

## CASE REPORT

---

### SPONTANEOUS SIMULTANEOUS BILATERAL FEMORAL NECK FRACTURE SECONDARY TO RENAL OSTEODYSTROPHY: A CASE REPORT & REVIEW OF LITERATURE

Patnala Ashok Kumar<sup>1</sup>, Anisha Vupputuri<sup>2</sup>, M. Chandrasekharam Naidu<sup>3</sup>, Srinivas Gollangi<sup>4</sup>,  
Udaya Kumar Boddapalli<sup>5</sup>

#### HOW TO CITE THIS ARTICLE:

Patnala Ashok Kumar, Anisha Vupputuri, M. Chandrasekharam Naidu, Srinivas Gollangi, Udaya Kumar Boddapalli. "Spontaneous Simultaneous Bilateral Femoral Neck Fracture Secondary to Renal Osteodystrophy: A Case Report & Review of Literature". Journal of Evolution of Medical and Dental Sciences 2014; Vol. 3, Issue 13, March 31; Page: 3484-3490, DOI: 10.14260/jemds/2014/2309

**ABSTRACT:** We here with present a case of bilateral spontaneous femoral neck fracture in a middle aged male patient suffering from undiagnosed renal osteodystrophy. He undergone bilateral uncemented hemiarthroplasty and is receiving treatment for renal osteodystrophy and other deficiencies caused by chronic renal disease. Our aim is to present a rare case of bilateral fracture of the neck of femur secondary to renal osteodystrophy with an atypical presentation, simulating bilateral osteoarthritis of the hip. We also want to stress upon the importance of evaluation of serum Calcium, Phosphorous, Vitamin D, Parathyroid hormone and Alkaline Phosphatase levels in patients with chronic renal disease, even though the patient is not in the End stage renal disease.

**KEYWORDS:** Bilateral Femoral Neck fracture, Renal Osteodystrophy, Simultaneous Fractures.

**INTRODUCTION:** Spontaneous simultaneous femoral neck fractures are very rare. We present herein a case of non-traumatic spontaneous simultaneous bilateral femoral neck fracture in a 32 year old male patient, secondary to renal osteodystrophy. Our aim is to present a rare case that we came across. Patient was informed in the language he understands that the data concerning his case would be submitted for publication and he gave his consent.

**CASE REPORT:** A 32yr old male patient attended orthopedic OPD in our hospital with chief complaints of pain in both groins of one year duration. The pain started 1yr ago, insidious in onset and was dull aching type without any radiation. It was not preceded by trauma or fever and was aggravated by activities and relieved by rest and analgesic medications. The pain gradually progressed to its present severity where it is unbearable and uncontrollable and is not relieved even with high doses of analgesics and is affecting his daily activities like squatting, sitting cross legged, standing for more than 5min and walking for more than 10steps. There is no loss of weight and appetite or other constitutional symptoms at the time of presentation. In the past, the patient had episodes of severe muscle weakness for which he was given oral potassium chloride but was unaware of the previous diagnosis.

The patient was moderately built and nourished and was pale on inspection. He had a waddling gait. On inspection of both hips, there were no significant findings. There was no apparent discrepancy in limb length or obvious deformities. There was bilateral anterior joint line tenderness and pain on passive range of movement of both hips. The movements of both hips were restricted, particularly the rotations. Trendelenberg test could not be done as the patient was not able to stand even for few minutes and telescopy was absent both sides. His spine and both sacroiliac joints were

## CASE REPORT

clinically normal. With the given history and clinical findings, we arrived at a provisional diagnosis of bilateral secondary osteoarthritis of hips most probably due to bilateral avascular necrosis of femoral head. Hence, we admitted the case for further evaluation.

Once we admitted the case we started the baseline investigations. We completed the routine blood work and a plain radiograph of pelvis including both hips was taken. The blood tests included Hemoglobin (8.4 mg/dl), Blood urea (24mg/dl), Serum creatinine (2.0mg/dl), and Random blood sugar (82mg/dl). Radiographs of pelvis with both hips showed bilateral Garden's type 3 femoral neck fractures. Now considering the previous history of muscle weakness(for which he has been using potassium chloride), his blood urea, serum creatinine values and the features of osteoporosis (which is usually secondary in this age group) in the radiographs, we felt that further evaluation of the patient was necessary to rule out chronic renal disease.

