

# Unusual Operative Treatment and Outcome of Femoral Shaft Fracture in a Non-ambulatory Cerebral Palsy Patient

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## SUMMARY

Cerebral palsy patients are prone to spontaneous fractures due to poor bone quality. The treatment options of femoral fractures include conservative and operative management which is tailored according to the patient's needs, co-morbidities and the presence of skilled surgeon. We present a 20 year old non-ambulatory CP patient who had a fractured femoral shaft which was treated by surgical excision of the fracture which is a surgical modality that according to our knowledge hasn't been addressed before in literature.

**Key words:** operative; femoral fracture; shaft; non-ambulatory; cerebral palsy

## BACKGROUND

Fractures in patients with cerebral palsy are very common and could be spontaneous due to reduced bone mass which is a result of various contributing factors like non-ambulation, poor nutritional status, anti-convulsant therapy [1-4] According to one study 82% of these fractures are sited in the lower limbs, 48% of the lower limb fractures are sited in the femur [3]. Treatment of femoral fractures in such patients is challenging and should be tailored according to the patients' needs and co-morbidities. Options for femoral fracture treatment include non-operative and operative treatment. Non-operative treatment include spica cast which is the main option in children under 6 years of age. Operative treatment compromise plate fixation, flexible nails (Nancy nails), IM nails (mature femur), and external fixation [5]. Surgical excision of the fracture in a closed femoral fracture in non-ambulatory CP patients is an option that to our knowledge hasn't been addressed before in literature.

## CASE STUDY

We present a wheelchair bound 20 year old male CP patient with spastic quadriplegia who came to the emergency department with a history from his carers that they felt something give in his right thigh whilst they transferred him. A full length femur radiograph showed a long oblique femoral shaft fracture on the right side (Fig. 1). Examination demonstrated that the patient wasn't comfortable on moving his right lower limb. The patient is known to have spastic quadriplegic cerebral palsy, chronic right hip dislocation for which he had a girdlestone procedure in 2010, history of bilateral adductor tenotomies in 2000, bilateral flexion deformities of the knee. Blood

tests were all normal. The decision was made to take the patient for theatre for closed reduction and insertion of flexible intramedullary nails (Nancy nails).

At surgery however, closed reduction was not possible so the plan was modified to open reduction and internal fixation by plate and screws but again reduction was impossible. The muscle spasm was so severe there was no way the fracture could be reduced open. It was therefore decided in this non ambulatory patient to excise the fracture spikes and to shorten the femur (Fig. 2). The aim of this procedure was to alleviate the pain and it was felt it would not have any adverse effect on his function as he was wheelchair bound and did not even stand for transfer, he required hoisting.

The patient had uneventful recovery and was comfortable after surgery with no discomfort during nursing. He was followed up in fracture clinic at 2 and 6 weeks time and was successfully discharged from clinic. Further radiographs were taken ten weeks later in the orthopaedic clinic as he was being followed up for his hip dislocation that showed considerable bridging callus formation (Fig. 3).

## DISCUSSION

Excision of fracture site is a palliative treatment in non-ambulatory CP patients as their mobility demands are limited. It's not a technically demanding surgical option compared to nailing or plating, the absence of metal work decrease risk of infection due to absence of foreign material in the body. It is however a slightly strange treatment to consider for a trauma surgeon who is used to fixing fractures. Interestingly however, in this case, the fracture did unite despite the lack of any fixation or immobilisation.

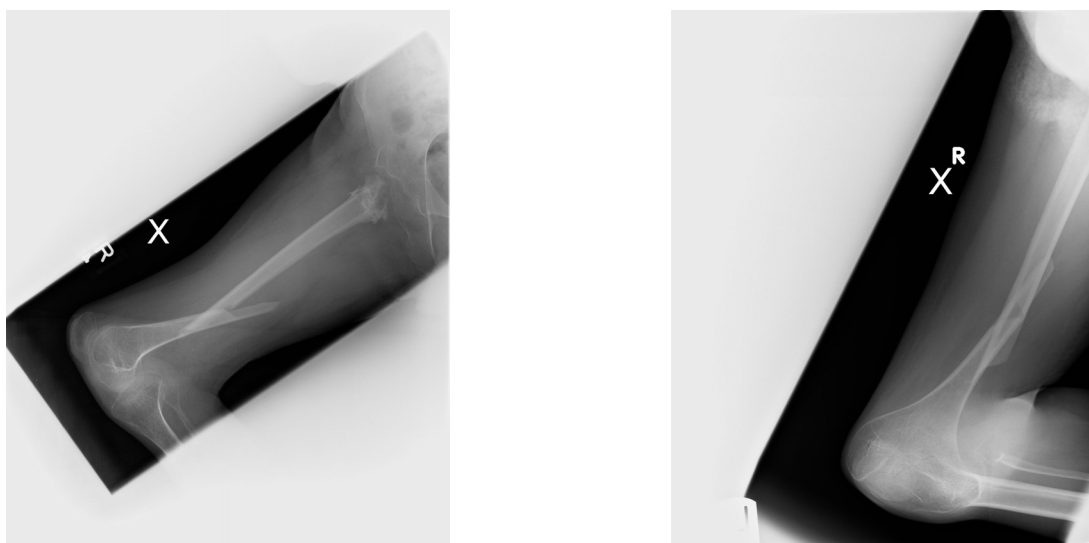


Fig. 1. X-ray views of full length right femur showing the fracture site



Fig. 2. Intra-operative x-ray after excision of the fracture spikes

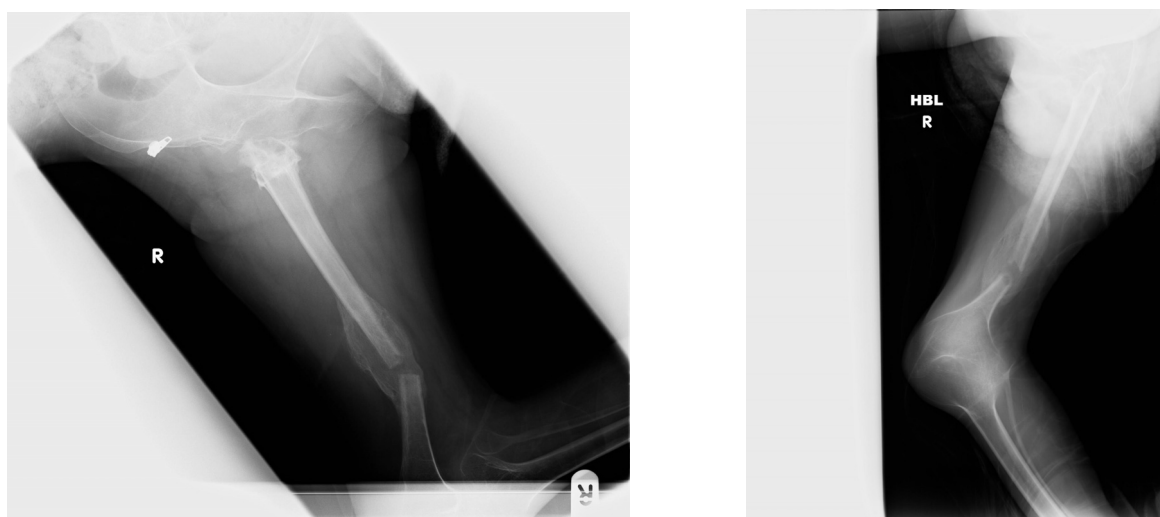


Fig. 3. Follow-up x-rays of the Femur showing bridging callus formation

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