



KINESIOPHOBIA IN PATIENTS AFTER DYNAMIC HIP SCREW PLACEMENT WITH OPEN PROCEDURE

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ABSTRACT

Dynamic Hip Screw (DHS) is used in surgical procedures using a plate with a screw to hold a fracture of hip bone. Kinesiophobia (fear of movement or re injury) is prominent key factor in patient undergoing post-op DHS patients. The research aim to determine Kinesiophobia in patients after open procedure dynamic hip screw placement. This was a case series. The questionnaire was used as data collection tool. It consisted of demographics and Tampa Scale for Kinesiophobia. Total 26 patients were enrolled through sample of convenience. Patients were distributed in gender, out of sample size 26, 14 patients were male and 12 patients were female. The study setting was Ghurki Trust Teaching Hospital, Lahore. The collected data analyzed through SPSS software. Results show that maximum number of patients (20 out of 26) with DHS reported moderate level of Kinesiophobia. 6 patients reported high Kinesiophobia

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and none of the patients reported with low Kinesiophobia. The results of this study concluded that majority of the patients show moderate level of Kinesiophobia after post-op DHS with open procedure.

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1. INTRODUCTION:

Femoral fractures in the hip are most commonly encountered by orthopedic surgeons across the globe (Parker and Johansen, 2006). Various management options available for managing different fractures of hip but the most commonly used approach involves fracture fixation with a dynamic hip screw (DHS) implant system (Butler et al., 2011). In the United States alone, almost 2 million patients undergo DHS placement every year (Lee et al., 2007).

Dynamic Hip Screw (DHS) is used in surgical procedures using a plate with a screw to hold a fracture of hip bone in place that may have occurred following a fall, trauma or due to any other injury or degenerative disease. Dynamic hip screw has been performed as an emergency intervention within 6.2 hours after accident (Pajarinen, J., Lindahl, J et al., 2005).

The rate of intertrochanteric fractures has been sufficiently great due to the increasing age of human populations so dynamic hip screw procedure is performed commonly (Cummings, S.R., et al., 1996) (Kannus, P., et al., 1996).

Generally, intramedullary fixation and extramedullary fixation are the 2 primary options for treatment of fractures. The dynamic hip screw (DHS), often used in extramedullary fixation, has become an ideal implant in treatment of fractures. Dynamic hip screws are used for fixation of fractures of the femoral neck and intertrochanteric region. Screw glides freely. Weight bearing causes the femoral head to become impacted on the femoral neck producing dynamic compression of the fracture (Bridle, S.H., et al., 1991) (Radford, P et al., 1999).

Proximal femoral nail (PFN) and Gamma nail are 2 commonly used devices in the intramedullary fixation. Previous studies showed that the Gamma nail did not perform as well as DHS because of relatively higher incidence of post-operative femoral shaft fracture (Butt, M.S., et al., 1995) (Saarenpää, I., et al., 2009).

After surgical procedure patient experience problem in ADL' included movement, standing/sitting and self-care social activities especially walking due to fear of movement 'Physical symptoms' included pain, cognitive impairment, edema and fear about recovering ambulatory ability and psychological disappointment about future.(Janes, G., 2016)

Kinesiophobia was defined by Kori et al. as excessive and irrational fear of movement that results in limitation of physical activity and occurs as a result of a painful injury(Kori et al., 1990a). Kinesiophobia has wide range of explanation and cannot be just come under the term of fear of pain. It may be described as fear of physiological symptoms like fatigue, fear of mental and physical discomfort (Knapik et al. 2011).

Pain causes different degrees of kinesiophobia exerting negative effects on functional activities (Uluğ et al., 2016). Injury recurrence and increased pain are the causes that make the patients suffering from kinesiophobia afraid of movement (de Jong et al., 2005). Patients who misinterpret pain are prone to develop irrational fear of pain resulting in either avoidance of physical movement or enhanced bodily awareness and hypervigilance of pain (Picavet et al., 2002).

