National Journal of Clinical Orthopaedics

ISSN (P): 2521-3466
ISSN (E): 2521-3474

www.orthoresearchjournal.com
2018; 2(4): 118-122
Received: 27-08-2018
Accepted: 30-09-2018

Amit Nandan Mishra
Professor, Department of Orthopaedics, Era's Lucknow Medical College, Lucknow, Uttar Pradesh, India

Shakeel Ahmed Qidwai
Professor, Department of Orthopaedics, Era's Lucknow Medical College, Lucknow, Uttar Pradesh, India

Siddharth Trivedi
Junior Resident III, Department of Orthopaedics, Era's Lucknow Medical College, Lucknow, Uttar Pradesh, India

Vikas Trivedi
Professor, Department of Orthopaedics, Era's Lucknow Medical College, Lucknow, Uttar Pradesh, India

Vipin Kumar
Assistant Professor, Department of Orthopaedics, Era's Lucknow Medical College, Lucknow, Uttar Pradesh, India

Ekta Tyagi
Junior Resident III, Department of Radiodiagnosis, Era's Lucknow Medical College, Lucknow, Uttar Pradesh, India

Correspondence
Siddharth Trivedi
Junior Resident III, Department of Orthopaedics, Era's Lucknow Medical College, Lucknow, Uttar Pradesh, India

Comparative study of cemented versus uncemented hemiarthroplasty of displaced fracture of femur neck in elderly

Amit Nandan Mishra, Shakeel Ahmed Qidwai, Siddharth Trivedi, Vikas Trivedi, Vipin Kumar and Ekta Tyagi

Abstract
The controversy regarding the advantages and disadvantages of the cemented bipolar prosthesis with uncemented bipolar prosthesis is still in debate. The present study was carried out with an aim to compare hemiarthroplasty using cemented bipolar prosthesis with uncemented bipolar prosthesis in elderly patients with intracapsular fractures of the neck of femur. Thirty elderly patients with femoral neck fracture in each group were enrolled in the study. Devastating injuries of hip viz. Femoral neck fracture mostly affect the elderly age group leading to debilitatory health issues, reducing quality of life, increase in economic burden over family and number of deaths. This study has been taken up to compare two groups in terms of functional outcome. Prospective analysis of 60 elderly patients who underwent hemiarthroplasty using cemented bipolar prosthesis (n=30) & uncemented bipolar prosthesis (n=30) for intracapsular fractures of the neck of femur were reviewed. Postoperative harris hip score & visual analogue score was assessed at discharge, 3 weeks, 6 weeks, 12 weeks & 6 months for both the groups. At 3 weeks, 6 weeks, 12 weeks and 6 months follow-up intervals Harris Hip score & visual analogue score of the two groups were not statistically significant.
Conclusion: The present study compared both cemented and uncemented bipolar prosthesis offering similar functional outcomes among elderly patients with fracture femoral neck.

Keywords: Femoral neck fractures, hemiarthroplasty

Introduction
Devastating injuries like hip fractures affect the elderly population leading to more severe health problems like reduced quality of life thus causing the large number of deaths. As per an estimate around twenty-five years back, the annual burden of hip fractures was 1.7 million worldwide [1]. The incidence of hip fracture rises dramatically with increasing age. A hip fracture is generally a fracture of the proximal femur. Such injuries may be divided into three categories, according to the anatomical area in which they occur. Femoral neck and intertrochanteric fractures account for over 90% of hip fractures, occurring in approximately equal proportions and subtrochanteric fractures account for the remaining 5-10% [2]. Today With growing elderly population, femoral neck fractures, as a consequence of osteoporosis, are becoming a real public health problem. The Indian population appears particularly vulnerable to the problem of osteoporosis and hip fractures [3]. It has been shown that hip fractures occur a decade earlier in Indians in comparison with western Caucasian counterparts. Osteoporosis, co-morbidities, increased incidence of trivial trauma with increase in life expectancy of the Indian population has increased the incidence and complications in the treatment of these fractures. Moreover, the awareness of osteoporosis in India is poor and the screening facilities for identifying osteoporosis are poor. The treatment goal is to return the patient to his or her pre-morbid functional status with pain free joint. Management of femoral neck fractures in elderly patients has been subject of discussion. Femoral neck fractures have been considered 'unsolvable fractures' in the older era of orthopedics [4] due to the high rate of associated complications, which include nonunion and avascular necrosis of the femoral head, among others. While stable fractures can be easily treated with osteosynthesis with predictable results but unstable femur fractures in the elderly patient are associated with high rate of mortality as much as 20 per cent during the first postoperative year [5-7]. Important factors to consider in choosing any treatment modality are intrinsic, which is patient age, general medical condition,

