

Clinical Profile of Patients with Hip-Hemi Arthroplasty Managed Between 2015 & 2020 in Pakistan

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Abstract

This study was carried out as review on the hemi-arthroplasty patients admitted & treated in the Pakistan Institute of Medical sciences (PIMS), Pakistan. Patient's information such as; name, age, gender, causes of the fracture, types of referral, assessment outcome/tools, treatment provided, duration of hospitalization & the discharge pattern were obtained from the physiotherapy's department patients register, case- file & nursing register. The collected data was summarized & tabulated under the descriptive statistic heading as range, mean, standard deviation & percentages. A total of 45 cases (25female; 20 male) aged 75.88 ± 12.58 years was reviewed. The majority of the patients (98.2%) had post-femoral neck fracture hip-arthroplasty while in one case femoral neck damage has been recorded secondary to the sickle cell disease. Fall is a cause of fracture was documented for 24 cases (53.33%), 30 patients (66 %) were referred by the orthopedic department for the ambulation post-surgery while 29% of patients were referred complete orthopedic rehabilitation. Pain & muscle strength were the 2 variable in the physiotherapy department for the assessment of the patients. 60 % of the patients were discharged with walking aids in order to attain optimal ambulation while 3% were deceased. 14 patients continued physiotherapy as an out-patients basis while 12 patients completed the complete physiotherapy rehab program. It was observed that women were then men in the prescribed period admitted for treatment for hip-arthroplasty. The majority of the patients was aged above 65 years (or above)& was not referred by the surgeon for the physiotherapy rehabilitation to the department. Poor documentation & the lack of systematic assessment were observed during the data collection period for the study.

Keywords: Hemi-arthroplasty, ambulation, orthopedic rehabilitation

Introduction

Hip fractures as per estimation worldwide was 1.26 million in 1990 and the number is expected to double in 2025. The study, thus reported that the management & care cost of the hip fracture is a huge economic burden (Della Rocca, 2103). Hip fractures can be subdivided into 1) intra-capsular fracture b) extra-capsular fractures. Half of all hip fractures (50%) are intra-capsular while most of the hip fracture were displaced fractures (Type AO/OTA B3). Arthroplasty is considered the gold standard treatment for the displaced inter capsular fractures. This includes a) Hemi-arthroplasty (HA), where the proximal Femur is replaced b) Total hip- arthroplasty (THA), where both the femur and