In this modern world of science and evidence based practice, many new theories and ideas has been proposed, these theories has been exploring the relationship between

different factors that leads to kinesiophobia such as pain , fear of movement and disability.(Dimitriadis et al., 2014)

Fear avoidance model is one the psychiatric model that explains the wide range of key factors that causes the avoidance of movement and first is psychological distress. (fear of reinjury) (Doménech et al., 2014) The key factors include emotions, behavior and environment of individual and lack of support from their family that cause persistent pain and increase chances of disability. According to Fear avoidance model if patient notice pain he/she may develop resistance against it. Fear will guide patient to escape him/herself from certain behaviors and due to lack of mobility patient put him/herself toward sedentary life style and risk of deconditioning of muscles (Doury-Panchout et al., 2015).

After surgery Patient may become more sensitive and may develop exaggerated response for caution to avoid further pain against certain stimuli like movement and touch more laziness develop more prone to disability (Erlenwein et al., 2015).

Kinesiophobia in patients with Dynamic Hip Screw placement has not been evaluated in many studies and literature provides little evidence on their relationship. This study will help to determine kinesiophobia among post-op DHS patient and will benefit the patient by limiting his duration of stay in hospital and will speed up recovery time. It is least touched topic among physical therapists.

The rationale of this study is to describe the occurrence of fear of movement in patients who underwent DHS placement so that kinesiophobia is justifiably treated in such patients.

2. LITERATURE REVIEW:

In 2015, Medvicky Mj and Nelson S conducted his study on athlete in his meta-analysis study 48 studies show result after 41 months of follow up to determine kinesiohobia and return to sport the knee reconstruction surgery the result of the study was kinesiophobia, or fear of reinjury, may play an important role in some patients' inability to return to their preoperative level of sports participation. He concluded that fear of movement is psychological factor have great impact on social life and activity of daily living. (Medvicky Mj n Nelson S,2015)

In 2015, Hrubina M1, Skoták M et al conducted his study about hip surgical procedure his study main focus was on complication after dynamic hip screw surgical procedure especially in proximal femur fracture The authors performed 367 DHS osteosyntheses to treat 341 patients with fractures of the proximal femur to notify intra operative, preoperative and post operative complication after surgical procedure. Radiography were made before and after surgical procedure to check any deformity implant position and other complication. A complications of the DHS system (11 %) were recorded. Hence result of this study and can be preventable if carefully correctly implant place and postoperative care. The mortality rate within one year of surgery was 49 %. The authors regard DHS as an effective method to treat stable pertrochanteric fractures and fractures of the femoral neck in younger patients (Hrubina M1, Skoták M et al.,2015)

In 2015, Misterska et al. conducted a study that shows that patients who have low physical efficacy for performance of physical activity following a transplant surgery has

significant fear of producing movements. They showed 73% of patients had kinesiophobia. (Misterska et al. 2015).

In 2015, Koho P, Borodulin K, et al conducted his study on 455 men and 579 women as a participant. To estimate levels of kinesiophobia in men and women, and to examine the relation between kinesiophobia and leisure-time physical activity and the impact of additional disorder on Kinesiophobia the result concluded that Men over 55 years of age and women over 65 years of age had a higher ($p < 0.001$) TSK score compared with younger people. So inverse relation between kinesiophobia and leisure-time physical activity among both sexes. The presence of cardiovascular disease, musculoskeletal disease or a mental disorder was related with a higher TSK- score compared with the absence of the disorders. So disorders other than musculoskeletal origin also have impact on daily activity of life to create fear of movement and re-injury (Koho P, Borodulin K, et al., 2015)

In 2014, a study done by Kocjan et al found about TAMPA scale for kinesiophobia in patients suffering from coronary artery disease. Tampa scale is a standard tool used for measurement of kinesiophobia (Kocjan and Knapik, 2014).

