

OSTEOTOMY AT THE BASE OF FEMORAL NECK WITH OSTEOPLASTY FOR MODERATE AND SEVERE SLIPPED CAPITAL FEMORAL EPIPHYSIS: COMPARISON OF CLINICAL RESULTS WITH CONTROL

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INTRODUCTION

Slipped capital femoral epiphysis (SCFE) is a common hip disorder affecting adolescents. Pain, limited hip motion and muscle weakness are common complications of SCFE, affecting the long-term outcomes [1,2].

More recently, the association of the osteotomy at the base of femoral neck and osteoplasty has been shown to partially restore the abduction function [2]. Nevertheless, there is limited comparative evidence estimating the level of functional restoration following this procedure. We compared the range of motion and strength of the hip from patients who underwent osteotomy at the base of femoral neck and osteoplasty for the treatment of moderate and severe SCFE and from healthy individuals.

METHODS

This study was approved by the Ethics Committee of the Clinical Hospital of Ribeirão Preto (processes HCRP 942.952 and 2.357.360) and included one cohort of patients with SCFE with a minimum follow-up of two years after the index surgery, and one cohort of healthy individuals. Twelve patients (14 hips) underwent osteotomy at the base of femoral neck associated with head-neck osteoplasty and twelve healthy volunteers without a clinical history of hip disease or trauma composed the control group (Table 1).

Table 1: Demographic data. Values refer to mean ± standard deviation (range) or frequency and percentages of hips.

	Osteotomy (14 hips)	Control (24hips)	p value
Age at evaluation (years)	17.0±2.2 (12.8-20.7)	16.9±2.4 (12.6-19.9)	p=1.0
Sex boys:girls, n (%)	10:4 (71:29)	12:12 (50:50)	p=0.21
Body mass index kg/m ²	28.4±6.2 (19.5-37.8)	22.0±4.5 (15.9-34.0)	p<0.001

Hip motion was assessed using goniometry and the muscle strength was determined using isokinetic dynamometry and the Trendelenburg test.

RESULTS AND DISCUSSION

The osteotomy at base of neck showed similar range of motion compared with control hips, except for increased internal rotation ($37^{\circ}\pm 9^{\circ}$ vs. $29^{\circ}\pm 8^{\circ}$, $p<0.001$). There was no complete restoration of the abduction torque following the osteotomy at the base of neck in compared with control individuals (76 ± 37 Nm.kg in base of neck osteotomy vs. 89 ± 28 Nm.kg in controls; $p=0.045$), but the strength was similar for flexion, extension and adduction, with low proportion of Trendelenburg sign (7% in base of neck osteotomy vs 0% in controls, $p=0.194$).

The improvement in the anatomical positioning of the greater trochanter following the base of femoral neck osteotomy may have positive effects on the abduction strength [3]. However, a potential neck shortening following the base of femoral neck osteotomy may decrease the abductor moment arm, and the direct lateral approach may disturb the abductor muscle function [3,4].

CONCLUSION

Our results showed that the treatment of moderate and severe cases of SCFE with the osteotomy at the base of femoral neck in association with head-neck osteoplasty restored the hip motion and muscle strength to normal levels, with exception to the abductor strength.

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