Bilateral femoral neck fracture in pregnancy- outcome of conservative versus operative treatment: A case report

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Abstract

Introduction: Transient osteoporosis of pregnancy is usually benign in nature. Rarely serious complication like fragility fracture of neck of femur can occur. Usually idiopathic in nature and self-limiting. So far only 12 such cases and bilateral in only 2 patients have been reported in literature. Since, X-rays are usually avoided in pregnancy this condition is usually missed leading to late diagnosis.

Case report: A 26-year-old primigravida was referred to our institute on her 7th month of gestation with bilateral hip pain and limp. She developed bilateral hip pain on her 5th month of gestation which was progressive in nature. Her radiograph showed bilateral femoral neck fracture. To avoid radiation hazard to the fetus fracture fixation was delayed till caesarean section on her 38th week of gestation. Closed reduction and internal fixation with three CC screws was done for left femur neck fracture. Fixation was planned for right side fracture simultaneously but since the patient did not consent for bilateral surgery she was asked to review after one month for right femur neck fracture fixation. The patient who lost to follow-up showed up after 6 months walking comfortably. Radiological examination showed that in the non-operated side the fracture united in Varus with shortening of 0.5 cm.

Conclusion: Musculoskeletal problems during pregnancy should not be overlooked. MRI should be used for early diagnosis whenever feasible. Fracture Neck of femur in pregnancy in-spite of delayed diagnosis and treatment has a better prognosis even with conservative treatment.

Keywords: transient osteoporosis, pregnancy, femoral neck fracture, spontaneous healing

Introduction

Transient osteoporosis of pregnancy, an uncommon condition occurring in the third trimester of pregnancy is usually benign in nature [1]. The most serious complication include fragility fracture of neck of femur. Other locations include knee, foot and ankle .Usually idiopathic in nature and self-limiting. Clinically there can be hip pain without history of trauma. Gait disturbance or inability to bear weight can occur. Hip fracture due to Transient osteoporosis of pregnancy is very rare and only 12 cases and bilateral in only 2 patients have been reported in literature till date [2, 3]. Majority of these fracture are caused by minor trauma whereas few cases occurred without any trauma making the diagnosis difficult. Since X-rays are usually avoided in pregnancy this condition is usually missed leading to late diagnosis. MRI is helpful in diagnosing with low signal intensities of bone marrow in T1 weighted images and high signal in T2 suggesting marrow edema [4]. Due to limited availability of resources and unaffordability in developing countries MRI could not be used in all cases.

We report a case of bilateral neck of femur fracture in a primigravida female at 7 months of gestation without any significant trauma who was treated with different modalities for each side (conservative for right and internal fixation for left). We discuss the clinical and radiological outcome at 1 year follow up.

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Case report

A 26-year-old primigravida weighing 52 kg with height of 160 cm on her 5th month of pregnancy developed low back ache with bilateral hip joint pain which was gradually progressive in nature. She was treated by her physician initially with analgesics but without any relief. Her bilateral hip pain worsened over the next months and she was limping. During her 7th month of gestation she was referred to our institute with x-ray pelvis AP view taken by primary care physician. We diagnosed Garden grade IV fracture neck of femur left hip and Garden grade III fracture neck of femur right hip (figure 1). Since, we did not want to subject the patient to unnecessary radiation exposure from C-arm during intra-operative procedure we decided to postpone the surgical procedure till the delivery. The patient was treated with bilateral non-adhesive skin traction till definitive treatment. Her past medical history showed she was suffering from hypothyroidism for which thyroxine 100 microgram was prescribed. There was no history of alcohol consumption, smoking or steroid abuse. She was on Iron and folic acid supplementation and calcium supplementation from 4th month of gestation onwards. Clinical examination was unremarkable and other routine investigations normal.

