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Snapping hip

Thirty-one snapping hips in 24 patients were followed for 4 (1–11) years after operation. At follow-up, snapping persisted in nine hips, in three cases accompanied by pain. The femoral neck angle was less in the patients (128°) than in a control group (134°).

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Snapping hip (coxa saltans) can be classified as intra- and peri-articular (Binnie 1913, Moreira 1940, Schaberg et al. 1984). The periarticular snapping has mostly been associated with a thickening of the posterior upper border of the iliotibial tract or the anterior border of the gluteus maximus muscle near its insertion (Albany 1929, Binnie 1913, Leemans 1931).

We evaluated the results after operation of the peri-articular snapping hip, with symptoms located around the greater trochanter, and compared several anthropometric hip parameters of the patients with those of a control group.

Patients and methods

The material comprised 17 females and seven males with 31 hips operated in the period 1973–1983. The median age was 29 (15–78) years. The median time from onset of symptoms until operation was 2 (1–18) years. Six patients had had the symptoms since childhood, and five patients noticed the snapping after a fall. All patients complained before operation of daily discomfort from the hip, but in only two patients did this cause absence from work for short periods (Table 1). Sixteen patients had been treated with ultrasound and steroid injections without improvement. The median follow-up time after operation was 4 (1–11) years.

The control group comprised nine females and six males with median age 29 (20–58) years. None had a history of hip symptoms.

In 27 hips the posterior half of the iliotibial tract was resected at the site of the insertion of the gluteus maximus muscle. In four hips an incised posterior flap of the iliotibial tract was sutured to the anterolateral surface of the fascia. In eight hips the trochanteric bursa was also extirpated. All patients were mobilized with full weight-bearing the day after operation.

The following clinical parameters were measured: leg length from the anterior superior iliac spine to the medial malleolus; pelvic width between the anterior superior iliac spines; femoral circumference 15 and 25 cm above the knee joint; tonus of gluteal muscles; range of motion of the hip and knee joints.

For the 19 operated patients and the controls the following were measured on the radiograms: the prominence of the greater trochanter; the pelvis-crista-trochanter angle; the angle of the femoral neck to the femoral shaft; and the trochanter index, i.e. the distance between the greater trochanters divided by the greatest distance between the iliac crests (Figure 1).

The Mann-Whitney U-test was used in the statistical analysis.

Results

In 30 of the 31 operated hips the iliotibial tract was considered abnormally stiff and thick. In 13 hips this was accompanied by inflammation of the trochanteric bursa. Biopsies of the iliotibial tract were examined in nine cases; five showed degenerative changes with fibrosis.

There were no serious post-operative com-

Table 1. Snapping hip symptoms before and after operation. No. of hips.

	Before	After
Snapping with pain	29	3
Snapping without pain	2	6
No pain or snapping	0	22
Total	31	31

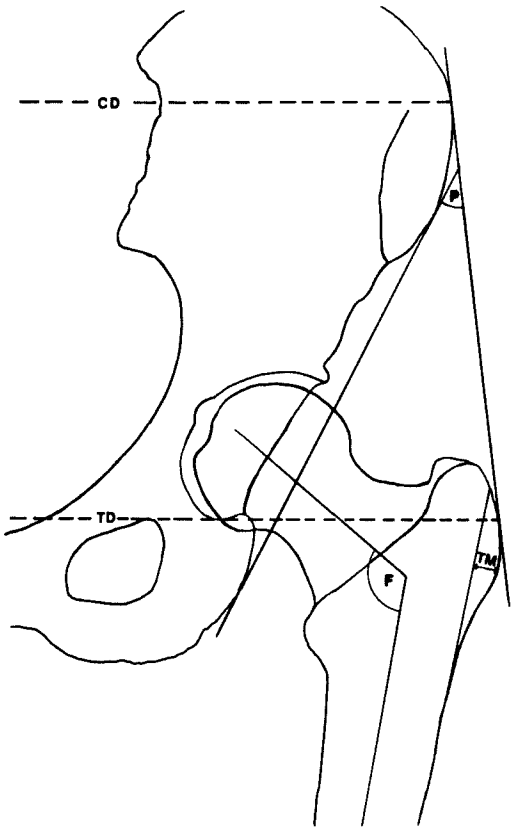

Figure 1. Measurements on the radiograms. P = pelvis-crista-trochanter angle. TM = prominence of the greater trochanter. F = angle of the femoral neck. CD = distance between the iliac crests. TD = distance between the greater trochanters.

plications. At follow-up 22 hips were symptomless (Table 1). Two of the three patients who still had pain and snapping were re-operated with good results. Two patients had some hypothrophy of the gluteal muscles on the operated side and one patient had 1.5 cm reduced femoral circumference.

Neither the operated patients nor the controls had more than 1 cm discrepancy in leg length. The range of motion of the operated hips was in all patients similar to that of the normal hip. The bi-iliac width, the prominence of the greater trochanter, the pelvis-crista-trochanter angle and the trochanter-pelvis index were the same in the operated patients and in the control group.

The median angle of the femoral neck in the operated patients was 128 (121–137) degrees and in the control group 134 (123–139) degrees ($P = 0.008$).

Bi-iliac width did not correlate with the angulation of the femoral neck.

Discussion

The degree of disability and pain is variable, and most often snapping is without subjective significance (Edmonson & Crenshaw 1980). Thus, in younger athletes an audible snap located around the greater trochanter is often heard when the hip is adducted, flexed and rotated, for instance in a knee examination (personal experience).

The residual snapping in nine patients points to causes other than just the thickening of the iliotibial tract passing over greater trochanter. The absence of microscopically visible fibrosis in several resected parts of the iliotibial tracts further supports this point of view. Also slipping of the iliopsoas tendon over the ileopectineal eminence and/or anterior inferior iliac spine, osteochondromas of the greater trochanter, and an abnormally large superior margin of the greater trochanter have been reported to cause peri-articular snapping (Moreira 1940, Edmonson & Crenshaw 1980, Schaberg et al. 1984). Snapping hips in our patients were not due to any of these causes.

The extensive insertion of the gluteus maximus into the iliotibial tract necessitates wide fenestration but the muscle will still exert its action on the tract. Inadequate fenestration of the iliotibial tract was possibly the reason for residual snapping in our patients; this is supported by the freedom from symptoms of the two re-operated patients, and also agrees with the disappearance of the snapping when the patient is relaxed (Moreira 1940).

Sliding over the greater trochanter may cause inflammation of the bursa, but, in agreemant with Binnie (1913), we do not believe that inflamed serous bursae can produce snapping of the hip.

Jacobs & Young (1978) showed that dancers with snapping hip had a narrower bi-iliac width than dancers without snapping. We did not find a difference in bi-iliac width between the operated patients and the control group.

Our finding of coxa vara being more common in the snapping population has not been reported previously. As the decreased angulation of the femoral neck results in shorter lever arms of the gluteus medius and minimus muscles, the abduction movements will be less effective, and there will thus be increased stress on the superior part of the iliotibial tract. This may be a mechanism similar to that in dancers.

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