For renal evaluation we referred the patient to the Nephrology department, who conducted various investigations including Complete Urine examination [Urine Potassium 28.4 mEq (<15 mEq)], Complete Blood Series, Serum Electrolytes (Serum potassium 2.8 mEq/litre), Arterial blood gas analysis and Ultrasound abdomen. After they examined the reports thoroughly and calculated the Glomerular Filtration Rate  $[(140 - \text{age}) \times \text{Body weight} / (\text{Serum creatinine} \times 72)]$ , they affirmed that the patient has Grade 2 Renal Failure (according to GFRs)

It was then that we proceeded with collecting the Vitamin D 11.5ng/dl (normal range 25-75ng/dl), Calcium 6.9 mg/dl(8.5-10.5 mg/dl), Phosphorous 8.6 mg/dl (2.8-5 mg/dl), Alkaline phosphatase 769 U/litre (30-135 U/litre) and Parathyroid Hormone 46.2 pg/ml (8.8-76.6 pg/ml) levels and finally arrived at the conclusion that the patient was a case of Renal Osteodystrophy (low turnover type).



**FIG. 1 : PLAIN X-RAY SHOWING BILATERAL FEMORAL NECK**



**FIG. 2: 3 D CT SHOWING BILATERAL FEMORAL NECK FRACTURE**



## CASE REPORT

---

**DISCUSSION:** Spontaneous simultaneous bilateral femoral neck fractures are rarely reported. They have been associated with chronic conditions causing osteoporosis such as hyperparathyroidism, vitamin D metabolism defects, multiple myeloma, post organ transplantation; narcotic drug abuse, long term bisphosphonates usage, steroid induced osteoporosis and pregnancy induced transient osteoporosis. Additionally, it is noted that few cases were reported on spontaneous simultaneous bilateral hip fractures associated with osteomalacia in adult patients.

However, there are some differences regarding clinical and biochemical presentation of these cases. David Schnadower<sup>1</sup> et al stressed that pediatric patients should be evaluated for bilateral femoral neck fractures immediately after severe hypocalcemic seizures. Ruben Depasquale<sup>2</sup> et al found that, though bisphosphonates have a well-established therapeutic role in prevention of osteoporosis, long term use of bisphosphonates showed direct relationship to subtrochanteric and femoral diaphyseal fractures.

S Lidder<sup>3</sup> et al reported bilateral femoral neck fractures secondary to transient osteoporosis during pregnancy. Alireza Hootkani<sup>4</sup> et al attributed bilateral femoral neck fracture to narcotic drug abuse. Raphael Omatayo Ayorinde and Clement Abu Okolo<sup>5</sup> reported concurrent femoral neck fracture following pelvic irradiation. H.D.W. Powell<sup>6</sup> published three different cases of bilateral femoral neck fractures with convulsions as common history. Asheesh Sood<sup>7</sup> et al discovered that in elderly, even in absence of primary and secondary bone disease, bilateral neck of femur fractures can occur after relatively minor trauma. Chirurgische<sup>8</sup> et al described bilateral femoral neck fractures with Osteogenesis Imperfecta tarda. Pankaj<sup>9</sup> et al described bilateral femoral neck fractures in post-knee arthroplasty subject. Sivas<sup>10</sup> et al reported simultaneous bilateral femoral neck fractures in young patients with osteomalacia associated with hypermagnesemia secondary to overuse of magnesium containing antacids.

Renal Osteodystrophy is usually a diagnosis of end stage renal disease. However, it can be brought into light with high suspicion in a patient with chronic muscle pain and localized groin discomfort, in spite of not having history of trauma, as in this case. It might also be an incidental finding with chest and pelvis X-ray showing Looser's zones or spine showing Ruggier Jersey spine along with serum studies. It might present as bone pain, joint pain or bone deformation and bone fractures.