type of fracture; and extrinsic, which is availability of facilities and socio-economic status. To allow earlier postoperative weight-bearing and to avoid excessive collapse at the fracture site, some surgeons have recommended prosthetic replacement for the treatment of unstable intertrochanteric fractures [8-10].

In patients with severe osteoporosis with significant comminution, prosthetic replacement may be considered; except in elderly patients with low activity demands and limited life expectancies. For active patients in whom prosthesis is indicated, a cemented or cementless femoral component with a bipolar or unipolar head attachment is preferred choice. In cases of unstable intertrochanteric fractures of elderly, primary cemented hemiarthroplasty has shown promising results and have shown to be having fewer complications than that reported for conventional treatment modalities like internal fixation [11]. A large number of prostheses have been used with or without cement and no definite conclusions have been made regarding which type of arthroplasty is preferred. There is some evidence of inferior short-term results, with decreased mobility and more pain when using an uncemented implant and concerns regarding fixation problems with uncemented stems in osteoporotic bone have been raised [12, 13]. The bonding between prosthesis and femur is dependent upon bony in-growth when cement is not used whereas in cemented prosthesis, cement forms a solid bond between prosthesis and bone. Cementing the prosthesis provides more secure fixation and may result in less residual pain and better function. However, the insertion of cement complicates the operation and carries the risk of cardiovascular collapse when the cement is introduced into the femur [14]. The advantages of cementing are a less post-operative mid thigh pain, as the prosthesis is firmly fixed within the femur and a reduced long term revision rate from loosening of the prosthesis [15]. Major side effects of cement are cardiac arrhythmias and cardio-respiratory collapse, which occasionally occur at time of application. Another major disadvantage of a cemented prosthesis is that revision arthroplasty will be more difficult. Keeping in view the controversy regarding the advantages and disadvantages of both the prostheses, the present study was carried out with an aim to compare hemiarthroplasty using cemented bipolar prosthesis with uncemented bipolar prosthesis in elderly patients with intracapsular fractures of the neck of femur in terms of Harris hip scores, VAS Score & to compare the functional outcome.

Material and Method

After clearance from institutional ethical board, patients with fracture of neck fracture older than 60 years old who came to the Department of Orthopaedics of the Era's Lucknow Medical College and Hospital and in the Emergency Department for the duration of 18 months were enrolled in the study.

The sampling frame was bound by the following inclusion and exclusion criteria: patients with diagnosed displaced fracture of femur neck, aged >60 years (male and female both), giving written & informed consent for surgery were included in the study. Whereas, patient below 60 years, patients aged 60 to 75 years, patient not giving consent, patients with a pathological fracture from a tumour or Paget's disease of bone, previous treatment to the same hip for a fracture, patient not fit for surgical procedure, patient with arthritis that necessitated treatment with a total hip replacement were not included in the study.

Sixty-six patients with displaced femoral neck fractures underwent hemiarthroplasty and were allocated to two study groups. Group I: Patients undergoing Uncemented bipolar hemiarthroplasty (n=33) & Group II: Patients undergoing Cemented bipolar hemiarthroplasty (n=33). The patients were selected for cemented or uncemented hemiarthroplasty based on Dorr classification [16] who classified proximal femoral conformation into types A, B and C, based on the thickness of the cortical bone and on the shape of the medullary canal.

