A Research Protocol on Limb Salvage Surgery versus Unilateral Transfemoral Amputation in Lower Extremity Osteosarcoma: A Retrospective Analysis and Current Status

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ABSTRACT:

Problem Statement: *Every year 23,500 amputees are added to the amputee populace in India, of which 20,200 are male and 3,300 are females. The most widely recognized justification for removal are vascular entanglements (diabetes), disease, and injury. Consequently, there is a genuine need to enhance current treatment techniques and foster novel methodologies for treating osteosarcoma.* ***Purpose:*** *The study aims to critically assess the number and choice of surgeries performed in India for osteosarcoma in order to identify factors, which contribute to performance and efficiency, and life expectancy. The objective of the study is to obtain appropriate data specific to surgical management. Medical care arrangement of creating areas where the prosthetic recovery is accessible at a died down cost. Further, the ability group for speedy treatment isn't generally accessible, which either draws out the effective reproduction or neglects to accomplish the objective. Removal versus rescue should be individualized depending on the given conditions of the accessible norm of care and reasonableness.* ***Results:*** *Data will be collected and analyzed using SPSS (version: 20) and the Bland Altman Test. Also, with reference to the previous research done worldwide, this study favors amputation as compared to limb salvage surgery.* ***Conclusion:*** *To conclude, this research seeks to examine on limb salvage surgery (LSS) versus unilateral transfemoral amputation in lower extremity osteosarcoma following a retrospective analysis and current status.*

Keywords: *Limb Salvage Surgery, Unilateral Transfemoral Amputation, Osteosarcoma, Retrospective Analysis, Current Status.*

INTRODUCTION

The lower limb amputation is one of the most seasoned known precisely performed strategies, tracing all the way back to ancient occasions.[1] Neolithic people are known to have endure horrendous, ceremonial, and correctional instead of helpful removals. Cavern divider hand engraves have been discovered that exhibit the deficiency of digits. As indicated by Metz, the worldwide commonness of handicap is 4% in agricultural nations and 7% in industrialized nations.[2] The commonness of inability in India as per an enumeration report in 2001 is 1.8–2.2%.[3] According to the National Sample Survey Organization, the province of West Bengal positions second as far as commonness rate and third in frequency paces of incapacity among the significant Indian states.[4]

Reports on the reasons for amputation contrast from one country to another. Sansam et al detailed in 2009 that injury represented most of removals in India, and impaired vascular supply was the prevalent reason in most created nations.[5] Sujatha. likewise expressed in her examination at the Government Institute of Rehabilitation Medicine, K.K. Nagar in Chennai, that most of patients lose their appendages because of street mishaps.[6] Another report on amputee measurement reported every year 23,500 amputees are added to the amputee populace in India, of which 20,200 are male and 3,300 are females. The most widely recognized justification removal are vascular entanglements (essentially diabetes), disease, and injury.

Osteosarcoma is a forceful bone neoplasm emerging from crude transformed cells of mesenchymal beginning. It was such a deadly infection that "months to metastasis" as opposed to real endurance time, was utilized to quantify the results of treatment in investigations of beginning phase.[7] It is a somewhat remarkable disease in spite of the fact that it is the most well-known essential harm to emerge from bone. While occurrence is low, osteosarcoma predominately influences teenagers and youthful grown-ups, and if untreated it is deadly. Notwithstanding present day treatment conventions that consolidate chemotherapy, medical procedure, and some of the time radiotherapy, the 5-year endurance rate for patients determined to have osteosarcoma stays at 60%–70%.[8] Current medicines for osteosarcoma are related with critical horribleness, and a time of recovery might be required after a medical procedure for osteosarcoma. Consequently, there is a genuine need to enhance current treatment techniques and to foster novel methodologies for treating osteosarcoma.[9]

The National Comprehensive Cancer Network suggests a timetable of follow-up tests and tests for osteosarcoma patients. It incorporates arrangements at regular intervals for the initial two years, like clockwork for the third year, like clockwork for the fourth and fifth year, and yearly from there on. In case repeat is recognized at follow-up, further chemotherapy and additionally medical procedure is normally suggested.[10]

For tumours the degree of removal is controlled by the kind and area of the tumours. The standards of tumour annihilation should be thought of, while simultaneously, as long a stump as conceivable is protected. Conservation and reclamation of capacity are significant variables. The general recovery of the patient with a trans-femoral removal starts at the hour of medical procedure and proceeds until the patient has accomplished most extreme useful freedom for that person. The proper medical procedure takes into consideration simpler

prosthetic fitting just as upgrading active recuperation to permit the patient to accomplish the objectives set by the treating group.[11]

