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PLIGHT OF AN AMPUTEE: WHAT STOPS ME FROM WORKING?

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ABSTRACT

Introduction

Road Traffic Injuries stands as an important cause for amputation in Trauma. Pedestrians, motorized two wheeled vehicle users, cyclist are most vulnerable. Studies show that 93.4% of all lower extremity amputations are due to vascular injury with incidence increasing 27% from 1988 to 1996. Trauma, responsible for only 5.8% of lower limb amputations is the most common cause in the second and third decade of life.

Objective of the study

To document and examine the use, satisfaction and problems with prosthetic devices among persons who suffered trauma related amputation.

Design

Retrospective cohort design

Medical records and follow up interview data were collected from persons with extremity amputation who received their acute care at Jai Prakash Narayan Apex Trauma Centre, AIIMS, New Delhi between 2016-2017. Patients with neurological (head injuries, spinal injuries) issues were excluded from the study.

Results

197 patients were identified. Out of this total 21 have died (20 during in hospital stay and 1 after prosthetic fitting). 75 Patients (38%) were given phone call of which 29 (39%) were having prosthesis and only 21 patients (72%) were using prosthesis. Satisfaction level was excellent (highly satisfied) in 57.1% of patients. 10% of patients reported average satisfaction and 33% patients were not satisfied due to reasons as heavy weight (19.0%) heavy weight with same side fracture 15 days back (4.8%), patient expired (4.8%), above elbow prosthesis pending (4.8%), stump not healed completely because of infection (9.6%).

Conclusion

Although the number of patients who undergo trauma - related amputation is very high and the prosthetic education is started early to the patients, the number of patients who do not get prosthesis is very high due to constrains like low socio - economic status, prosthesis poor quality, unhealthy stump etc. Among the patients who use prosthesis the satisfaction level is fair. An increase awareness and dedicated clinic for such patients is the need of the hour.

Key words : Traumatic Amputation, Prosthesis, Limb loss, Satisfaction

Introduction

Extremity amputation is one of the earliest surgical procedures that date back to the time of Hippocrates. ¹ If the limb is not salvageable (dying or dead) which may pose a danger to patients' life. ^{1,2} The amputation of the lower limb can be major or minor. The major lower limb amputation is performed at or above the ankle level. For an individual, lower limb amputation can result in considerable morbidity. The debilitating effects of amputation can be catastrophic for a young patient with trauma and can also reduce functional ability and quality of life during the most active years of patient's life. ³

The existing evidence on prosthetic use focuses mainly on the perspective of elderly patients with vascular insufficiency who underwent amputation. ^{1,2} Although the clinical conditions following these amputations vary significantly from those caused by post trauma amputations, the results of these studies are of little use in describing the prosthetic experience and future functioning of amputees associated with trauma. Traumatic amputation is more prevalent in young adults, so varied prosthetic success and functional standards are often seen.

The acute post-operative stage emphasizes on wound healing, pain management, patient's mobility, mental coping, strengthening and learning program. Physical therapy emphasizes on the prevention of contractures, the enhancement in movement ability and activities of daily living by an increase in muscle strength and offering functional training. Since there are occasions when prosthesis wearing may not be feasible, the amputee should be maximally mobile without prosthesis.

Over the past few years, prosthetic prescription choices for amputees have changed significantly. Choosing the most suitable components for the lower limb amputee prosthetic reconstruction is an incredibly difficult job. ⁴ The mean and modal interval from surgery to first prosthetic fitting was very long in the study done by Dillingham, despite the known favorable benefits of early prosthetic fitting in 2002. ³

It has been noted that the prevalence of psychological disorders among amputees vary from 32% to 84%. ⁵ To combat psychological issues after amputation; provision of comfortable prosthesis to patients which helps in carrying out daily activities is of crucial importance. For certain patients, apart from safety and efficiency, the look of the prosthesis gives higher degree of satisfaction and acceptance

Methods

Data source

This is retrospective study where hospital data maintained by medical record section / computerized patient registry system at Jai Prakash Narayan Apex Trauma Centre, AIIMS, New Delhi was used to identify patients who had undergone lower limb trauma-related amputations.

A medical record about initial acute hospitalization was obtained to track the patients and their injury status. Detailed information was obtained regarding medical, surgical procedures performed and their discharges.

All the patients (discharged alive) were approached and interviewed by telephone based on detailed information of the patient's health status records, physical functional status, condition of residual and contra lateral limbs, usage and satisfaction with prosthetic devices, financial background and healthcare services used.

Study population

The study population consisted of all lower limb amputee patients discharged from Jai Prakash Narayan Apex Trauma Centre, AIIMS with a primary or secondary diagnosis of amputation of the lower limb post trauma.