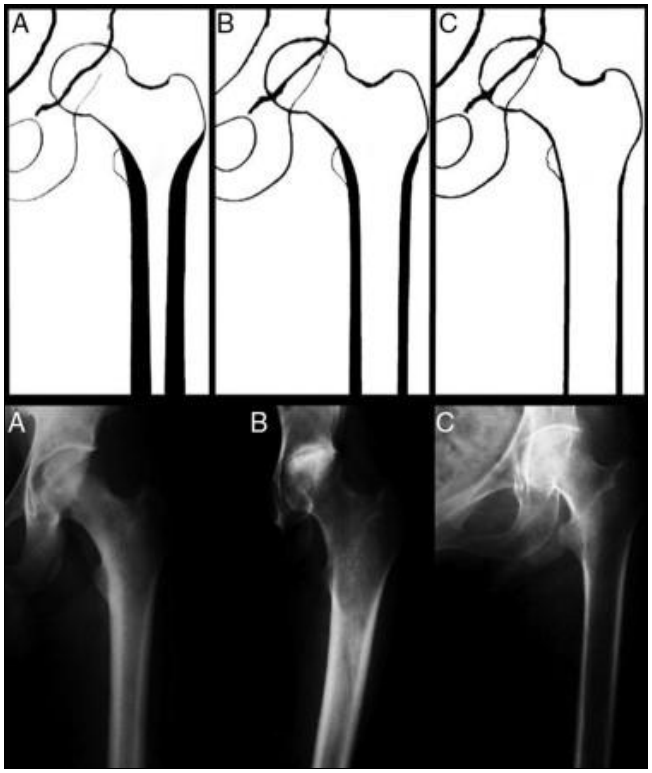

Fig 1: Schematic drawings and radiographs of the morphological types described by Dorr.

All patients were followed up for a period of six months; the follow up visits were done at: 3 weeks, 6 weeks, 12 weeks and 6 months. On each follow up, the intensity of pain (based on visual analog scale), hip function (according to Harris hip score), radiological signs of patients x-ray (the presence or absence of acetabular erosion loosening of prosthesis) and postoperative complications were recorded. The important parameters assessed were: Function on Harris hip score, Shortening, Pain on VAS score. The statistical analysis was done using SPSS (Statistical Package for Social Sciences) Version 21.0 statistical.

Result

Over a period of eighteen months 33 patients each receiving uncemented and cemented prosthesis were compared for functional outcome and pain status. However, a total of 3 patients in each group did not turn up even for first follow-up and hence were excluded from the study. Table 1 shows the distribution of cases in two study groups:

Table 1: Group wise distribution of cases

S. N	Group	Description	No. Of cases	Percentage
1.	I	Cases undergoing uncemented bipolar hemiarthroplasty	30	50
2.	II	Cases undergoing cemented bipolar hemiarthroplasty	30	50

A total of 30 (50%) patients who underwent uncemented bipolar hemiarthroplasty comprised the Group I of study while another 30 (50%) underwent cemented bipolar hemiarthroplasty and comprised the Group II of study.

Harris hip scores at discharge ranged from 24 to 56. Mean Harris hip score of patients in Group I was 43.80±8.08 in Group I as compared to 39.50±8.74 in Group II, though the mean scores were slightly higher in Group I as compared to that in Group II yet this difference was not significant statistically (p=0.053). Table 2 shows comparison between two groups for status at discharge is depicted in.

Table 2: Comparison between two groups for status at discharge

S. N	Characteristic	Group I (n=30)	Group II (n=30)	Statistical significance 'p' value
1.	Mean Harris Hip Score±SD (Range)	43.80±8.08 (29-56)	39.50±8.74 (24-54)	't'=1.979; p=0.053
2.	Limb length discrepancy±SD (Range) in cm	0.26±0.92 (0-5.0)	0.21±0.33 (0-1.0)	't'=0.280; p=0.780
3.	Mean VAS±SD	5.70±1.15	5.73±1.51	't'=0.096; p=0.924

Mean limb length discrepancy was 0.26±0.92 cm in Group I as compared to 0.21±0.33 cm in Group II, thus showing no statistically significant difference between two groups (p=0.780).

