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Long-term Follow up of Van Nes Rotationplasty for Congenital Proximal Focal Femoral Deficiency [Proceedings]

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Presentation Abstract

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Abstract:
INTRODUCTIONProximal focal femoral deficiency (PFFD) is a congenital anomaly that presents challenges for orthopaedic and prosthetic management. The Van Nes rotationplasty is one treatment in which the extremity is surgically rotated to utilize the ankle and foot as a functional knee joint in a prosthesis. The purpose of this study is to determine the long-term functional and quality of life (QOL) outcomes for individuals who have undergone rotationplasty surgery for congenital PFFD compared to age and gender matched controls.
METHODSThis prospective study had 12 prosthetic participants (PFFD Group: 8 M, 4F, age range 16-57 years) average 31.6±13.5 years and 12 control participants (Control Group: 8M, 4F) with an average age 32.6±14.1 years. Participants completed the following outcome questionnaires: SF-36, Revised-Faces Pain Scale, Harris Hip Score, Oswestry back pain score; and underwent lower extremity range of motion (ROM), hand held dynamometry, gait analysis, computerized dynamic posturography and Timed 'Up& Go' (TUG) testing. The PFFD Group also completed the Prosthetic Evaluation Questionnaire© (PEQ). The Wilcoxon Signed rank test was used to statistically compare each PFFD Group participant to the matched Control Group participant with values statistically significant at p< 0.0123.
RESULTSParticipants had rotationplasty performed at an average age of 6.5±3.9 years with follow up testing done 25.1±11.2 years later. All adult subjects were working full time in a variety of manual and office/desk jobs. No significant issues were seen for body image. *Pain:* The PFFD and Control Groups both reported similar low back pain with 6.8±9.7% and 7.0±13.0% disability respectively on the Oswestry back pain questionnaire. On the day of testing, only one PFFD participant reported mild low back pain on the Revised-Faces Pain Scale. The average Harris Hip Score for the PFFD Group was 92.7±9.2 out of 100, indicating excellent outcome. Two participants reported pain on their non-prosthetic hip. *ROM:* The PFFD Group showed significantly decreased hip flexion and ankle dorsiflexion, and increased ankle plantarflexion strength on the prosthetic side compared to the Control Group. The PFFD Group had significantly greater ankle abduction strength on their non-prosthetic side compared to the Control Group. *Strength:* The PFFD Group demonstrated significantly weaker hip flexion, hip abduction and ankle plantarflexion on the prosthetic side compared to the Control Group. *TUG:* The PFFD Group scored an average of 8.5±1.6 seconds on the TUG, demonstrating a low fall risk. The Control Group scored significantly lower with an average of 6.5 ±1.0 seconds. *SF-36:* There were no significant differences between the groups in overall health and well-being. *PEQ©:* The PFFD Group scored lower in areas of satisfaction, appearance, and sounds of the prosthesis. However, participants reported that others perceived them well and they did not see themselves as a social burden. *Gait Analysis:* Temporal-spatial gait parameters for the PFFD Group demonstrated significant decrease in cadence, stride time, opposite foot off, single support and walking speed compared to Control Group. *Posturography:* The PFFD Group showed significant decrease in symmetry in stance, as well as a decrease in end point and maximum excursion in limits of stability testing compared to the Control Group.
DISCUSSION AND CONCLUSIONOverall, long-term follow up of teens and adults who underwent Van Nes rotationplasty showed that they maintained a high level of function, participation and QOL. They did present with significant differences in temporal spatial and posturography parameters compared to the Control Group.

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