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Fall Risk Reduction for Middle-aged Symptomatic Hallux Valgus Patients' after Orthotic Treatment: A Case-series with 1 Year Follow-up

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Introduction

Hallux valgus (HV) is a common foot deformity that may cause pain, limit walking ability, difficulties in shoe wear, affect postural stability and related to elderly fall risk. Since 2010, patient's condition and related treatment outcomes have been documented systematically in the Prosthetics and Orthotic Department of Queen Elizabeth Hospital.

Objectives

A retrospective study to review the effectiveness of orthotic treatment on fall risk reduction and its correlation with foot pain for HV patients in Hong Kong is performed.

Methodology

New HV patients who have been treated in the Prosthetic & Orthotic Department of Queen Elizabeth hospital were included in this review. Patients have been treated following the KCC HV treatment protocol. Treatment outcomes, including postural stability (i.e. center-of-pressure velocity) and foot pain improvement, were evaluated at baseline, 1 month, 3 month, 6 month and 1 year follow-up. Postural stability was monitored using 30 seconds comfortable standing postural sway measurement. High fall risk is defined as the value of center-of-pressure (COP) velocity at follow-up which is higher than the reference of faller group, i.e. 2.4cm/s, from Melzer I et al. (2004). Foot pain was monitored using self-developed Chinese questionnaire. Data analysis has been done based on last data carry forward principle.

Result

Nineteen hallux valgus patients (Male : Female = 1 : 4) with mean age of 55 years were included. Follow-up rate is 90%. Foot pain improves 33%-48% among five pain-related aspects at different stages of 1-year treatment. Although average age of patients were in the middle-age, 18 of 19 subjects were fall into the high fall risk

range at baseline. After 1 year of orthotic treatment, 17 of 19 subjects were escaped from the fallers' range. Relative risk of fall between two periods is 0.056. Therefore, relative risk reduction is 94.4%. Conclusion Results suggested that orthotic treatment is effective in fall risk reduction for symptomatic HV patients. In addition, results suggested that fall risk reduction after elimination of fall risk modifier, i.e. foot pain. In the future, longitudinal RCT study to evaluate the fall risk reduction for hallux valgus patient with and without orthotic treatment would help to establish evidence for orthotic treatment as fall prevention interventions.