Mean pain scores (VAS) were 5.70±1.15 and 5.73±1.51 respectively in Groups I and II, thus showing no statistically significant difference between two groups (p=0.924).

Thus, at discharge both the groups were matched statistically for all the outcomes and did not show a significant difference between two groups.

At 3, 6 & 12 weeks follow up mean Harris hip score of patients in Group I was 52.47±8.14, 62.50±5.76, 72.63±5.06 in Group I as compared to 50.67±7.45, 64.00±6.06, 73.67±4.75 in Group II respectively, though the mean scores were slightly higher in Group I at 3weeks as compared to that in Group II yet this difference was not significant statistically (p=0.311). However, mean scores were slightly higher in Group II as compared to that in Group I at 6 (p=0.330). & 12 (p=0.418) weeks yet this difference was not significant statistically. Table 3, 4, 5 shows comparison between two groups at 3, 6, 12 week follow-up.

Table 3: Comparison between two groups at 3-week follow-up

S. N	Characteristic	Group I (n=30)	Group II (n=30)	Statistical significance 'p' value
1.	Mean Harris Hip Score±SD	52.47±6.14	50.67±7.45	't'=1.021; p=0.311
2.	Limb length discrepancy±SD (Range) in cm	0.26±0.92 (0-5.0)	0.21±0.33 (0-1.0)	't'=0.280; p=0.780
3.	Mean VAS±SD	3.90±0.84	4.30±0.79	't'=1.889; p=0.064

Table 4: Comparison between two groups at 6-week follow-up

S. N	Characteristic	Group I (n=30)	Group II (n=30)	Statistical significance 'p' value
1.	Mean Harris Hip Score±SD	62.50±5.76	64.00±6.06	't'=0.983; p=0.330
2.	Limb length discrepancy±SD (Range) in cm	0.26±0.92 (0-5.0)	0.21±0.33 (0-1.0)	't'=0.280; p=0.780
3.	Mean VAS±SD	3.07±0.69	3.13±0.90	't'=0.322; p=0.749

Table 5: Comparison between two groups at 12-week follow-up

S. N	Characteristic	Group I (n=30)	Group II (n=30)	Statistical significance 'p' value
1.	Mean Harris Hip Score±SD	72.63±5.06	73.67±4.75	't'=0.818; p=0.418
2.	Limb length discrepancy±SD (Range) in cm	0.26±0.92 (0-5.0)	0.21±0.33 (0-1.0)	't'=0.280; p=0.780
3.	Mean VAS±SD	1.30±0.79	1.60±1.04	't'=1.258; p=0.214

Mean limb length discrepancy at 3, 6 & 12 weeks was 0.26±0.92 cm, 0.26±0.92 cm, 0.26±0.92 cm in Group I as compared to 0.21±0.33 cm, 0.21±0.33 cm, 0.26±0.92 cm in Group II, thus showing no statistically significant difference between two groups (p=0.780).

Mean pain scores (VAS) at 3, 6, 12 weeks were 3.90±0.84, 3.07±0.69, 1.30±0.69 in group I and 4.30±0.79, 3.13±0.90, 1.60±1.04 respectively in Groups II, thus showing no statistically significant difference between two groups (p=0.064 at 3 weeks, p=0.749 at 6 weeks, p=0.214).

Radiologically both the groups did not show any abnormality. Thus at week 3, 6, 12 & 6 months too, the two groups did not show any statistically significant difference (p>0.05).

At 6 months follow-up, a total of 2 (6.7%) cases in Group I and 1 (3.3%) patient in Group II did not turn up for follow-up, hence the evaluation was restricted to 28 patients in Group I and 29 patients in Group II. Table 6 shows comparison between two groups at 6 months follow-up.