acetabulum are replaced. (Müller et al,1990, The National Hip Fracture Database National Report 2010). Hemi-arthoplasty is a surgical procedure in which the head & neck of the femur are replaced with prosthesis & the acetabulum of the concerned hip is modified (Bhattacharyya and Koval, 2009, Biber et al, 2012). Elderly patients, frail & weak patients are prone to hip- fracture & at high risk of complication & death (Rahme et al, 2010). The cost of the arthoplasty, the lack of the health care facilities & low literacy rate in the developing countries are some of the factors, that the choice of arthoplasty become limited (Alonge and Shokumbi, 2004). For the displaced intra-capsular fractures of the femoral neck hemi or total arthoplasty are the treatment of choice but both have its own pro & cons, thus the optimal treatment is still subject to further investigation (Biber et al, 2012, Burgers et al, 2012). Intra-capsular hip fracture (femoral neck fracture) is fracture of the femur's neck within the joint's capsule, the capsular fracture occurs proximal to the point at which joint –capsule attaches to the hip joint. Femoral neck fractures are broadly classified into a) displaced hip fracture b) undisplaced hip fractures (Griffin, 2005, Parker, 2000). The incidence of the femoral fracture is more in the elderly population with the cause of fall from the height across the globe, other associated factors include; poor bone density, co-morbid conditions & general body weakness etc(Beaupre et al, 2005), however, it has been observed that hemi-arthoplasty patients younger than 50 years are often the result of high grade trauma such as; 1) vehicle accident 2) fall from the height 3) sport injuries. Ly and Swiontkowski, 2008, had observed that these normal bone density patients requires sufficient axial load in the abducted hip position & these patients are associated with higher incidence of femoral head Osteo-necrosis & non-union or mal-union. The rate of the Osteo-necrosis reported in the literature is 12-86% in young population post-hip fracture, which may subsequently leads into osteoarthritis of the joint (Dedrick et al, 1986; Upadhyay et al, 2004, Gautam et al, 1998).In Africa as compared to the Asia & Europe there are very few published studies on the femoral neck fracture but a study reported that hip-neck fracture is common in the geriatric African population, while some others reports low incidence of the hip fracture. Fall is the prevalent cause of the fracture & the fractures -incidence –rate is more in female elderly patients as compared to men of the same age. (Ekezie et al, 2011; Dhanwal et al,2011).Physiotherapy for the post-hip fracture is a standard regime for most geriatric patients but there is lack of consensus about the duration of the treatment & frequency of the therapy or Dosage for the optimal functional outcome. Post-hip fracture physiotherapy aims to maximize the patient's functionality & independence as well as relatively minimize complications as per status of the patient such as; a) pulmonary embolism b) wound infection c) deep vein thrombosis d) hip dislocation. Physiotherapy may be administered at different points-of time in the rehab of the patients following surgery such as immediately after the surgery (1-7 days), in the early recovery period (1-3 months) & after discharge (< 3months) (Bitar et al, 2005, Harper and Lyles, 1988). There is variation among physiotherapy protocol among therapists across the globe for the post-hip fractured orthopedic patients & thus, the evidence is needed to obtain the best outcome in these patients regarding the pre- & post-acute rehab program(Jaglal et al, 2005). Literature search showed that there is paucity in the patient's profile –related data for the hemi-arthoplasty. This study was designed to investigate & record the patient's data which can be used for further inferential studies in the future.

Materials & Methods

A 6-years review in the PIMS hospitals was conducted of the cases hip hemi-arthoplasty. Legal permission from the hospital's admin & concerned physiotherapy department were obtained prior to

the retrieving of the data. Patient's information such as; name, age, gender, causes of the fracture, types of referral, assessment outcome/tools, treatment provided, duration of hospitalization & the discharge pattern were obtained from the physiotherapy's department patients register, case- file & nursing register. The data self-designed form was summarized & tabulated under the descriptive statistic heading as range, mean, standard deviation & percentages. A total of 45 cases (25 female; 15 male) aged 75.88 ± 12.58 years were reviewed. The research assistants were the department's physiotherapists who assisted in retrieving the case files from the record section of the department/hospital & extracted required data as per the criteria from the case files.

The data collected via self-designed form was summarized & tabulated under the descriptive statistic heading such as range, mean, standard deviation & percentages. Descriptive statistic of frequency, mean & standard deviation were used to summarize sex, cause of fracture, and types of referral, discharge pattern, outcome assessed & treatment received.