With the approach of powerful neoadjuvant chemotherapy in the 1970s, limb rescue surgery(LSS) has been taken a likely treatment for osteosarcoma.[12] After World War I, Winett Orr and later Trueta, fostered the method of 'shut mortar treatment' of open cracks, in view of two significant standards, which actually stays the premise of current present day practice: Debridement and Stabilization. The significant forward leap in appendage rescue happened with the presentation of microsurgery from the 1960 onwards. In addition to the fact that it allowed replantation of excised limits, yet additionally permitted the exchange of vascularised tissue to fix huge delicate tissue absconds.[13]

The appendage rescue has progressed since the hour of the Civil War, when practically all seriously damaged appendages were removed. Endovascular methodology in blend with careful detour decreases the degree of medical procedure and the length of unions required especially in precisely high danger people. With such methodology the appendage rescue pace of 87% at 2 years has been accounted for. The point of appendage rescue is hence to give solidness, weight bearing ability and ambulation. A multidisciplinary group approach with input from Oncologists, Pathologists and resective and reconstructive specialists is fundamental to accomplish such an objective.[14]

As a rule, LSS enjoys practical and physiological upper hands over customary amputative strategies when joined with neoadjuvant or adjuvant chemotherapy.[15] It is now commonly acknowledged that LSS is characteristic for limited osteo sarcoma, while careful removal is taken on for high threat osteosarcoma. Notwithstanding, there are still a few specialists holding the view that prompt and forceful expulsion of the tumour will forestall the movement of break incited infection, and subsequently removal is viewed as a superior alternative for osteosarcoma patients with pathologic crack.[16] The appendage rescue versus removal is by and large accepted that in contrast with the confounded appendage rescue strategies, early removal and prosthetic restoration offers a quicker recuperation at a lower cost. Nonetheless, ongoing investigations dependent on infection sway profile and the lower furthest point appraisal project (study) have shown that there is no critical contrast in the result at 2 years and removal was more costly and might be pretty much as high as multiple times the appendage rescue.[17]

These investigation recommends that appendage rescue ought to be all the more forcefully sought after, particularly where removal isn't obviously shown. These investigations anyway don't address medical care arrangement of creating areas where the prosthetic recovery is accessible at a died down cost. Further, the group of ability for speedy treatment isn't generally accessible, which either draws out the effective reproduction or neglects to accomplish the objective. Removal versus rescue should be individualized dependent on the given conditions of accessible norm of care and reasonableness.[18]

Hence, the study aims to critically access the number and choice of surgeries performed in India for osteosarcoma in order to identify factors, which contribute to performance and efficiency and life expectancy. The objective of the study is to obtain an appropriate data specific to surgical management Also, with reference to the previous research done worldwide, this study favors amputation as compared to limb salvage surgery.

METHODOLOGY:

Very substantial amount of work has been done in India on preference of surgical management in cases of osteosarcoma, let alone the field of orthopedics, even the area of oncology currently provides too scanty demography. This research work shall encompass a multi-centric approach for data-collection and provide a systematic order of increase or decline in the preference and outcomes of management of patients with osteosarcoma. The following research work is proposed to be carried out in patient population admitted in Hospitals registered under Rajiv Gandhi University of Health Sciences (RGUHS), Karnataka. The study will be estimating the incidence and mortality related to both upper limb and lower limb osteosarcomas, the estimation of osteosarcoma incidence and mortality in relation to lower limb cancer for time periods of past 5 years i.e. 2010-2015 and 2016-2018 and comparison of choice of surgery for osteosarcoma between transfemoral amputation and limb salvage, its associated risk factors and out comes in comparison with other studies done in India and globally. The research protocol is approved by the Institutional Ethical Committee.

STATISTICAL ANALYSIS:

The software used in the study will be SPSS 24.0 version, the praphade prism 7.0 version, and the degree of significance < 0.005 (p > 0.005m) is considered. Analysis of data will be carried out using concise and inferensive statistics using unpaired t-test students in chi-square.

DISCUSSION:

In comparing the measurement of the critically access number and choice of surgeries performed in India for osteosarcoma in order to identify factors, which contribute to performance and efficiency and life expectancy. The study will be determining to obtain an appropriate data specific to surgical management. Also, with reference to the previous research done worldwide, this study favours amputation as compared to limb salvage surgery.

Conflict of Interest:

All authors declared no conflict of interest.

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