Table 6: Comparison between two groups at 6 months follow-up

S. N	Characteristic	Group I (n=28)	Group II (n=29)	Statistical significance 'p' value
2.	Mean Harris Hip Score±SD	86.18±3.13	85.72±4.04	't'=0.474; p=0.637
3.	Limb length discrepancy±SD (Range) in cm	0.28±0.95 (0-5.0)	0.22±0.33 (0-1.0)	't'=0.327; p=0.745
4.	Mean VAS±SD	0.32±0.48	0.48±0.51	't'=1.236; p=0.222

Mean Harris hip score of patients in Group I was 86.18±3.13 in Group I as compared to 85.72±4.04 in Group II, though the mean scores were slightly higher in Group I as compared to that in Group II yet this difference was not significant statistically (p=0.637).

Mean limb length discrepancy was 0.28±0.95 cm in Group I as

compared to 0.21±0.33 cm in Group II, thus showing no statistically significant difference between two groups (p=0.745).

Mean pain scores (VAS) were 0.32±0.48 and 0.48±0.51 respectively in Groups I and II, thus showing no statistically significant difference between two groups (p=0.222).

At six months, in Group I, majority (75%) had good outcome followed by excellent (21.4%) and fair (3.6%) outcomes. None of the patients had poor outcome.

In Group II too, majority of patients had good outcome (69%) followed by excellent outcome (20.7%) and fair outcome (10.3%) respectively. Table 7 shows comparison between two groups for Functional Outcome at 6 months. Statistically, there was no significant difference between two groups with respect to outcome (p=0.604).

Table 7: Comparison between two groups for Functional Outcome at 6 months

S. N	Functional Outcome	Group I (n=28)	Group II (n=29)
1.	Poor	0	0
2.	Fair	1 (3.6%)	3 (10.3%)
3.	Good	21 (75.0%)	20 (69.0%)
4.	Excellent	6 (21.4%)	6 (20.7%)

χ^2=1.007; p=0.604

Discussion

The present study was carried out to compare hemiarthroplasty using cemented bipolar prosthesis with uncemented bipolar prosthesis in elderly patients with intracapsular fractures of the neck of femur.

For this purpose, a total of 30 patients each being treated by uncemented and cemented bipolar hemiarthroplasty were enrolled in the study.

Moreover, keeping in view the fact that the duration of follow-up in present study was of six months only and the results had to be evaluated primarily in terms of functional scores (Harris hip scores) and pain (VAS). That is why the patient selection was generally amongst those who had a relatively more active life profile despite being elderly. Moreover, as the participation in study was voluntary, only those who had an active life profile preferred to go for bipolar prosthesis instead of conservative management opted by those who were too old to lead an active life and were unwilling to go for prosthetic replacement.

In present study, mean Harris hip score at discharge in uncemented and cemented groups was 43.80±8.08 and 39.50±8.74 respectively. Statistically, there was no significant difference between two groups. At 3 weeks, 6 weeks, 12 weeks and 6 months follow-up intervals mean Harris Hip score was 52.47±6.14, 62.50±5.76, 72.63±5.06 and 86.18±3.13 respectively in uncemented group and 50.67±7.45, 64.00±6.06, 73.67±4.75 and 85.72±4.04 respectively in cemented group. Statistically, there was no significant difference between two groups at any of these time intervals. Thus, a gradual increase in Harris hip scores was observed in both the groups but there was no significant difference between two groups. There are limited studies reporting the progressive change in functional scores during this short duration of follow-up. Khorami *et al.* [17] Who conducted follow-up at 4th week and 6 months also reported good to excellent outcome in 49.8% and 68.2% patients respectively at 4th week and 6 months in cemented and 34.3% and 47.8% patients respectively in uncemented group, thus showing a progressive behaviour of functional outcome in both the groups which is similar to our study, but showed better outcome in cemented group as compared to uncemented group which is in contrast to the findings of present study.