Results

The emphasis of the orthopedic –department was to prevent hip-dislocation & pain reduction while the physiotherapy department administered tailored-based strength training for the referred patients. Fifty seven cases of patients referred to physiotherapy department for the post-hip- hemi-arthoplasty were retrieved, 56 among which were patients who had hip arthoplasty secondary to the femoral neck fracture while one case was due to femoral head damage secondary to sickle cell disease. 20 (44.4%) male & 25 female (55.5%) with a means age of 77.77 ± 11.59 years were recorded. The age-range was 32-92 years in which majority of the patients (90%) were aged above 65 years. The cause of fracture was documented in only 15 cases (33.3%) out of 45 patients. The cause for the injury were falls (24 -53.3%) & road traffic accident (4-8.8%). The majority of the hip-arthoplasty patients (30-6%) were referred for ambulation only while 16-35.5% patients were referred by the surgical department of the concerned hospital for the complete physiotherapy program). Among these 16 patients referred for the complete physiotherapy-rehab continued physiotherapy on the out-patients basis. Pain was assessed via the numerical rating scale in the initial assessment (mean pain intensity; 5.04 ± 2.32) for all 16-35.5% patients referred for the physiotherapy department. Muscle strength for these patients was assessed through manual muscle testing using the Oxford muscle scale during the initial assessment. Other variables commonly used in the patient assessment were not used & documented such as; A) ADLs (activities of daily living) b) functional ability c) quality of life etc. A majority of the patients (86%) were discharged home with the prescription of zimmer's frame as a walking aid. 5 patients (11.1%) were discharged home with the prescription of the wheelchair for ambulation while the remaining 3 (6.6%) died as in-patients. Among the out-patients 2 (13%) were discharged after they started ambulating independently while the 11 (69%) were discharged using either tetra pod or cane as per the patient's need. The remaining 3(18%) discontinued Physiotherapy without discharge.

Table 1: Hemi-arthoplasty Patients profile –Data

Variable		Frequency	%
Gender	Male	20	44.4
	Female	25	55.5
Age-Ranges	<65	4	8.8
	65-80	28	62.2
	>80	13	28.8

Causes of Fracture	RTA*	4	8.8
	Fall	24	53.3
	Avascular Necrosis – HOF*	1	2.2
	Undocumented	30	66.6

*RTA- Road Traffic Accident, * HOF- Head of Femur

Discussion

The primary aim of this study was to conduct a 5- year’s review (2015-2020) of hip-arthoplasty cases managed in the physiotherapy department of PIMS, Islamabad. This study found that individuals who had undergone hip-hemi-arthoplasty were aged 65 years or above which is consistent with the study, in which they have found that hip-hemi arthoplasty is commonly done for geriatric patients who sustains femoral neck fracture (Biber et al, 2012) Beaupre et al, 2005; Fletcher et al, 2003). Similarly, this study finding that majority of the hip-hemi-arthoplasty patients were female was also consistent with another study carried out by the Tsai(Tsai et al 2009), in which they have reported that femoral neck fracture was substantially greater in female as compared to male. This study also showed that most of the study’s subjects were not referred by the department concerned for the physiotherapy rehabilitation program. Physiotherapy has long been the essential component of the holistic program for the hospitalized (not for the home –based) hip-hemi arthoplasty patients across the countries. It has been reported that exercise in the post-surgery in these patients (acute phase) are effective in restoring muscle mass, co-ordination, functionality of the limb involved. The higher impact at the hospitalized rehabilitations of these patients as compared to the home-based program is probably due to supervised higher intensity training that is conducive & facilitated by the supervision of the trained therapists & access to the specialized equipments & facilities (Lowe et al 2009, Lemmey and Okoro, 2013). This study finding on discharge & referral pattern was inconsistent with the finding of another study (Jae et al, 2016) in which most of the patients were referred for complete in-patients physiotherapy & not merely for ambulation purpose, however, both studies reported that after discharge from the acute-care hospital hip-hemi-arthoplasty patients may receive in-patient or out-patients physiotherapy as intervention for the optimal recovery. This study found that majority of the patents were discharged home immediately after hip-hemi-arthoplasty without going both in-patient or out-patients physiotherapy regime which is contrary to another study, in which the author reported that majority of the patients were discharged after 1 month in- patient physiotherapy post-hip surgery (Jae et al, 2016). It is as per protocol necessary for the hip-hemi-arthoplasty patients to be referred to the physiotherapy department for extensive physiotherapy rehab program rather than only for ambulation. Standard rehab protocol for the hip-hemi-arthoplasty patients includes; restoring mobility, optimal strength, co-ordination, flexibility & reduction in the pain intensity (Stockton and Mergersen, 2009). Regarding the ambulatory capacity of the hip-hemi-arthoplasty patients, this study found variation among the patients’ capacity, keeping the same rehab dosage, some hip-hemi-arthoplasty patients ambulated the given time while some needed at walking/ambulatory aids. This finding is consistent with the finding of (Jae et al, 2016) in which the study reports that patients ambulatory potential after hip-hemi-arthoplasty can be divided into a) Non-ambulatory state b) Ambulation with assistive devices c) Ambulation without assistive devices. This study emphasized on the precautionary measures to be taken for these patients before discharge which includes; the ability of the patients to physically demonstrate & can state verbally 1) Total hip precautions 2) Transfer independently 3) Ambulate independently on all surfaces 4) can perform home-exercise

