

# Bilateral Distal Radius Fracture in Third Trimester of Pregnancy with Accelerated Union: A Rare Case Report

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## ABSTRACT

Bilateral distal radius fracture is a rare entity. There is no literature reporting a bilateral distal radius fracture in pregnancy. Fracture healing is influenced by hormones. Hormonal changes of pregnancy will affect the healing of a fracture. A 28-year-old female at 34 wk of pregnancy sustained a bilateral distal radius fracture after a self fall. One side was managed conservatively and open reduction was done for the other side. Both fractures united at four weeks. This case is unique in three ways. First distal radius fractures commonly occur in elderly postmenopausal females due to oestrogen deficiency. In this case a distal radius fracture occurred following a self fall in third trimester of pregnancy – a hyperestrogenic state. Second the time taken for union was only four weeks signifying the hormonal effects on pregnancy on fracture healing. Third the occurrence of bilateral distal radius fracture itself is very rare in adults. In pregnancy there is a faster rate of fracture healing due to effects of oestrogen and increased cardiac output. Fractures in pregnancy require special attention. Surgical intervention should be done with a multidisciplinary approach. While management of fractures in pregnancy, effect of hormonal and physiological changes should be kept in mind.

**Keywords:** Hormones, Oestrogen, Plating

## CASE REPORT

A 28-year-old female presented to the casualty after four hours of sustaining a self fall in the bathroom. The mechanism of injury was due to fall on outstretched hands. She was a primigravida at 34 wk period of gestation. She complained of bilateral wrist pain and restriction of movements. On examination swelling, deformity tenderness and crepitus was present over both the wrists. No ecchymosis was present. Distal Radioulnar Joint injuries were ruled out by clinical examination by provocative Distal Radioulnar Joint stability tests and by a negative piano key sign. Both injuries were of closed nature with no distal neurovascular deficits. Patient was splinted with a below elbow slab on both sides for immobilization and analgesia.

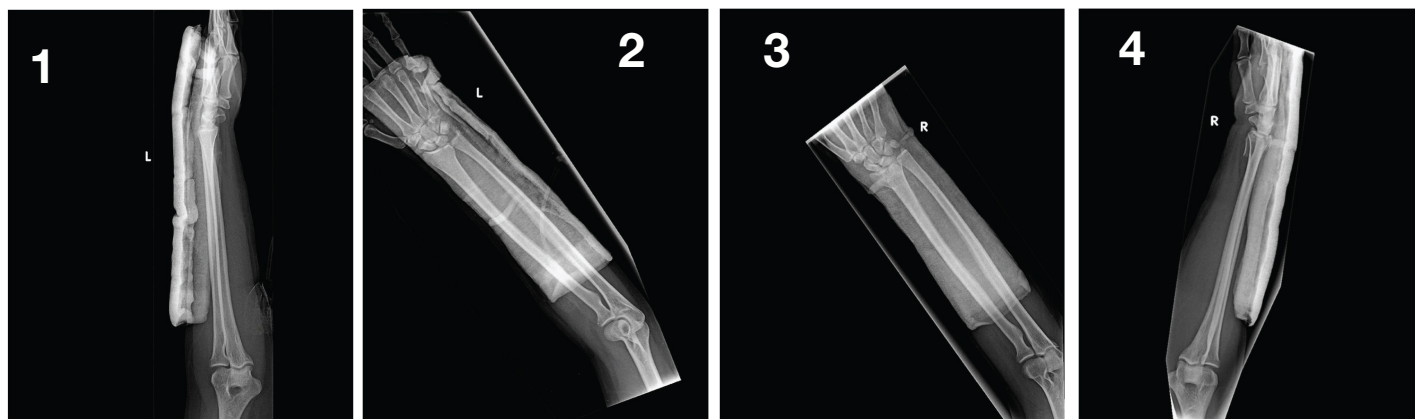
Radiographs of both the wrists were done after proper shielding of the abdomen. X-Rays revealed an undisplaced distal radius fracture on the Left Distal Radius– Frykman Type IV and a displaced fracture of the Right Distal Radius– Frykman Type VII [Table/Fig-1-4]. The routine blood investigations were normal.

