25

A case, B age at surgery (yr/mo), C sex, D side, E diagnosis, F level of mobility, G previous hip surgery/age, H additional indications for operation, I hip procedures, K length of follow-up (yrs), L radiographic control follow-up 1987, M neck-shaft angle preoperatively/Fu, N acetabular index preoperatively/Fu, O abduction preoperatively/Fu.

At adductor tenotomy, Dv derotation and varisation osteotomy, Dw dependent non-walker, Fs femoral shortening, Fu follow-up, Hw household walker, Iw independent walker, No nervus obturator neurectomy, Of orthosis fitting problem, Or open reduction, P pain, Pc perineal care problems, SI subluxated, Sd spastic diplegic, Sq spastic quadriplegic, Tb total body involvement.



A



B

Figure 1. Bilateral spastic dislocation of the hip in a total body-involved 7-year-old child.

A. Preoperatively.

B. Two years after open reduction of both hips, derotation, varisation and shortening of both proximal femora and medial soft tissue release.

perineal care possible. In 10 of the operated on hips, the femoral head was well located within the acetabulum. In 1 child both hips were well centered, but the acetabular coverage was still considered insufficient. Because this child was bedridden, this result was quite acceptable. All the proximal femur osteotomies healed in 6 weeks. The neck shaft angles needed considerable correction (Table 1). These angles showed no tendency to increase during the follow-up period. Acetabular indices showed a slight decrease at follow-up.

Discussion

All infants are born with anteverted coxa valga and flexion. In severe cerebral palsy with spasticity of the flexors and adductors around the hip, the congenital flexion pattern will persist. In addition, the mechanisms for decreased femoral anteversion, external rotation of the hip, and hip extension will fail to appear.

It is generally accepted that surgery is the best treatment in order to prevent a subluxation or dislocation of the hip in cerebral palsy. However, Silver (1985) described a failure rate of 20 per cent despite regular control visits with radiography and operative soft-tissue procedures as adductor release and anterior obturator neurectomy. Eight of our patients fitted this category, resulting in 10 dislocations despite soft-tissue procedures.

At the time our patients had an adductor tenotomy, they all had a coxa valga anterversion. When the hips of such patients are extended, the

risk of anterior dislocation increases. In all our patients, these factors contributed to the onset of the dislocation.

Whether surgery of dislocated spastic hips is justified is still controversial. Moreau et al. (1979) stated that subluxation and dislocation should be prevented by surgical means, but that surgical treatment of the already dislocated hip was only indicated for the neurologically mature patient. However, Samilson et al. (1972) advocated surgery for the acquired spastic dislocation of the hip, irrespective of the neurologic maturity of the patient.

We agree with Samilson et al. (1972) that treatment of dislocated spastic hips – associated with severe contractures that prevent normal sitting balance and perineal care – is advisable in all cases. Surgical procedures can prevent future major problems, such as the wind-swept hip phenomenon and degenerative changes in the cartilage of the hip joint caused by long-standing dislocation. Then, only salvage procedures, such as resection of the proximal femur, will be appropriate, which can resolve the pain, but not the impaired sitting balance.

Subluxations and dislocations of recent date cannot be managed by soft-tissue release alone, but should be combined with derotation and varisation osteotomy of the proximal femur.

We did not observe any loss of obtained correction of the neck-shaft angles during follow-up, probably due to the relatively advanced age of the patients when soft-tissue releases on the medial side of the hip joint and the extreme varisation of the proximal femur were performed.

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