In 2013, Marinus, Joha n PhD conducted cross section study on 238 patient with Complex Regional Pain Syndrome_1(CRPS1) of the legs from 4 pain clinic and Department of neurology Of university hospital Participant in this study. The aim of study was to determine the Role of Pain Coping and Kinesiophobia in Patients with Complex Regional Pain Syndrome type 1 of the legs. To assess pain and CRPS, pain rating index and CRPS severity score used and for Kinesiophobia Tampa scale used. And activity

level measured with rising and walking scale. He used different strategies to evaluate

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different response. Studies result concluded that making use of resting as a pain managing strategies contribute to limitation in activity and difficulty in functioning but Kinesiophobia not related. (Marinus, Joha n PhD et al., 2013)

In 2008, Branstrom et al conducted his postal survey study on both male and female candidate, to determine degree of Kinesiophobia with chronic musculoskeletal pain in both male and female. Investigate difference between both genders. He included in his 88 men and 173 women with musculoskeletal pain. Tampa scale was used to measure fear of pain Kinesiophobia (TSK-SV score >37) was found in 56% of patients, with men having a higher frequency (72%) than women (48%). Pain intensity was correlated with TSK-SV score in both men and women. No correlations were found between kinesiophobia and age, pain duration or probable depression/anxiety. Women with high kinesiophobia tended to be younger, had more pain and showed more tiredness, disability, stress, interference and life dissatisfaction compared with women with low kinesiophobia. These differences were not seen in men.so result indicate of Tampa scale of kinesiophobia help therapist to investigate negative impact of fear of movement and reinjury on rehabilitation program. (Branstrom et al., 2008)

In 2004, Roelofs, J., Goubert, et al conducted a study from acute to chronic low back pain (LBP) and the objectives of this study were to investigate, in a population with acute LBP, the reliability of Tampa Scale Kinesiophobia. One hundred and Seventy-Six patients suffering LBP for no longer than 4 weeks completed a Visual Analogue Scale for pain (VAS), the TSK, the Fear Avoidance Believe Questioner (FABQ), and a socio-demographic questionnaire. Each patient completed the VAS, TSK, and FABQ twice within 24 hour. TSK and FABQ scores range from $\alpha=0.70$ to 0.83. Test–retest reliability

ranges from $r_s=0.64$ to 0.80 ($P<0.01$). Validity is moderate, ranging from $r_s=0.33$ to 0.59 ($P<0.01$). It may be concluded that in a population with acute LBP, both the TSK and the FABQ are reliable measures of pain-related fear. In the clinical setting they may provide the means of identifying pain-related fear in a patient with acute LBP (Roelofs, J., Goubert, et al., 2004).

In 2002, H.Susan n johan n W.S vlaeyen et al conducted cohort study. A total of 1,845 of the 2,338 inhabitants (without severe disease) aged 25–64 years who participated in a 1998 population Pain Catastrophizing and Kinesiophobia on chronic low back pain study concluded that a high level of pain catastrophizing or a high level of Kinesiophobia increases the risk of future chronic low back pain and disability. This finding was true for those subjects with and those without low back pain at baseline and still existed after correction for severity of back pain at baseline. The result of this study (H.Susan n johan n W.S vlaeyen et al., 2002).

3. OBJECTIVES:

To determine Kinesiophobia in patients after open procedure dynamic hip screw placement.

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4. MATERIAL AND METHODS:

4.1. Sampling Technique:

Non-Probability convenience sampling,

4.2 Study Design:

Case series

4.3 Setting:

Ghurki Trust Teaching Hospital Lahore

4.4 Duration of study:

Six months after the approval of synopsis

4.5 Sample Size:

Sample size is calculated by using World Health Organization (WHO) software under this formula with 0.006 prevalence, 0.03 precision and 95% confidence interval.

The sample size is 26.