Data related to patients age, gender, site of amputation, availability of prosthesis, application of prosthesis from the date of surgery, type of prosthesis, level of dependency, whether back to work, level of satisfaction and reasons for dissatisfaction were assessed telephonically.

Data analysis was conducted by SPSS, a p-value of less than 0.05 was considered the critical level to determine statistical significance.

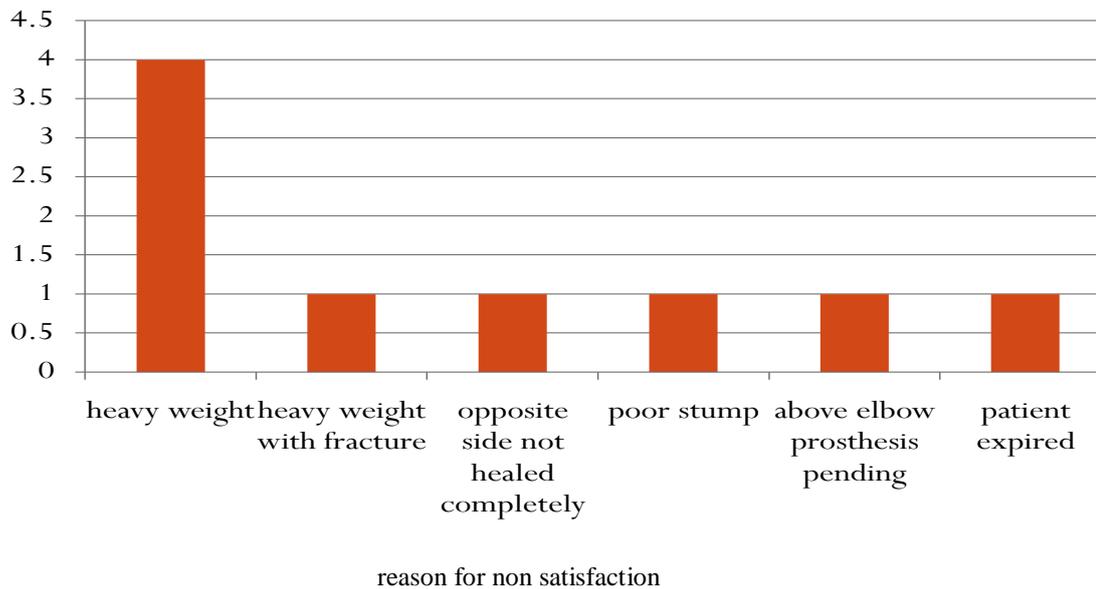
Result

There were 197 patients identified who had undergone trauma-related amputation at Jai Prakash Narayan Apex Trauma Centre over one year (January 2017 to December 2017). Out of those; 21 patients (11%) died; 20 patients during the hospital stay and 1 patient died after prosthetic fitting. All the patients were given call and out of which only 75 patients (38%) responded to the call. Rest all others either refused to be interviewed or the contact numbers were not reachable; so the response rate was only 38%. Out of 75 patients, only 29 patients (39%) were having prosthesis but only 21 patients (72%) were using a prosthesis.

Satisfaction level was excellent (highly satisfied) in 12 patients (57.1%), 2 patients (9.6%) reported average satisfaction and 7 patients (33.3%) were not satisfied with the prosthesis. The reasons for dissatisfaction with prosthesis were identified as under:

- in 4 patients (19.1%)
- prosthesis weighing heavy 1 patient (4.8%) reported heavyweight of the prosthesis along with fracture on the same side 15 days back.
- 1 patient (4.8%) reported still awaited above elbow prosthesis.
- 2 patients (9.6%) reported incomplete healing of stump out of infection.
- 1 patient (4.8%) expired after prosthetic fitting.





Out of 29 patients who had prosthesis, only 2 patients were females, rest 27 patients were males. Out of all the patients 2 patient (9.6%) had upper limb amputation, majority of the patients were lower limb amputees comprising of 17 patients (80.9%).

2 patients (9.6%) had both upper and lower limb amputation.

The time to prosthesis ranged from 2 months (3 patient, 14.3%), 3 months (4 patient, 19%), 4 months (2 patients, 9.5%), 6 months (8 patients, 38%), 7 months (2 patients, 9.5%), 8 months (2 patients, 9.6%).

Economic status

8 patient (38.0%) were having income 650 USD or less per annum, 10 patients (47.6%) were having income less than 1300 USD annual, 2 patients (9.5%) were having income 2000 USD per annum, 1 patient (4.7%) was having an income of 3300 USD per annum.

