Osteochondritis dissecans in Perthes' disease

Report of 7 cases

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We report 7 cases of osteochondritis dissecans following Perthes' disease in 363 hips, i.e., an incidence of 2 percent. Six of the 7 cases belonged to Salter group B (Catterall Groups III–IV), indicating a higher incidence in hips with a worse prognosis. Six cases were asymptomatic and did not require treatment; in 3 of these, there was spontaneous radiographic healing of the lesion.

Catterall (1982) found only 54 published cases of osteochondritis dissecans after Perthes' disease. We report 7 cases of osteochondritis dissecans in a series of 363 Perthes' hips.

Observations (Table 1, Figures 1–3)

Among 337 children (363 hips) with Perthes' disease, diagnosed at our hospital between 1973 and 1987, seven hips (2 percent) had osteochondritis dissecans (Table 1); one was Salter Group A (Catterall Groups I–II; Salter 1984) and six were Salter Group B (Catterall Groups III–IV). All 7 patients were boys. The mean age at the time of diagnosis was 10 years for Perthes' disease and 14 years for osteochondritis dissecans, with a mean follow-up of 7 and 3 years, respectively. Treatment for Perthes' disease in these 7 boys was an abduction brace in 4, femoral osteotomy in 1, and no treatment in 2. There were no subjective symptoms related to the osteochondritis except in Case 3, who complained of intermittent pain and a limp. He was operated on with drilling and bone grafting, but there was a strong suspicion that his symptoms were due to the deformed femoral head. Radiographically, the osteochondritis fragment disappeared in 4 of the cases.

Table 1. Data for 7 boys with osteochondritis dissecans following Perthes' disease

A	B	C	D	E	F	G	H	I	J	K	L	M
1	8	L	IV	S	G	7	13	–	10 x 4	A	N	D
2	14	R	I	B	G	6	16	–	12 x 6	A	N	P
3	11	L	III	N	P	9	16	+	26 x 9	A	D	D
4	9	R	III	B	G	7	11	–	10 x 6	L	N	D
5	9	L	III	B	F	4	12	–	15 x 9	A	N	D
6	13	L	III	N	P	4	15	–	17 x 6	A	N	P
7	9	L	III	B	F	9	15	–	24 x 7	L	N	P

A case
B age at diagnosis of Perthes' disease
C side
D Catterall's group
E treatment of Perthes' disease:
N none, B brace, S surgery (varization).
F outcome of Perthes' disease (Mose's criteria):
G good, F fair, P poor
G follow-up (years)
H age at diagnosis of osteochondritis dissecans (OD)
I symptoms of OD:
– none, + pain
J radiographic size of OD fragment (mm)
K radiographic view for best visualization:
A AP, L Lauenstein
L treatment of OD:
N none, D drilling
M fate of OD on final follow-up:
D disappeared, P persisted

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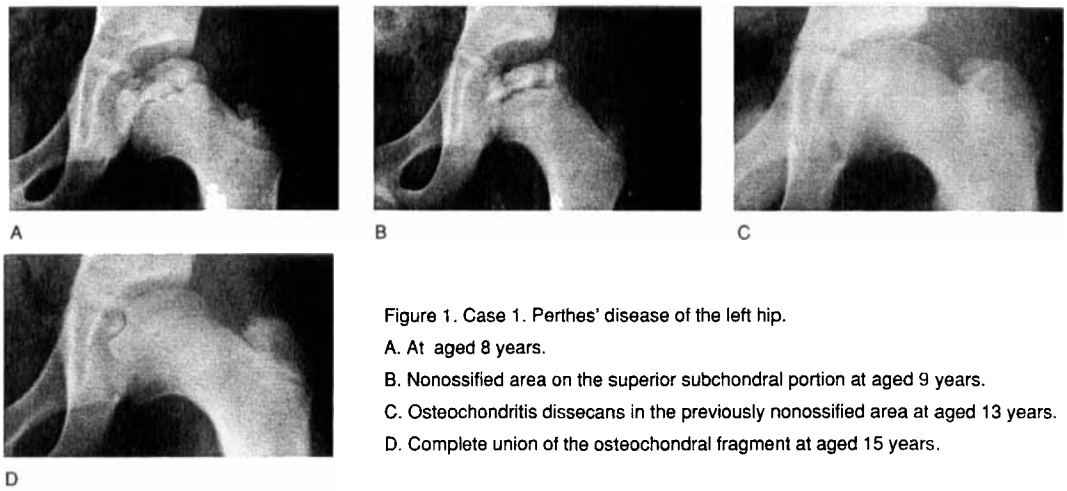

Figure 1. Case 1. Perthes' disease of the left hip.