$$\frac{Z^2 1 - \alpha \kappa P(1 - P)}{d^2}$$

4.6 Sample Selection Criteria:

4.6.1 Inclusion criteria:

Female and male patients

All patients after open procedure of dynamic hip screw

4.6.2 Exclusion Criteria

Previous history of phobia

Vitally unstable patient

Any other Postoperative complication restricting mobility

4.7 Data Collection Procedure:

The data was taken from Ghurki trust and teaching hospital, Lahore. Almost 20 to 30 patients were evaluated for inclusion and exclusion criteria under supervision of orthopedic surgeon. Exclusion criteria was made by any postoperative complication that restrict mobility and cognitive impair patient previous history of phobia. Total 26 patients fulfilled the criteria and were included in the study. All patients had same baseline characteristics. A questionnaire was filled for each patient with post-op patient under the supervision of an orthopedic surgeon. Patients undergoing dynamic hip screw procedure admitted in Ghurki Hospital were included in this study. A structured questionnaire was used to collect data. Patients with Kinesiophobia were diagnosed by using Tampa Scale for Kinesiophobia which is a valid and reliable tool. Internal consistency of TSK and FABQ scores range from $\alpha=0.70$ to 0.83 . Test-retest reliability ranges from $r(s)=0.64$ to 0.80 ($P<0.01$) (Swinkles et. Al).

Kinesiophobia was assessed by using Tampa Scale for Kinesiophobia (Monticone et al. 2016). Interview method was used to fill the tampa scale. Total score was calculated after inverting the scores of question 4, 8, 12 and 16. Score ranging from 17 to 33 was considered as low kinesiophobia, 34-50 was considered moderate and 51-68 was considered as high level of kinesiophobia.

Data was analyzed using statistical package of social sciences (SPSS). Informed consent was obtained from each patient. The data was summarized to meet the objectives. Respondent information sheet was explained to all subjects. The objectives and significance of study was briefed to subjects. They were told that they have right to know about the results of study.

4.8 Data analysis:

Data collected was analyzed with statistical package for social sciences (SPSS) version 21. The study variables was presented in the form of descriptive statistics (tables, graphs and percentages). The numeric data like age was presented in the form of Mean \pm S. Dev. The qualitative data like gender and diagnosis etc. were presented in the form of frequency and percentage.

4.9 Ethical consideration:

Permission from the ethics committee of LCPT will be obtained in order to carry out the study. The cultural and religious considerations were duly taken at the time of collection data.

5.RESULT:

Table 5.1 Frequency of age

Patients were distributed in age groups, frequency of patients represent 13 (50%) patients were included in 40-50 age group, 5 (19.2%) patients were included in 51-60 age group and 8 (30%) patients were included in 61-70 age group. Maximum number of patients were found in age group between 40-50 years.

Age groups	Frequency	Percent	Valid Percent	Cumulative Percent
40-50	13	50.0	50.0	50.0
51-60	5	19.2	19.2	69.2
61-70	8	30.8	30.8	100.0
Total	26	100.0	100.0	

Table 5.2 Frequency of gender

Patients were distributed in gender, out of sample size 26, 14 (53.8%) patients were male and 12 (46.2%) patients were female

Gender	Frequency	Percent	Valid Percent	Cumulative Percent
Male	14	53.8	53.8	53.8
Female	12	46.2	46.2	100.0
Total	26	100.0	100.0	

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Table 5.3. Frequency of increasing pain:

Frequency represent out of sample size 26, 2 (7.7%) patients strongly disagree, 10 (38.5%) patients disagree, 13 (50%) patients agree and 1 (3.8%) patient strongly agree that if they try to overcome it their pain would increase,

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly disagree	2	7.7	7.7	7.7
Disagree	10	38.5	38.5	46.2
Agree	13	50.0	50.0	96.2
strongly agree	1	3.8	3.8	100.0
Total	26	100.0	100.0	

Table 5.4. Frequency of ADLs

Frequency represent out of sample size 26, 4 (15.4%) patient strongly disagree, 4 (15.4%) patient disagree, 14 (53.8%) patients agree and 4 (15.4%) patient strongly agree that they cannot do all things normal people do due to fear of injury.

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly disagree	4	15.4	15.4	15.4
disagree	4	15.4	15.4	30.8
agree	14	53.8	53.8	84.6
strongly agree	4	15.4	15.4	100.0
Total	26	100.0	100.0	

Table 5.5 Kinesiophobia:

Results show that maximum number of patients (20 out of 26) with DHS reported moderate level of kinesiophobia. 6 patients reported severe kinesiophobia and none of the patients reported with low Kinesiophobia.