She underwent caesarean delivery on her 38th week of pregnancy. After 2 weeks we planned for operative intervention. Since patient did not consent for bilateral surgery in the same sitting we planned to operate on left side femoral neck fracture with grade IV garden in the first sitting. She was treated with closed reduction and

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Figure 1: Radiographs at presentation showing B/L neck of femur fracture

Figure 2: Radiograph at 6 months follow-up

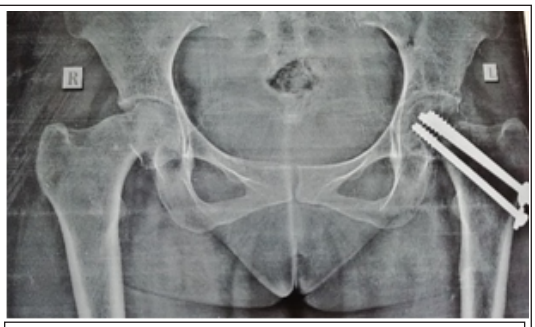

Figure 3: One year follow up- AP view both hip with union

internal fixation with 3 cannulated cancellous screws in inverted triangle configuration while we continued skin traction for right sided fracture.

The patient was advised to review after one month for operating the right sided fracture but she lost to follow up. When she came for review 6 months post-op she was pain free and walking with mild discomfort. We found that active straight leg rise was normal on both side. Clinically union was suspected and on subsequent radiological examination we found radiological union on both sides (figure 2). The patient was followed up for a period of one year(figure 3). Non-operated fracture neck of femur has united in Varus (figures 4&5). Range of movements was satisfactory with no apparent shortening. Actual shortening of 0.5 cm was measured in the non-operated limb. At 1 year follow up the patient was clinically normal.

Discussion

Hormonal changes causing fluid retention and joint laxity combined with the altered axial loading due to weight of gravid uterus frequently causes musculoskeletal symptoms like low back ache, sciatica and hip pain but cases of non-traumatic bone fracture is very rare [5].

Transient osteoporosis of pregnancy, osteonecrosis are serious conditions considered as differential diagnosis of musculoskeletal problems in pregnancy. Transient osteoporosis is mostly seen in primiparous women in third trimester and it often affects hip [6]. Most patients recover spontaneously in 6-12 months. The most common mechanism attributed is tissue ischemia and microvascular injury causing bone marrow edema [7].

Figure 4: one year follow up lateral view right hip showing union

Figure 5: one year follow up lateral view left hip showing union with implant in situ

Even though vertebral fractures are common due to pregnancy associated osteoporosis cases of femoral neck fractures are very rare[8]. Literature review showed 12 cases of fracture neck of femur and bilaterally in only 2 cases reported so far due to transient osteoporosis of pregnancy either non-traumatic or with trivial injuries.

Generally during third trimester of pregnancy there is accelerated calcium transport to the fetus from the mother because of rapid mineralization of fetal bones. If the maternal intake of calcium is less, there occurs resorption of maternal skeleton to meet this demand. Women with low mineral density or predisposing factors like anorexia nervosa are affected more [5].

The risk factors for transient osteoporosis of pregnancy include increased weight, microtrauma due to fetal movement, compression of pelvic sympathetic and pudendal nerves by gravid uterus, hypertriglyceridemia [9]. Though hyperthyroidism is one of the risk factor for osteoporosis there is still debate regarding hypothyroidism causing osteoporosis [10, 11].

Since musculoskeletal symptoms are common and radiographs are usually avoided during pregnancy this condition is generally under reported. MRI is useful in such circumstances to arrive at diagnosis but not performed usually because of unaffordability and lack of facilities in under-developed and developing countries.

We experienced a similar situation where the patient was having progressive pain not relieved by rest and medications and progressive limp. Since the patient could not afford MRI investigation, she was subjected to X-ray by her family physician. We were worried regarding the teratogenic effects of the radiograph taken during pregnancy. Literature review showed that potential health hazard to the fetus occur only between 0 to 15 weeks of gestation in the radiation dose of 5-50 rads[12]. Beyond about 26 weeks the fetus is less sensitive to non-cancer health effects of radiation in doses less than 100 rads whereas doses above 100 rads can lead to miscarriage and neonatal death. Since the radiation exposure from single pelvis with both hip film ranges from 0.04 rad to 0.37 rads (0.6-0.7 mSv) [13]. we were relieved from our worries regarding ill effects to the fetus. In order to avoid further anxiety to the patient regarding radiation exposure during operative procedure we decided to wait till delivery.