A. At aged 8 years.

B. Nonossified area on the superior subchondral portion at aged 9 years.

C. Osteochondritis dissecans in the previously nonossified area at aged 13 years.

D. Complete union of the osteochondral fragment at aged 15 years.

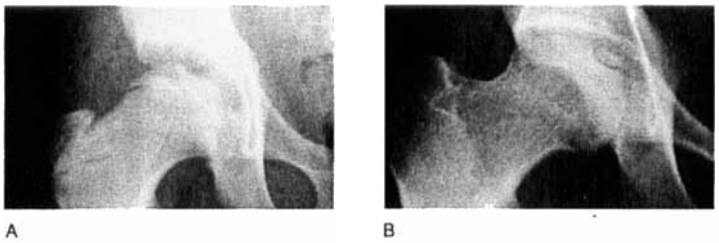

Figure 2. Case 2. A 14-year-old boy with Perthes' disease of the right hip.

A. Nonossified area on the superior subchondral portion of the right hip.

B. A definite fragment of osteochondritis dissecans 2 years later.

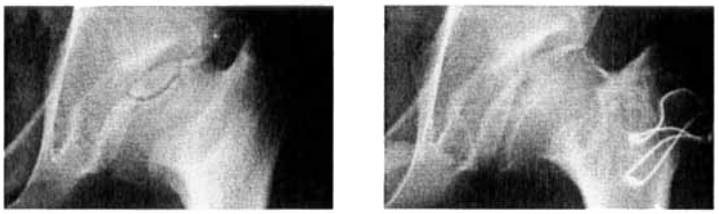

Figure 3. Case 3. Osteochondritis dissecans of the femoral head diagnosed at aged 11 years.

A. Osteochondritis dissecans of the femoral head at aged 16 years.

B. Complete union of the osteochondral fragment after operation.

Discussion

It has been reported by many authors that osteochondritis dissecans can occur in the epiphysis of a femoral head affected by Perthes' disease. However, Catterall (1982) found only 54 cases in the literature.

Reports about the incidence of this lesion have also been few; 2 cases were reported by Ratliff (1967) in his series of 34 hips observed for 30 years. Kamhi and MacEwen (1975) found 7 cases in 200 patients. We found an incidence of 2 percent.

Catterall (1982) reported that the risk of contracting osteochondritis dissecans was not correlated with the severity of Perthes' disease or the type of treatment used. However, all our patients except 1 belonged to Salter Group B.

The pathogenesis of the osteochondritis dissecans has been discussed by several authors. Catterall (1982) stated that clefts are formed in the fibrocartilagenous tissue of the epiphysis during healing of Perthes' disease. By ossification the free cartilage fragment becomes the osteochondritis. He also proposed that ossification occurs after invasion of granulation tissue into the fibrocartilagenous area in the superior part of the epiphysis; when the ossification does not coalesce, an area of osteochondritis may form. It has also been suggested by Ratliff (1967) that the osteochondritis is caused by the persistence of an unhealed necrotic fragment.

With serial radiographic examinations, we could observe the sequential development of osteochondri-

tis dissecans; a radiolucent area first formed in the dome of the femoral osseous epiphysis and multiple tiny osseous nuclei appeared, which gradually enlarged and coalesced into a small osteochondral fragment with distinct margins. This observation seems to agree with Catterall's theory.

Kamhi and MacEwen (1975), after a study of 7 cases, concluded that the treatment should be nonoperative unless there was gross interference with the mechanics of the hip joint. However, when the free fragment is displaced and becomes symptomatic, treatment such as rest, immobilization, or removal of the fragment may be indicated. Freehafer (1960) removed several loose fragments in his case and emphasized that removal of fragments is necessary only when they dislocate or lock the joint.

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