

MYOELECTRIC CAMP: AN INTERDISCIPLINARY APPROACH TO FITTING MYOELECTRIC PROSTHESES

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INTRODUCTION

The Philadelphia Unit of Shriners Hospitals has developed an interdisciplinary plan for providing 5-10 year olds with a comprehensive introduction to myoelectric fittings. The program utilizes a summer camp format for service delivery.

The initial camp was conducted as part of a research study in 1984. The Philadelphia Unit investigated the viability and cost effectiveness of providing myoelectric prostheses to adolescents [1]. Since that time, the age for fitting myoelectrics through the camp program has been progressively expanded to include children as young as five years [2,3].

The primary goal of the camp is to provide the participants with a diversified, fun and fundamentally complete myoelectric experience. The Myoelectric Camp format allows therapeutic treatment of all eligible candidates in a manner which otherwise would not be possible through individual out-patient appointments in our setting.

DESCRIPTION OF PROGRAM

Entry into the myoelectric program begins with a multidisciplinary screening process involving the Prosthetics, Occupational Therapy and Social Services Departments. In late spring, upper extremity amputees between the ages of five and ten are invited to participate. Although almost all candidates present with unilateral below elbow congenital amputations, above elbow and bilateral amputees are also considered.

One facet of the screening interview is conducted by the prosthetist and involves collecting information concerning the child's prosthetic history and current prosthetic needs. The myoelectric prosthesis is explained and demonstrated. Its performance and limitations are discussed in an effort to clarify any misconceptions. The time commitment required for fitting appointments and long term caretaking responsibilities are emphasized.

A second segment involves a family interview which is performed by the social worker. Preliminary information concerning family dynamics is assessed and the camp program is fully explained. Issues related to staying overnight in the hospital begin to be addressed. Accommodations are available for parents to stay in the hospital with their child for the duration of the camp. The social worker makes recommendations to the parents and to the team as to whether this is optional, imperative or contraindicated in the individual child's case.

The occupational therapists evaluate the residual limb for basic myoelectric control potential. The candidates are given the opportunity to operate the myoelectric test hand. The therapists also evaluate the children's performance with their current conventional prostheses using the UNB Test of Prosthetic Function.

Once the screening data has been compiled, the team members discuss each candidate's appropriateness for the myoelectric program. Key determinates for candidacy for Myoelectric Camp are listed in Table I.

TABLE I: Key Determinants for Inclusion in Myoelectric Camp

1. Usage patterns and wearing history with current conventional prosthesis
2. Repair and maintenance history with current prosthesis
3. Reasons and motivation expressed by child for wanting a myoelectric prosthesis
4. Reasons and motivation expressed by parent(s) for wanting a myoelectric prosthesis
5. Appointment compliance to date
6. Cooperation displayed by child and family
7. Myosite potential
8. Score earned on UNB test

Recommendations for camp attendees are finalized. If questionable areas arise, additional appointments may be requested by the concerned team member(s) before a final decision is made. In the majority of cases, these candidates have been patients of Shriners Hospitals - Philadelphia Unit since infancy. Consequently, a reasonable level of familiarity has already been established prior to the screening.

Once chosen, each child is evaluated for electrode placement. Biofeedback may be utilized to facilitate this process. Castings and trial fittings are then performed in the typical manner. Before the camp begins, the children try on the completed prostheses so that any fitting or electrical problems can be resolved before camp commences. They are also given 3/4 lb. wrist weights to wear on their conventional prostheses in preparation for the myoelectric.

The Myoelectric Camp is held for two weeks in August. This timing provides a smooth transition from the summertime (when upper extremity prostheses are typically abandoned due to heat) to the school year. Thus, the desirable wearing schedule established during the camp is easily maintained by the structure of the school day.

Throughout each day of camp, the children receive two hours of group occupational therapy. The first week focuses on controls training; that is, opening and closing the terminal device in a smooth, measured way on demand. Week One also provides patient education regarding donning, doffing and glove care. Therapeutic activities include puzzles, peg boards, bean bag relays and parachute games. Purposefully incorporating the prosthesis into activities of daily living is the goal of Week Two. Dress-up, tooth brushing, cooking and other functional activities are utilized.

Wearing schedules are developed by the occupational therapists in a effort to gradually build tolerance for the new prosthesis. During the first few days, it is common to find the children using their sound hand to cradle or support the myoelectric and to guide it into position for grasping. Although all participants previously wore self-suspending sockets in their body-powered limbs,

complaints of tightness are almost universally reported at the outset. During free time and in the evenings, the nursing staff reinforces and reports on wearing patterns. Nurses, therapists and prosthetists all monitor skin integrity.

The recreational therapists also provide two hours of structured programming daily. Their goal is to give the children opportunities to functionally incorporate the new prosthesis into age-appropriate recreational and educational activities. Sports, arts and crafts, baking and computers are the mediums used. Special outings are coordinated by the recreational and occupational therapists for bowling, miniature golf, horseback riding and discovery-type playgrounds. The Aquatics Specialist provides swimming lessons as a diversional activity twice weekly. In the evenings, the campers participate in activities scheduled for all in-patients in their age group.

The social workers, in coordination with the Child Life Specialist, structure play therapy groups during the camp. They utilize creative and non-threatening forums to encourage the campers to verbalize their feelings and perceptions of themselves with the new prosthesis. Pretend radio shows or videotaped interview "programs" are met with enthusiastic participation. The social workers also provide individual counseling for children and/or their parents as warranted.

The prosthetists are involved throughout the camp by troubleshooting and adjusting the new prostheses as needed. They provide child-oriented education concerning glove and socket cleaning, battery maintenance and overall prosthetic care. Trinkets, such as friendship bracelets, nail polish or plastic watches, are supplied as attractive novelties for the new arms.

At the conclusion of the first week, a parental educational program is provided. In addition to reviewing prosthetic care, maintenance and follow-up, experienced myoelectric wearers serve as guest speakers to field questions concerning personal life experiences. The speakers range in age from 14-23 and are effective in addressing parental concerns regarding dating, music and sport activities, school experiences and family relationships. This event is sponsored by the multidisciplinary team and has proven to be a highly successful forum for providing parents with "real life" information which can mitigate fears and spark new interests.

The camp concludes after two weeks. If all goals have been met, the children will be followed through regular appointments in the Prosthetic Clinic. In isolated cases, additional therapy or family counseling may be required. Arrangements to provide these services are made on an individual basis.

CONCLUSION

To date, 71 prostheses have been provided through the Myoelectric Camp. Although the model is designed for an in-patient setting, the ideas presented have the potential to be modified for out-patient programs.

In 1993, a Child Life Specialist was added to the screening team. The Specialist informally assessed the candidates' developmental levels and ability to work in a group. This information alerted the team to specific concerns regarding therapist-to-patient ratio during training sessions and outings.

Outcome studies are currently being constructed to compare functional and psychosocial goals attained through Myoelectric Camp with traditional rehabilitation service-delivery models.

The Myoelectric Camp may prove to be an effective format in which elementary school-aged children can build a solid foundation for using myoelectric prostheses.

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