Renal Osteodystrophy can be of two types. High turnover renal bone disease and low turnover renal bone disease. High turnover type is associated with raised parathyroid hormone levels. Low turnover type (as seen in this case) with low or normal levels of parathyroid hormone is uncommon. Chronic renal disease results in deficiency of vitamin D and thereby reduces the intestinal absorption of calcium, phosphorous and magnesium. Low levels of calcium leads to secondary hyperparathyroidism with bone resorption. Alternatively, in low turnover state the parathyroid hormone levels are within normal range but pathology is due to excess deposition of aluminum into bones, which again ultimately lead to bone resorption and weakness along with inadequate mineralization.

David Schnadower<sup>1</sup> et al performed open reduction and internal fixation of both femoral heads in his pediatric subject. Ruben Depasquale<sup>2</sup> et al stopped the subject from taking Alendronate and started him on vitamin D and calcium supplements since their subject had history of multiple fractures and was uneventful. S Lidder<sup>3</sup> et al conservatively treated the subject until delivery and then operated on the subject. Alirezia Hootkani<sup>4</sup> et al treated the subject with bilateral single staged

## CASE REPORT

---

hemiarthroplasty. Raphael Omatayo Ayorinde<sup>5</sup> and Clement Abu Okolo concluded that African blacks are predisposed to hip fractures following pelvic irradiation and treated with bilateral hemiarthroplasty with uncemented Austin Moore stems at 8 weeks interval.

Asheed Sood<sup>7</sup> et al treated the elderly with cemented hemiarthroplasty using Thompson stem. Chirurgische<sup>8</sup> et al implanted a cemented total endoprosthesis bilaterally in a single stage operation. Although McBryde<sup>11</sup> et al recommended single stage procedure in elective surgery; Tsiridis<sup>12</sup> et al noticed the need for more blood transfusions in single staged procedures than in staged procedure. Whatsoever is the method, Orthopedic surgeons should concentrate on restoring the normal anatomy apart from therapeutic vitamin D, calcium supplements and bisphosphonates.

**CONCLUSION:** This case highlights that in chronic renal disease subjects, even though there is an absence of secondary hyperparathyroidism, decreased bone mineralization and excess deposition of aluminium can lead to bilateral femoral neck fractures, in spite of the fact that the patient claiming that he did not sustain a trivial trauma. Consequently the orthopedic surgeon, emergency physician and general practitioner should be aware of this condition and should treat the subject of chronic renal disease with groin discomfort with high index of suspicion, though the subject is not in end stage renal failure and they do not present clinically as a typical fracture.

**CONSENT:** Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-chief of this Journal.

### REFERENCES:

1. David Schnadower, Chhavi Agarwal, Sharon E. Oberfield, Ilene Fennoy and Martin. Hypocalcemic Seizures and Secondary Bilateral Femoral Fractures in an Adolescent with Primary Vitamin D Deficiency. Official Journal of American Academy of Paediatrics 2006 Nov;118(5):2226-30
2. Ruben Depasquale, Claire Matthews, Victor N. Cassar-Pullicino. Bisphosphonate-related bilateral atypical femoral fractures – be aware and beware. Malta Medical Journal Volume 23 Issue 02 2011
3. S Lidder, K J Lang, H-J Lee, S Masterson, R K Kankate. Bilateral hip fractures associated with transient osteoporosis of pregnancy. The Royal London Hospital, Whitechapel, London. surjitlidder@doctors.org.uk. J Orthop Surg Res. 2010; 5: 41. Published online 2010 June 25. doi: 10.1186/1749-799X-5-41
4. Alireza Hootkani, Ali Moradi, Ehsan Vahedi. Neglected simultaneous bilateral femoral neck fractures secondary to narcotic drug abuse treated by bilateral one-staged hemiarthroplasty: a case report. J Ortho Surg Res 5:41. doi:10.1186/1749-799X-5-41.
5. Raphael O Ayorinde, Clement A Okolo. Concurrent femoral neck fractures following pelvic irradiation: a case report. Journal of Medical Case Reports 2009, 3:9332 doi: 10.1186/1752-1947-3-9332.
6. h. d. w. Powell. Simultaneous bilateral fractures of the neck of the femur. The Journal of Bone and Joint Surgery. Vol. 42b, No. 2, May 1960.