As far as residual pain is concerned, in present study, at the time of discharge mean pain score (VAS) was 5.70±1.15 and 5.73±1.51 respectively in uncemented and cemented groups. On subsequent follow-up intervals at 3 weeks, 6 weeks, 12 weeks and 6 months mean VAS were 3.90±0.84, 3.07±0.69, 1.30±0.79 and 0.32±0.48 respectively in uncemented group and 4.30±0.79, 3.13±0.90, 1.60±1.04 and 0.48±0.51 respectively in cemented group. Statistically, there was no significant difference between two groups with respect to VAS scores at any of the follow up intervals. However, in studies by Khorami *et al.* [17] and Chaurasia and Charan [18] though gradual decline in mean pain scores with passage of time was observed which is similar to that in present study, however, at both 4th and 24th week intervals it was significantly higher in uncemented as compared to cemented groups. However, Yurdakul *et al.* [19] similar to present study, did not find a significant difference in pain scores between two groups. The reasons for absence of significant difference in pain scores of patients in two groups contrary to the most of the previous studies could be relatively lesser mean age of patients, their active profile and shorter duration of follow-up.

In present study, at final follow-up, functional outcome was found to be excellent, good and fair respectively in 21.4%, 75.0% and 3.6% patients respectively in uncemented and 20.7%, 69% and 10.3% respectively in cemented group. Statistically, there was no significant difference between two groups with respect to functional outcome. Similar to present study, Movrin *et al.* [20] also showed similar functional outcome in two groups at six months of follow up. Even studies with longer duration of follow-up, such as the one conducted by Ng and Krishna [21] did not find a significant difference in functional outcome of two groups despite a much higher average age of patients in their study.

One of the limitations of the present study was small sample size and shorter duration of follow-up. However, this shorter duration of follow-up was helpful in restricting the loss to follow-up rate, however, keeping in view the fact that most of the studies have evaluated the outcomes at a longer duration of follow-up [17, 22, 23, 24] and given the fact that as far as resumption of functions is concerned, six months is a short duration for adjustments, studies with a longer duration of follow-up are recommended. Moreover, some variations from previous studies could be attributable primarily to the relatively lesser mean age of patients and a better activity profile.

Conclusion

Findings of the present study thus showed that both cemented and uncemented bipolar prosthesis offered similar functional outcomes and pain relief among elderly patients with fracture femur neck. The limitation of the study was sample size and its duration of follow-up, which was, restricted only upto six months. Subsequent studies on a larger sample size with longer duration of follow-up are recommended.

References

1. Cooper C, Campion G, Melton LJ III et al. Hip fractures in the elderly: a world-wide projection. Osteoporos Int. 1992; 2:285-9.
2. Trikha V, Rastogi S. Epidemiology and Rehabilitation of Hip Fractures in the Geriatric Population. IJPMR. 2005; 16(1):16-19.
3. Malhotra N, Mithal A. Osteoporosis in Indians. Indian J Med Res. 2008; 127:263-268.