The most common complication of fracture neck of femur is non-union and avascular necrosis of femoral head [14]. But cases of fracture of neck femur following pregnancy even though treated late shows good union without any complications like AVN [4]. There is only a single reported case of spontaneous healing of bilateral neck of femur fracture following transient osteoporosis of pregnancy [9] The remaining cases of femoral neck fracture following osteoporosis in

Figure 6 Figure 7 Figure 8 Figure 9 Figure 10 Figure 11

Figure 6-11: clinical function at final follow-up

pregnancy were either treated by osteosynthesis or replacement arthroplasty but there is no study till now comparing spontaneous healing versus operative fixation.

In young patients internal fixation should be tried even in neglected and delayed presentations. We got a natural comparison in our study between conservative and operative methods in such an iatrogenic neglected case. Results of both the methods were comparable in terms of limb length, range of movements and functional status of the limb except for 0.5 cm shortening which was seen in non-operated site but without visible deformity or functional limitation.

Conclusion

Musculoskeletal problems during pregnancy should not be overlooked as few patients could develop serious complications like fracture neck of femur. MRI should be used for early diagnosis whenever feasible. In-spite of delayed presentation the results of internal fixation are promising without complications like implant failure, non-union and AVN of head of femur. Spontaneous healing in Varus occurs in few cases without operative intervention.

Clinical Message

Transient osteoporosis of pregnancy should be considered as differential diagnosis of severe musculoskeletal problems in pregnancy. Women with low mineral density or predisposing factors like anorexia nervosa or decreased oral calcium intake are affected more. MRI should be considered in such circumstances to arrive at diagnosis. Cases of fracture of neck femur following pregnancy even though treated late either conservatively or with internal fixation shows good union without any complications like AVN.

References

1. *Lakhanpal s, Ginsburg W, Luthra H, Hunder G. Transient regional osteoporosis, a study of 56 cases and review of the literature. Ann Intern Med. 1987;(106: 444-450).*
2. *Aynaci O, Kerimoglu S, Ozturk C, Sarcoglu M. Bilateral non-traumatic acetabular and femoral neck fractures due to pregnancy-assosiated osteoporosis. Arch Orthop Trauma Surg. 2008;(128 :313-316).*
3. *Munker R, Niedart C, Niedart F, Schmidt RB. Bilateral fracture of the femoral neck following transient osteoporosis in pregnancy. Z Orthop thre Grenzgeb. 2007;(145:88-90).*
4. *Willis-Owen C, Daurka J, Chen A, Lewis L. Bilateral femoral neck fractures due to transient osteoporosis of pregnancy. Cases J. 2008;(1:120).*
5. *Kyoko K, Nobuyuki K. Bilateral femoral neck fractures resulting from pregnancy assosiated osteoporosis showed bone marrow edema on magnetic resonance imaging. The journal of obstetrics and gynaecology research. 2017 jun; 43((6)1067-1070).*
6. *Cohen I, Melamed E, Lipkin A, Robinson D. Transient osteoporosis of pregnancy complicated by a pathologic sub-capital hip fracture. J Trauma. 2007; 62(1281-3).*
7. *Rishi V, Wahi P, Mahajan A. Transient osteoporosis of hip (migratory). JK Science. 2008; 10(194-6).*
8. *Smith R, Athanosou NA, Ostlere SJ, Viponf SE. pregnnacy assosisted osteoporosis. QJM. 1995; 88(865-878).*
9. *Alioune GB, Lamine S, Badara D, Alioune DB, Andre DS, Charles DB. Bilateral fracture of femoral neck during pregnancy:A case of spontaneous Healing. SM journal of orthopaedics. 2017.*
10. *British tF. thyroid disorders and osteoporosis ,revised 2018. ; 2018.*
11. *Dominika T, Marek B. the influence of thyroid disfunction on bone metabolism. thyroid research. 2014;(7:12).*
12. *CDC. CDC guidelines. US Govt emergency.cdc.gov.*
13. *Vakil C. Radiation and medical procedures.how do we do no harm? Canadian family physician. 2017 oct; 63((10)774-775).*
14. *Lu-Yao GL ,Keller RB, Littenberg B. Outcomes after displaced fractures of the femoral neck. a meta analysis of one hundred and six published reports. J bone Joint Surg Am. 1994; 76(15-25).*

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