



Case Report

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# The Nursing Strategies of Hip Joint Arthroplasty for Dialysis-Dependent Patients



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## Introduction

It is a meaning to accept regular dialysis treatment for patient with uremia. However, dialysis-dependent patients frequently develop osteoarthritis or osteonecrosis that warrants joint arthroplasty [1]. Many studies described Nursing Strategies and Managements for hip replacement but may not reflect standard for this dialysis-dependent patient [2,3]. Besides, no consensus has been reached to this especial populations at present. This paper reports the perioperative nursing strategies for two dialysis-dependent patients who accepted hemiarthroplasty in order to share clinical and nursing experience.

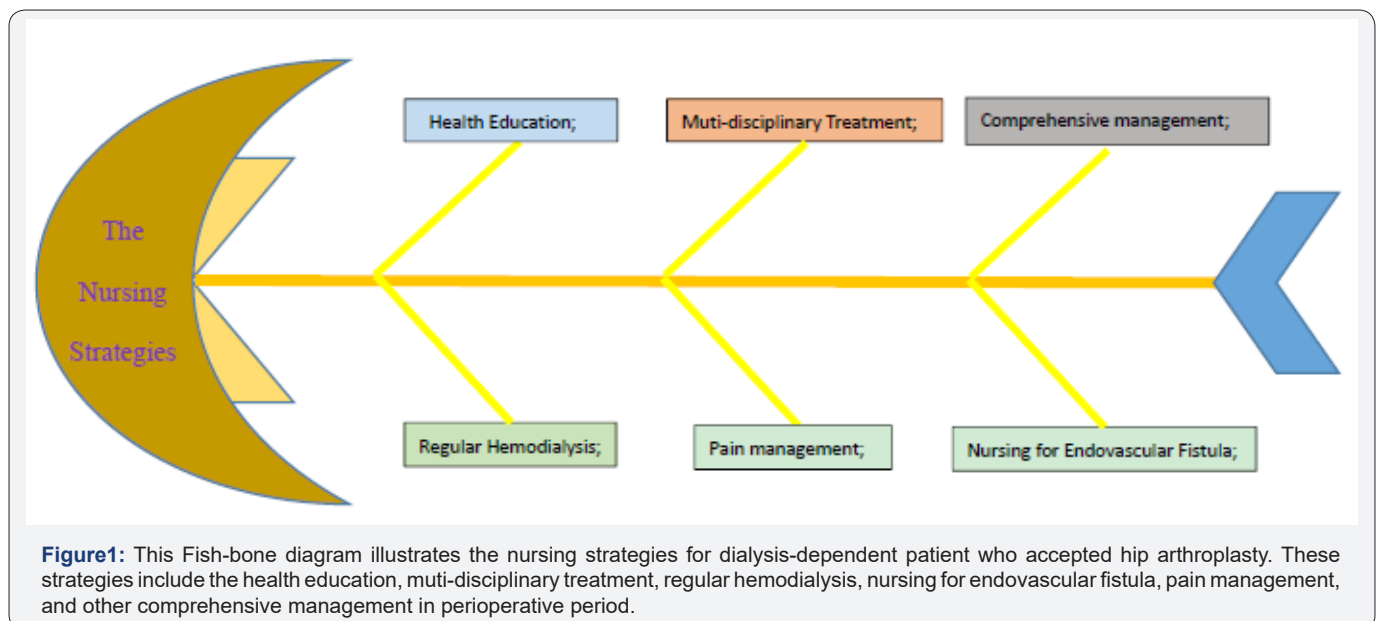
## The Clinical Data

In the databases, we identified 2 dialysis-dependent patients (Female/Male:1:1) who had undergone hemiarthroplasty from 2017 through 2018 and performed analysis nursing strategies in

perioperative period. Respectively, uremia was caused by Diabetic Nephropathy and Chronic Glomerulonephritis. There was no history of allergy to medications or of any previous anesthesia-related problems. Otherwise, there were no complications of hypersplenism, thrombocytopenia, pulmonary infection, and heart failure. The female patient occurred spontaneous periprosthetic fractures on postoperative days 7 and she accepted conservative treatment. No other complication occurred in follow-up period (6 months).

## The Nursing Strategies

The Nursing Strategies includes the health education, multi-disciplinary treatment, regular hemodialysis, nursing for endovascular fistula, pain management, and other comprehensive management in perioperative period (Figure 1) (Table 1).



**Table 1:** Nursing Strategies of Hip Joint Arthroplasty in Dialysis-Dependent Patient.

Items	Summary and Recommendation	
Health Education	The high-quality proteins, high calories and high vitamin diet and eternal nutrition approval, professional nursing steps.	Dietary Management
	Avoiding to use high salt and potassium food and monitoring the glucose levels for the diabetic.	Dietary Management
	The perioperative period is 6 hrs for liquids and 8 hrs for solid food.	Dietary Management
	The suitable body positions and functional training.	Exercise Missionary
	The muscle strengthening and its range of motion training.	Exercise Missionary
	The explanation of the disease with its characteristics, progression, and knowledge of surgeries.	Psychological Counseling
Muti-disciplinary Treatment	The multidisciplinary consultations include nephrology, hematology, anesthesiology, endocrinology, and blood dialysis room.	Multidisciplinary Consultations
	The team consists of physician, nurse and rehabilitation therapist.	Professional Team
Comprehensive Managements	Concerning the oxyhemoglobin saturation, blood pressure, and pain.	Vital sign monitoring
	Communication with surgeon about the results of laboratory investigations.	Analysis of biomedical reports
	The application of low molecular weight heparin per day and functional training for uninjured limb.	Prophylactic Anticoagulant
	The guidance of usage of bedpan and basic skill training.	Lifestyle Guidance
Regular Hemodialysis	The adjustment of hemodialysis basing on the results of levels of creatinine and urea nitrogen in blood.	Effective Hemodialysis
	Proper training of upper limb with AVG.	Observation of Permeability
	Regular observation by means of echo meter.	Regular Observation
Endovascular Fistula Nursing	Avoiding to low blood pressure and dehydration.	Maintaining and Monitoring
	Prohibition of any intervention with or without invasive action in upper limb with AVG.	Prohibition Action
Pain Management	The usage of the NIASDs or Opioid drugs basing on evaluation of pain such as VAS.	Drugs Controlling
	By means of the rehabilitation therapies includes electropuncture and audio frequency electricity	Physiotherapy Assistance