program independently (Jae et al, 2016; Freburger,2000).The finding that only muscle strength & pain were the two only variable assessed in the physiotherapy departments for these referred patients is consistent with the finding of another study, in which the author report that pain is the major symptom for referral for physiotherapy & similarly muscle strength plays a pivotal role in the rehab of these patients (Steele et al, 2012). Eight weeks exercise program with the emphasis on the strength & stability & coordination resulted in the significantly improvement in the patient-specific daily activities in patients (post-hemi-arthoplasty Patients) between 4-12 months. Range & muscle atrophy for these patients were not assessed which is contrary to the finding of another study (Monaghan et al (2012) which reports surgery-induced early muscle strength deficits need to be assessed in order to design patient-specific & tailored-based rehabilitation program for the patient(Holm et al,2013). In addition, this study found & report that there was no documentation of the patient centered outcome such as; ADLs, quality of life (Qol), functional abilities & walking & physical/occupational functions , which suggests that health care –centered outcomes now need to shifted to the patient-centered outcomes measures. The finding of this study revealed that verbal scale were used entirely for the assessment of these patients which can be explained by the fact that it is widely utilized tool across the world in the geriatric population as it has been reported that geriatric patients understands it easily who often reports cognitive deficits as compared to the visual analogue scale (Krebs et al, 2007). The finding that the majority of cases documented has fall as cause in the background is consistent with the studies (Beaupre et al (2005; Ly and Swiotkowski (2008) in which they report that hip fractures (a Varsity of hip fractures) are seen in the geriatric population due to the underlying risk factors such as; decreased bone density, co-morbid medical conditions & lack of muscular strength are the predominant contributing factors. The finding that the cause of fracture in the documented patients was recorded in only 36% if patients which suggests for the complete assessment of the patients. It is important to maintain healthcare record by the health care worker for 2 reasons; 1) it helps in the proper & systematic evaluation of the patients which results in the tailored-made patients treatment, precautions, patient-education & discharge 2) it helps & direct government health related planning in the future& furthermore the alleged medical negligence (legal point of view) by the patients or relative can be redressed (Thomas ,2009).

This study found that Physiotherapists formally discharged their enrolled patients as satisfactory independent ambulation was attained during the study period which is contrary to a study carried out by the Odole et al, 2013, in which only 9% of cases were discharged. An explanation for this contrast can be related to the different time-span in which studies were carried out, which could means only that physiotherapists have improved regarding their skills of the patients-discharge. The same study recommended that there should be an audit of the physical therapy clinical practice to ensure patient's safety, evidence-based treatment & professional conduct of the physiotherapy clinicians.

Conclusion

This study found & confirmed that hip-hemi-arthoplasty is more prevalent among women than men. The majority of the study's subjects were aged 65 years or above (mostly geriatric patients) & the majority of the patients were not referred for the physiotherapy. Fall was the cause in majority of cases however we found that poor documentation regarding the cause of hip fracture in most of the cases reviewed for the study. No patient-centered outcome measures were utilized, thus there is needs for improvement in the clinical documentation &the systematic intervention of the standardized assessment outcome measures for the hip-hemi-arthoplasty. Systematic documentation

can be enhanced & facilitated by the regulatory & governing bodies of the profession nationally & hospitals administration locally.

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