Level of Dependency

13 patient (61.9%) reported that they are not dependent for activities of daily living, 8 patients (38.1%) reported that they are dependent for their activities of daily living.

Back to work

10 patients (47.6%) could not resume their previous work while as 11 patients (52.4%) were able to resume their previous work.

Discussion

Prosthetic fitting, application, function and comfort are crucial rehabilitation priorities following lower limb amputation.⁶ Despite the availability of literature on the epidemiology of lower limb amputations, there is dearth of information on matters affecting day today life of people using lower limb prosthesis. Our study examined these outcomes in a cohort of individuals who underwent lower limb amputation following trauma.

A prosthetic assessment questionnaire was developed by Legro et al to determine the quality of life experienced with prosthesis among people with lower-limb amputations.⁷ Nearly two-thirds of respondents to his prosthesis assessment questionnaire identified trauma as the reason for their amputation. Minimal attention has been given to the prosthetic experience of trauma-related amputees in the literature, except for studies by Burger et al⁴ that identified the prosthetic use and recreational results of 223 traumatic amputees in the Republic of Slovenia. They observed that roughly three-quarters of the patients used prosthesis more than seven hours a day. The study did not measure amputee satisfaction.

There are many reasons why a deeper understanding of factors associated with prosthetic use is important.¹⁰ Successful vocational adaptation is also associated with the use of prosthetics. In particular, regular prosthetic use and satisfaction with the functionality of the device have been shown to significantly enhance the prognosis for returning to work among individuals with limb loss.⁸ Well fit, supportive, lightweight and easy to use prosthetic devices that enable a patient to do daily activities and retain independence are, therefore, of utmost importance.⁹

Our findings suggest that few predictive variables like the heavy weight of the prosthesis, financial constraints, poor stump healing, associated injuries and co morbidities are major causes leading to poor outcome in these patients, lack of knowledge and awareness on available Government schemes significantly lowers the prosthetic use and its satisfactory acceptance and adaptability in the society.

Our results indicate that the time to the prosthesis is from 2 months to 8 months with an average of 5 months. Despite knowing the beneficial benefits of early prosthetic fitting the average time for prosthetic fitting was far above the favorable range. Whereas the timely fitting of prosthesis was not possible in some of the patients due to non-healing wounds, infections or other co-morbidities and limb injuries that hinder ambulation, but it should have been applied more often than observed at least for some patients.⁹

The results of the study suggest that majority of the patients were not having prosthesis which is in contrast with the study done by Dillingham et al² wherein 95 % of patients had prosthesis and wore it on an average of 80 hours/week. The contradicting results may be attributed to lack of health care policies, availability of prosthesis, financial support system, lack of education. Despite the availability of enough government funds patients usually don't get the benefit of it due to lack of awareness of government schemes.

Our results indicated 57.1% of patients who were using prosthesis were highly satisfied which is almost same as the results of the study by Dillingham in 2001. India being a developing nation also faces financial constraint concerning health facility delivered to the population especially belonging to lower socio-economic background. Similar findings were seen in a study conducted by Nabila Soomro in 2013.¹¹ Our results show that majority of the interviewed patients had income less than one lakh annually; which is again an important factor in delayed procurement and good quality prosthesis.

Positive results were observed when the level of dependency was considered. More than 50 % of the patients were not dependent on others for activities of daily living. Similar results have been observed in a study done by Mahima et al in which the researcher has used TUG score to measure the level of dependency.¹² Almost half of the patients were able to resume their previous work.

Limitations of the study

Several limitations are worth noting with the current study. The majority of the outcome measures used in the research were well-validated self-report measures. Due to the self-reporting nature of the interventions, the subjects wishing to demonstrate positive progress may have skewed these results.

Overall sample size and the method by which participant was recruited in the study restricted our ability to analyze all the issues faced by amputees. Loss of contact with the patient due to factors like incorrect phone numbers, patient shifted to some other place, loss to follow up in out patient department due to financial issues which may have led to loss of potential participants are important limitations of this study.

Conclusion

This study adds to the increasing literature on the satisfaction of amputees with prosthetics. The convenient, functional and easy to use prosthesis contributes significantly to the ability of amputees to quickly return to activities of daily living, including the ability to walk and independently perform social and physical tasks.

Our results corroborate findings from previous studies that indicate a strong negative correlation between timing and fitting of the first prosthesis and the use and satisfaction of the prosthesis.

With advances in early prosthetic fitting in amputee management and recovery, education and understanding remain an obstacle in the early integration of patients into society. Increase awareness and dedicated amputation clinic for such patients is the need of the hour.

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