

10882- Long-term Outcomes and Satisfaction of Rotationplasty Patients in the Treatment of Lower Extremity Sarcomas

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Background: There are many different options for restoration of function in the treatment of lower extremity sarcomas in younger children. Options for functional reconstruction include: expandable endoprosthetics, osteoarticular or intercalary allografts, allograft prosthetic composites, amputation with traditional prosthetics and rotationplasty with custom below-knee prosthetics. The use of each option has its advantages and disadvantages. Sacrifice of the distal femoral or proximal tibial growth plate in a child four or more years from skeletal maturity presents distinct challenges. The choice that allows children to maintain the highest level of function is clearly the goal. Currently, the trend is moving more toward the use of expandable megaprosthesis in the skeletally immature patient. However, leg-length discrepancy and durability of expandable endoprostheses may require reconsideration of reconstructive options in these younger children. Many of these children require multiple additional surgeries for: early mechanical failure, limb lengthening, infection, aseptic loosening, and other additional complications. We looked to explore long-term functional results and patient satisfaction of a rotationplasty cohort.

Questions/Purposes: The purpose of our study was to obtain and analyze long-term functional outcomes and the emotional and physical [well-being](#) of skeletally immature patients who underwent rotationplasty at our institution for the treatment of lower extremity sarcomas. We hypothesize that rotationplasty patients will have favorable long-term functional scores, and will be satisfied emotionally with their rotationplasties. We also hypothesize that rotationplasty is still an effective long-term option for patients and the health-care system.

Patients and Methods: This institution performed twenty-four rotationplasties from 1991-2004. A survey was sent to the surviving members of the cohort. A survey queried the participants for emotional and physical impact of rotationplasty. We collected name, medical record number, age, date of birth, sex, diagnosis, treatment (chemotherapy +/- radiation therapy +/- surgery), and surgical intervention. We also surveyed disease status (alive with disease, no evidence of disease and died with disease), length of follow-up, musculoskeletal tumor society scores (MSTS) and Toronto extremity salvage scores (TESS) to measure function and the 36-item short form health survey (SF-36) to measure quality of life after limb salvage. We compared these results to those of alternative reconstructions in the literature.

Results: Of the twenty-four rotationplasty patients, at least seven died of disease. One is participating in this project and his survey was disqualified. An additional patient is currently incarcerated with no evidence of disease but was unable to participate. Seven patients were lost to follow-up. Results were based on the remaining eight respondents. The average age at time of rotationplasty was 11.6 years old. The average age at time of follow-up questionnaires is 30.0 years old. The average follow-up time is 18.4 years from rotationplasty surgery. The average MSTS score of the eight respondents was 68.33%, with an average pain score of 3.6, function score of 3.0, emotional score of 3.4, support score of 3.9, walking score of 3.5 and gait score of 3.1. The average TESS score was 90.025%. The most common patient complaints in the TESS were problems with kneeling, difficulty walking on uneven surfaces and the importance of a well-fitting prosthesis. The SF-36 results are given in reference to norm-based scoring with norm-based scores below 45 being below the average range for the general population. The norm-based scoring (N) averages of the eight patients are as follows: physical functioning (PF)-N 45.1, role limitations due to physical health (RP)-N 51.8, bodily pain (BP)-N 50.1, general health perceptions (GH)-N 48.3, vitality (V)-N 49.9, social functioning (SF)-N 53.1, role limitations due to emotional problems (RE)-N 55.3, general mental health (MH)-N 53.3, summary of physical health (PC) 46.4, and summary of mental health (MC) 55.6.

Conclusions: In our study, the patients who are alive with no evidence of disease are functioning well at an average of greater than eighteen-year follow-up. If the prosthesis fits right and the patient is initiated in it at a young age, patients function relatively well in comparison to their peers. There are issues with kneeling and ability

to participate in sports, but as adults, rotationplasty patients are able to cope with their rotationplasty and are able to walk relatively normally with a well-fitting prosthesis. Based upon the SF-36 average scores, our rotationplasty cohort functions in line with the general population on all levels. Based upon the current functional status of our cohort, we believe that rotationplasty still should be a consideration in the armamentarium of limb salvage surgery.