Kinesiophobia	Frequency	Percentage
Low	0	0.00
Moderate	20	76.9
Severe	6	23.1
Total	26	100.0

6. DISCUSSION:

Femoral fractures in the hip are most commonly encountered by orthopedic surgeons across the globe. Kinesiophobia was defined by Kori et al. as excessive and irrational fear of movement that results in limitation of physical activity and occurs as a result of a painful injury.

As kinesiophobia is known to adversely affect functional capacity of an individual, recognizing its presence earlier results in better management and better functional outcome.

Tampa scale was used to assess kinesiophobia in a study conducted by Lars-Eric Olsson and colleagues who determined that Tampa scale is a reliable measure of pain related fear in patients underwent hip fracture procedures. As determined in this study, he also concluded that patients with high scores on TAMPA scale have lower stay in hospitals (Lars-Eric Olsson et al., 2016).

Kinesiophobia was found in patients, with men having a higher frequency (53%) than women (46%) and 53.8% patients agreed that they experience reduced mobility and limited ADLs after undergoing hip procedures which show close association with the study conducted by Branstrom (Branstrom et al., 2008).

Misterska et al. conducted a study that shows that patients show low physical efficacy for performance of physical activity following a transplant surgery and have significant fear of producing movements. (Misterska et al. 2015).

There is lack of adequate literature on whether the kinesiophobia is present after post-op DHS and only 1 quasi-experimental study was found in patients with total hip

arthroplasty. Few studies have been conducted till date to determine the relationship between hip surgeries and kinesiophobia.

There are various limitations, due to shortage of time sample size is not adequate. Confounding factors have not been addressed. Data is collected from a limited number of settings which reduces the generalizability of the results. As kinesiophobia is an important factor to consider during the development of treatment protocol as well as during the consideration of outcomes further studies should be conducted to provide better evidence.



7. CONCLUSION:

The results of this study concluded that majority of the patients show moderate level of Kinesiophobia after post-op DHS with open procedure.

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9. APPENDIX I:

Questionnaire:

Tampa Scale for Kinesiophobia

(Kori et al., 1990b)

1= strongly disagree

2 = disagree

3 = agree

4 = strongly agree

1. I'm afraid that I might injury myself if I exercise	1	2	3	4
2. If I were to try to overcome it, my pain would increase	1	2	3	4
3. My body is telling me I have something dangerously wrong	1	2	3	4
4. My pain would probably be relieved if I were to exercise	1	2	3	4
5. People aren't taking my medical condition seriously enough	1	2	3	4

	1	2	3	4
6. My accident has put my body at risk for the rest of my life				

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7. Pain always means I have injured my body	1	2	3	4
8. Just because something aggravates my pain does not mean it is dangerous	1	2	3	4
9. I am afraid that I might injure myself accidentally	1	2	3	4
10. Simply being careful that I do not make any unnecessary movements is the safest thing I can do to prevent my pain from worsening	1	2	3	4

10. Simply being careful that I do not make any unnecessary movements is the safest thing I can do to prevent my pain from worsening	1	2	3	4
11. I wouldn't have this much pain if they weren't something potentially dangerous going on in my body	1	2	3	4
12. Although my condition is painful, I would be better off if I were physically active	1	2	3	4

	1	2	3	4
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13. Pain lets me know when to stop exercising so that I don't injure myself				
14. It's really not safe for a person with a condition like mine to be physically active	1	2	3	4
15. I can't do all the things normal people do because it's too easy for me to get injured	1	2	3	4
16. Even though something is causing me a lot of pain, I don't think it's actually dangerous	1	2	3	4
17. No one should have to exercise when he/she is in pain	1	2	3	4

A total score is calculated after inversion of the individual scores of items 4, 8, 12 and 16.

Demographic data:

You are kindly requested to choose ONE answer for EACH Question below

1. Name of Patient:

2. Address of Patient:-

3. Age of Patient:- _____

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10. APPENDIX II:

Patient's Consent Form

"I _____

_____ Resident of _____

hereby declare that I have been informed about the research study completely and ready to

participate in the study. Moreover, I authorize the researcher to get access to my medical information as and when needed."

Contact No. _____

Dated: _____

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