## Discussion

### Effective Health Education

The contents of health education include dietary management, exercise missionary, and psychological counseling. It may be better to select the absorbable foods with high-quality proteins, high calories, and high vitamin, but low in salt and potassium [4]. Besides, in particular salt and protein restriction are fundamental for the proper care of CKD patients [5]. At the same time, the glucose levels should also be paid attention for the patients with diabetes [6]. Obviously, the suitability of the preoperative fasting and water-deprivation concentration may be preventing to situation of vomit and aspiration. Additionally, emphasizing proper body positions and effective functional training, which are important parts of the nursing managements in perioperative period. The muscle strengthening, and its range of motion will be encouraged to perform for the patient without any contraindications [7]. Notably, there is same importance of psychological counseling in these population. The positive mood management is viewed as work of psychological counseling in this patient, which needs the nurse to explain this disease with its characteristics, progression, and knowledge of surgeries;

Moreover, the sufficient communication and correct guidance may also show supplement for treatment [8].

### Muti-Disciplinary Treatment

The researcher's provider plan that the individualized therapeutic protocol and evaluation of risks as the part of Muti-disciplinary treatments, which are basing on the medical records and advice of specialist consultation [9]. In regard to the dialysis-dependent patient, muti-disciplinary strategies include nephrology, hematology, anesthesiology, endocrinology, and blood dialysis room. The intensive care unit (ICU) can provider special treatments for postoperative period. In addition to, the team consists of physician, nurse, and rehabilitation therapist that may make supplements of treatments for the dialysis-dependent patients [10]. It is unique way to combine the specific nursing and enhanced recovery after surgery basing on the physical condition [11].

### Other Comprehensive Management in Perioperative Period

The comprehensive managements consist of vital sign monitoring, analysis of biomedical reports, cough training and defecation habit practice, usage of antibiotics, and prophylactic anti-

coagulant [12]. Regularly, to monitor oxyhemoglobin saturation, blood pressure, and pain that should be viewed as a part of the general nursing works. There are benefits for recovery, when the nurse pays attention to results of laboratory investigations and communicate with physician. The ways of using bedpan and to combine with the purgative are illustrated by nurses. Avoiding using cephalosporin antibiotics or drugs with renal toxicity results in drug-induced encephalopathy. The reasonable strategies of prophylactic anticoagulant including physical nursing of active or passive measures and preventive anticoagulant treatment by low molecular weight heparin or a hybrid approach ask nurse to perform dynamic evaluation and systematic nursing education [13].

## Regular Hemodialysis

All patients accepted heparin free dialysis before surgery day 1 aiming to reducing levels of creatinine and urea nitrogen in blood. Some authors indicated that the surgery can be performed as scheduled if the concentrations of creatinine under 445umol/L and the levels of urea nitrogen are inferior to 20mmol/L in blood on surgical day [14,15]. At the same time, maintaining the concentrations of potassium ion less than 4.5mmol /L shows advantage for surgery. Last but not least, the hemodialysis should follow the rationale of strategies as preoperative action, but it is essential to monitor concentration of creatinine, urea nitrogen, and potassium ion in blood.

## Nursing for Endovascular Fistula

Internal arteriovenous fistula (AVG) as the measurements of long-term hemodialysis that shows its importance for uremia patient. The careful observation and nursing protection of AVG and the preventive embolisms show its significance in nursing works [16]. The permeability of AVG can be performed assessment according to the following criterion:

- i. Proper training and raising of upper limb;
- ii. Regular observation by means of echo meter;
- iii. Avoiding to low blood pressure and dehydration;
- iv. Prohibition of any noninvasive or invasive intervention in upper limb with AVG.

## Pain Management

Some published articles revealed the fact that pain management is essential for patients accepted joint replacement [17,18]. Suitable and effective measures of pain management may provider the benefit for recovery and high quality of hospital life. Not only the drugs are used to kill pain, but also the rehabilitation therapies such as the rehabilitation therapies includes electropuncture and audio frequency electricity are used for relieving pain. At the same time, the evaluation of pain by terms of Visual Analogue Scale (VAS) can help physician to adjust strategies of pain management.

## Conclusion

In our paper, the nursing strategies provider a series of clinical nursing experiences. The limitations of our study are

related to retrospective cases analysis, and without control group. Besides, there are only two cases without enough data supporting these nursing strategies for the end-stage renal disease receiving chronic dialysis. In conclusion, the hip joint arthroplasty is much higher-risk endeavors in dialysis-dependent patients. And the effective nursing strategies can show the benefits for treatments.

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## Conflict of Interest

No potential conflict of interest relevant to this article was report.

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