CASE REPORT

Post-traumatic fishtail deformity of distal humerus—is there a risk for refracture?

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SUMMARY

We present the case of fishtail deformity of distal humerus in a 13-year-old boy presenting with a refracture 8 years after the original surgically treated lateral condyle fracture. This unusual incomplete vertical fracture of distal humerus starting at the apex of fishtail was treated non-surgically and went on to union but refractured yet again 12 months later. This also went on to full healing with conservative treatment, however the fishtail deformity persists. We discuss the possibility that fishtail deformity reflects an inherent weakness in the distal humerus. We suggest that children and parents should be warned about the potential risk for refracture, particularly if they participate in contact sports.

BACKGROUND

Fishtail deformity of distal humerus is an uncommon complication of paediatric distal humerus fractures. Treatment of this condition is based on presenting symptoms but most patients are asymptomatic and this complication often goes unrecognised. None of

the published series so far recognise this as a risk factor for refractures even though one author¹ has reported a fracture secondary to fishtail deformity. Does this deformity cause an inherent weakness of distal humerus? Should these patients be advised to refrain from contact sports?

CASE PRESENTATION

A 13-year-old boy attended our fracture clinic injuring his non-dominant left elbow during a football match. Radiographs (figure 1) showed an unusual vertical fracture of distal humerus starting from the articular surface between trochlea and capitellum going vertically up without exiting through medial or lateral cortices creating an incomplete fracture. Radiographs also showed evidence of fishtail deformity of distal humerus from osteonecrosis of trochlea.

Medical records confirmed history of a displaced fracture of lateral condyle humerus at the age of 5 years which required open reduction and wire fixation (figures 2 and 3). At that point the child was discharged from routine follow-up once the elbow movements were restored. Neither the child nor the mother could recall any ongoing symptoms with the elbow such as pain or limitation of motion before the second fracture. Examination of elbow revealed scar from the previous lateral approach to the elbow.

The new fracture was treated conservatively in a plaster for 4 weeks and then the elbow was mobilised. At 8 weeks radiographs showed satisfactory

Figure 1 First refracture—vertical fracture from the apex of fishtail deformity.

Figure 2 Original lateral condyle fracture.

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Figure 3 Original lateral condyle fracture postfixation.

healing and restoration of functional range of movements. He was again discharged with an open appointment to return in case of further problems.

He continued playing football and injured his elbow once again 12 months later.

INVESTIGATIONS

He sustained a T-shaped fracture of the distal humerus with extension to medial and lateral columns creating a complete fracture (figure 4).

TREATMENT

After discussing with paediatric orthopaedic surgeons from tertiary centres, conservative treatment in plaster was again pursued considering the minimal displacement and acceptable angulation that the fracture showed.

OUTCOME AND FOLLOW-UP

This third fracture went on to full healing and remodelling as shown in radiographs taken 6 months later (figure 5) with good functional range of movements; however, the fishtail deformity still persists leaving a gap between the trochlea and capitellum. He has been cautioned against the risk of further refractures should he continue playing football and have further injuries. Fixation of the fishtail deformity itself is technically challenging and can cause further stiffness of the joint or growth arrest. Hence, this was not considered as the primary option.

DISCUSSION

Fishtail deformity of the distal humerus is a rare complication of distal humeral fractures in children. All types of distal humerus fractures in children can lead to this complication regardless of whether the fracture was surgically treated or not.² Clinical presentation with loss of motion and/or pain is often delayed. The cause of the arrest is multifactorial and may be due to a gap in reduction of an intercondylar fracture, avascular necrosis of the lateral trochlear epiphysis or central premature physal arrest.

Glottzbecker *et al*¹ reported the largest series of fishtail deformity cases from a tertiary hospital. Most of the 15 patients in this series presented with pain or limitation of motion. Average time from index injury to presentation of fishtail deformity was 4.7 years. Only one refracture was noted in this series and conservative treatment was pursued for this patient. Subluxation of the radial head seems to be associated with

Figure 4 Second refracture—T-fracture pattern.

Figure 5 Final radiograph showing full healing with persistent fishtail deformity.

worse functional results. Early detection and surgical strategies in symptomatic cases may improve outcomes in these patients.

Learning points

- ▶ Paediatric distal humerus fracture patients need to be warned about the risk of fishtail deformity.
- ▶ Routine follow-up may not detect the deformity as it could take years to develop this complication.
- ▶ Fishtail deformity likely reflects an inherent weakness of the distal humerus which may predispose to refracture.
- ▶ Children with fishtail deformity and their parents should be counselled about the potential risk of refracture, particularly if they do contact sports.

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Contributors IL initiated the case report and contributed to the draft. HK wrote the first draft, edited it and obtained patient's consent.

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