## CASE REPORT

---

7. Asheesh Sood, Christopher Rao, Ian Holloway. Bilateral femoral neck fractures in an adult male following minimal trauma after a simple mechanical fall: a case report. *Cases J.* 2009; 2: 92. Published online Jan 28, 2009. doi: 10.1186/1757-1626-2-92.
8. Templin F, Schoppmeier K. Combined total endoprosthesis implantation in bilateral femoral neck fracture with osteogenesis imperfecta tarda. [Article in German]. Source: *Chirurgische Abteilung, Johanniter-Krankenhaus Geesthacht. Unfallchirurg.* 1996 Jun; 99(6):454-6.
9. Pankaj A, Malhotra R, Logani V, Bhan S. Bilateral femoral neck fractures following total knee arthroplasty: a case report and review of literature. *Arch Orthop Trauma Surg* 2007; 127:549-52.
10. Sivas F, Gunsen O, Ozoran K, Alemdaroglu E. Osteomalacia from Mg-containing antacid: a case report of bilateral hip fracture. *Rheumatol Int.* 2007; 27:679–681.
11. McBryde CW, Dehne K, Pearson AM, Treacy RB, Pynsent PB. One or two-stage bilateral metal-on-metal hip resurfacing arthroplasty. Source Research and Teaching Centre, Royal Orthopaedic Hospital, Bristol Road South, Northfield, Birmingham B312AP, UK. cwmcbryde@hotmail.com. *J Bone Joint Surg Br.* 2007 Sep; 89(9):1144-8.
12. Tsiridis E, Pavlou G, Charity J, Tsiridis E, et al.(2008). The safety and efficacy of bilateral simultaneous total hip replacement: An analysis of 2063 cases. *Journal of Bone and Joint Surgery: British Volume*90(8):1005-1012.
13. Heetveld MJ, Raaymakers EL, van Eck-Smit BL, van Walsum AD, Luitse JS. Internal fixation for displaced fractures of the femoral neck. Does bone density affect clinical outcome? Source Trauma Unit, Department of Surgery Academic Medical Center, Amsterdam, The Netherlands. m.heetveld@erasmusmc.nl. *J Bone Joint Surg Br.* 2005 Mar;87(3):367-73.
14. Ali H. Chamseddine, Abdullah A. Alasiry, Hadi K. Zein. Spontaneous simultaneous bilateral femoral neck fractures secondary to osteomalacia: a case report and review of the literature. *European Journal of Orthopaedic Surgery & Traumatology* Volume 22, Issue 1 Supplement, pp 139-143. DOI 10.1007/s00590-012-0979-y Print ISSN 1633-8065 Online ISSN1432-106 Publisher Springer-Verlag.

## CASE REPORT

---

### **AUTHORS:**

1. Patnala Ashok Kumar
2. Anisha Vupputuri
3. M. Chandrasekharam Naidu
4. Srinivas Gollangi
5. Udaya Kumar Boddapalli

### **PARTICULARS OF CONTRIBUTORS:**

1. Associate Professor, Department of Orthopaedics, Andhra Medical College, King George Hospital, Visakhapatnam, Andhra Pradesh.
2. Research assistant, Department of Orthopaedics, Andhra Medical College, King George Hospital, Visakhapatnam, Andhra Pradesh.
3. Assistant Professor, Department of Orthopaedics, Andhra Medical College, King George Hospital, Visakhapatnam, Andhra Pradesh.

4. Junior Resident, Department of Orthopaedics, Andhra Medical College, King George Hospital, Visakhapatnam, Andhra Pradesh.
5. Professor and HOD, Department of Orthopaedics, Andhra Medical College, King George Hospital, Visakhapatnam, Andhra Pradesh

### **NAME ADDRESS EMAIL ID OF THE CORRESPONDING AUTHOR:**

Dr. Patnala Ashok Kumar,  
Associate Professor,  
Department of Orthopaedics,  
King George Hospital,  
Visakhapatnam-530002.  
E-mail: ashok\_ortho59@rediffmail.com

Date of Submission: 16/02/2014.  
Date of Peer Review: 17/02/2014.  
Date of Acceptance: 25/02/2014.  
Date of Publishing: 29/03/2014.