Proximal Femoral Varus Osteotomy for Legg–Calvé–Perthes Disease: Do Age and Lateral Pillar Classifications Influence Short-to-Mid-Term Clinical and Radiological Outcomes?

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INTRODUCTION:

Proximal femoral varus osteotomy (FVO) is one of the most used treatment methods with acceptable outcomes for Legg–Calvé–Perthes disease (LCPD). We aimed to investigate the influence of age at disease onset and the Lateral Pillar classification on clinical and radiological outcomes of FVO surgery LCPD patients between 6-12 years of age.

Hypothesis: Proximal FVO surgery in the early fragmentation phase of LCPD patients led to acceptable clinical and radiographic outcomes in a 3-year follow up, regardless of preoperative age and Herring type.

METHODS:

Fifty patients with LCPD (Herring groups B, B/C, and C) who underwent FVO were retrospectively reviewed. We evaluated radiological (center-edge angle, extrusion index, epiphyseal index, acetabular index, articulo-trochanteric distance (ATD)), and clinical (hip abduction range of motion (ROM), Trendelenburg sign, pain, and Harris hip score (HHS)) outcomes with a follow up of 37.3 ± 10.5 months (range: 24 - 180 months). Finally, the overall treatment outcome was assessed using the Stulberg classification.

RESULTS:

The ROC Curve analysis did not reveal any significant relationship between age and clinical or radiological outcomes, and there was no predictable age cut-off for surgical outcomes (P=0.13). No significant difference was found in Stulberg classification at the follow up between patients with type B, B/C, and C of the lateral pillar (P>0.05).

DISCUSSION AND CONCLUSION:

Our results demonstrated that FVO surgery in children aged 6 to 12 years with type B, B/C, and C lateral pillars had acceptable clinical and radiographic outcomes in a short-to-mid-term follow up. Age and lateral pillar type did not seem to affect the results of FVO surgery significantly.
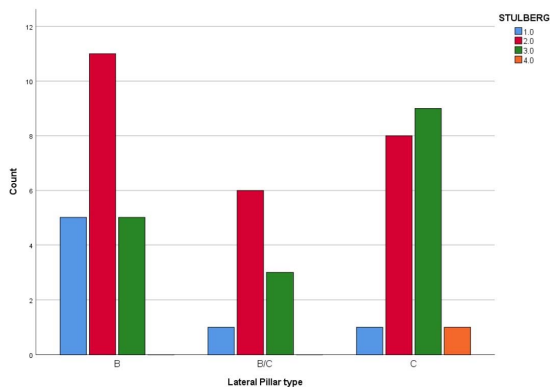

Figure 1. Surgery outcomes (Stulberg classification) distribution based on lateral pillar typing

Table 1. Comparison of the follow-up results of patients based on Stulberg radiological classification between lateral pillar types

n, %		Stulberg					Total
P-value = 0.15 (Congruent*Type)		Spherically congruent		Aspherically congruent			
P-value = 0.38 (Stulberg*Type)		1	2	3	4	5	
Lateral pillar type	B	5 (24%)	11 (52%)	5 (24%)	0	0	21 (42%)
		16 (76%)		5 (24%)			
	B/C	1 (10%)	6 (60%)	3 (30%)	0	0	10 (20%)
		7 (70%)		3 (30%)			
	C	1 (5%)	8 (42%)	9 (47%)	1 (5%)	0	19 (38%)
		9 (47%)		10 (53%)			
Total		12 (24.0%)	27 (54.0%)	10 (20.0%)	1 (2.0%)	0	50 (100%)
		35 (70%)		15 (30%)			