4. Rockwood & Green's Fracture in Adults & Children - 6th edition. Femoral neck fracture, 2009, 1591-92.
5. Dahl E. Mortality and life expectancy after hip fractures. Acta Orthop Scand 1980; 51(1):163-170.
6. Jensen JS. Trochanteric Fractures. An Epidemiological, Clinical and Biomechanical Study. Acta Orthop Scand. 1981; 188:11-19.
7. Eiskjaer S, Otsgard SE, Jakobsen BW, Jensen J, Lucht U. Years of potential life lost after hip fracture among postmenopausal women. Acta Orthop Scand. 1992; 63(3):293-296.
8. Harwin SF, Stern RE, Kulick RG. Primary Bateman-Leinbach bipolar prosthetic replacement of the hip in the treatment of unstable intertrochanteric fractures in the elderly. Orthopedics. 1990; 13:1131-1136.
9. Broos PL, Rommens PM, Geens VR, Stappaerts KH. Pertrochanteric fractures in the elderly. Is the Belgian VDP prosthesis the best treatment for unstable fractures with severe comminution? Acta Chir Belg. 1991; 91:242-249.
10. Rodop O, Kiral A, Kaplan H, Akmaz I. Primary bipolar hemiprosthesis for unstable intertrochanteric fractures. Int Orthop. 2002; 26:233-237.
11. Sinno K, Sakr M, Girard J, Khatib H. The effectiveness of primary bipolar arthroplasty in treatment of unstable intertrochanteric fractures in elderly patients. N Am J Med Sci. 2010; 2(12):561-568.
12. Keating J. Femoral neck fractures. In: Bucholz RW, Court-Brown CM, Heckman JD, Tornetta P. Rockwood and Green's Fractures in Adults, 7thedition.Lippincott Williams and Wilkins: Philadelphia, 2010, 1561-96.
13. Parker MI, Pryor G, Gurusamy K. Cemented versus uncemented hemiarthroplasty for intracapsular hip fractures a randomised controlled trial in 400 patients. J Bone & Joint Surgery Br. 2010; 92(1):116-22.
14. Parker MJ, Gurusamy K. Arthroplasties (with and without bone cement) for proximal femoral fractures in adults. (Cochrane Review). In: The Cochrane Library, Chichester: Wiley, 2006.
15. Inngul C, Hedbeck CJ, Blomfeldt R, Lapidus G, Ponzer S, Enocson A. Unipolar hemiarthroplasty versus bipolar hemiarthroplasty in patients with displaced femoral neck fractures: a four-year follow-up of a randomised controlled trial. Int Orthop. 2013; 37(12):2457-2464.
16. Dorr LD, Faugere MC, Mackel AM, Gruen TA, Bognar B, Malluche HH. Structural and cellular assessment of bone quality of proximal femur. Bone. 1993; 14:231-42.
17. Khorami M, Arti H, Aghdam AA. Cemented versus uncemented hemiarthroplasty in patients with displaced femoral neck fractures. Pakistan Journal of Medical Sciences. 2016; 32(1):44-48. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4795887/pdf/PJMS-32-44.pdf
18. Chaurasia T, Charan R. Cemented versus uncemented hemiarthroplasty in elderly patients with displaced femoral neck fractures. Int J Res Orthop. 2018; 4(3):519-522.
19. Yurdakul E, Karaaslan F, Korkmaz M, Duygulu F, Baktır A. Is cemented bipolar hemiarthroplasty a safe treatment for femoral neck fracture in elderly patients? Clinical Interventions in Aging. 2015; 10:1063-1067.
20. Movrin I. Cemented Versus Uncemented Hemiarthroplasty for Displaced Femoral Neck Fractures: A Prospective Trial with Two Years Follow-Up. Clin Surg. 2018; 3:2097.
21. Ng ZD, Krishna L. Cemented versus cementless hemiarthroplasty for femoral neck fractures in the elderly Journal of Orthopaedic Surgery. 2014; 22(2):186-9.
22. Stavrakis TA, Lyras DN, Psillakis IG et al. Fractures of the femoral neck treated with hemiarthroplasty. A comparative study. Folia Med (Plovdiv). 2009; 51(4):34-39. https://www.ncbi.nlm.nih.gov/pubmed/20232656
23. Figved W, Opland V, Frihagen F, Jervidalo T, Madsen JE, Nordsletten L. Cemented versus Uncemented Hemiarthroplasty for Displaced Femoral Neck Fractures. Clinical Orthopaedics and Related Research. 2009; 467(9):2426-2435.
24. Li T, Zhuang Q, Weng X, Zhou L, Bian Y. Cemented versus Uncemented hemiarthroplasty for Femoral Neck Fractures in Elderly Patients: A Meta-Analysis. PLoS ONE. 2013; 8(7):e68903.