Ultrasound was also done which was normal and showed a single live intrauterine foetus. Due to the non displaced nature of the fracture, closed reduction under sedation and a below elbow

cast application for the left side was done. However reduction was performed without any C-ARM guidance to avoid radiation exposure. On the next day patient was operated on the right side by open reduction and fixation with a locking plate with five screws using a Volar FCR approach under brachial plexus block [Table/Fig-5,6]. Parts were scrubbed and painted using povidone iodine. The fixation was supported with a below elbow slab. C-ARM was not used during the procedure to avoid radiation exposure to the mother. Operative time was 50 min. Tourniquet was applied during the procedure and deflated in 40 min. Preoperative antibiotic prophylaxis was given using intravenous cefozolin and was continued for three doses postoperatively. The patient was discharged after two days and follow up was done every two weeks. At four weeks of follow up, radiographs were taken which showed that the distal radius fractures on both sides had united [Table/Fig-7,8]. The cast and slab was removed and active range of motion was started. The wound had healed well with primary intention on the right side.

## DISCUSSION

Fracture healing is influenced by hormones like insulin, oestrogen and progesterone [1]. Therefore hormonal changes that occur in pregnancy will affect the healing of a fracture sustained during a



**[Table/Fig-1]:** X-ray of Left Wrist on presentation showing an undisplaced distal radius fracture – LATERAL VIEW

**[Table/Fig-2]:** X-ray of Left Wrist on presentation showing an undisplaced distal radius fracture – AP VIEW

**[Table/Fig-3]:** X-ray of right wrist on presentation showing a displaced distal radius fracture – AP VIEW

**[Table/Fig-4]:** X-ray of right wrist on presentation showing a displaced distal radius fracture – LATERAL VIEW



**[Table/Fig-5]:** Immediate post op X-rays of right wrist after plating – AP VIEW **[Table/Fig-6]:** Immediate post op X-rays of right wrist after plating – LATERAL VIEW  
**[Table/Fig-7]:** Follow up X-rays at 4 weeks showing union – AP VIEW **[Table/Fig-8]:** Follow up X-rays at 4 weeks showing union – LATERAL VIEW

pregnancy. In pregnancy, there is an increase in level of progesterone in the first trimester and oestrogen and prolactin in the second and third trimesters [2].

In this case the early union can be attributed to hormonal changes in pregnancy. Oestrogen is known to cause bone formation and remodeling [3]. There is also an increase in cardiac output and stroke volume in pregnancy [4] which accelerates fracture healing by increase supply of hormones and cellular factors at the fracture site. The incidence of bilateral distal radius in adults is unclear. It is a very rare injury with only two reports described in the medical literature one in an adolescent athlete and one in an adult after fall from height both of which were managed conservatively [5,6]. There is no report describing a bilateral distal radius fracture in pregnancy [Table/Fig-9].

Study	Trimester	Fracture Sustained	Management
Ahmad et al.,[1]	3 <sup>rd</sup>	Tibia	Non - operative
Caban A et al.,[7]	2 <sup>nd</sup>	Acetabular fracture	Operative
Pishnamaz et al.,[8]	3 <sup>rd</sup>	Sacral Fracture	Non - operative
Schwarzkopf et al.,[9]	3 <sup>rd</sup>	Ankle fracture dislocation	Operative
Our Case	3 <sup>rd</sup>	Bilateral Distal Radius	Operative for one side and non operated for other side with accelerated union

**[Table/Fig-9]:** Reports describing fractures in pregnancy

Fractures in pregnancy require special attention. Trauma can lead to foetal injury therefore ultrasound should be done after a traumatic injury. During radiographs proper shielding of abdomen should be done. Surgical intervention in pregnancy may cause a risk to the foetus. Surgical intervention should be done with a multidisciplinary approach [10]. The use of CARM should be avoided in pregnancy.

## CONCLUSION

To conclude, we would like emphasize that bilateral distal radius fracture especially in pregnancy is a rare entity. For fractures in pregnancy non operative treatment is preferred since operative intervention poses a risk to the foetus. If surgical treatment is necessary owing to nature of the fracture, proper precautions should be followed. The effect of hormonal changes on fracture healing should be kept in mind in the management of such injuries.

## Ethical Approval

Ethical consent for the work has been given.

## Consent

Written informed consent was obtained from the patient for publication of this case report and accompanying images.

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