CASE REPORT

Treatment of juvenile hallux valgus interphalangeus with a double compression headless bone screw

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SUMMARY

A 14-year-old girl presented with idiopathic valgus deformity of her left great toe at the interphalangeal joint (IPJ). The deformity, which had been present but asymptomatic for the past 4 years, began to enlarge and cause discomfort. The measured IPJ angle on anteroposterior standing X-ray was 26°. We treated the toe by medial closing wedge osteotomy and fixation with a double compression headless bone screw (DCHBS). Postoperative hallux valgus interphalangeus (HVI) angle was 14°.

BACKGROUND

Hallux valgus interphalangeus (HVI) is a rare disease for which double compression headless bone screws (DCHBS) have not previously been used in treating.

CASE PRESENTATION

A 14-year-old girl presented with deformity of her left great toe. She had valgus deformity of the interphalangeal joint (IPJ) for the past 4 years without any problems. The deformity began to enlarge recently and cause discomfort. She had no history of trauma to her left foot, and had no other deformity or medical problems. On physical examination, there was valgus deformity of her left great toe at the IPJ. There was no swelling or tenderness. The IPJ's range of motion (ROM) was limited to 30° of passive plantar flexion. X-ray of the left foot revealed valgus deformity in IPJ. The measured IPJ angle on anteroposterior standing X-ray was 26° (figures 1 and 2).

The patient was operated under general anaesthesia. A straight 3 cm incision was made on the proximal phalanx. A medial closed wedge

Figure 2 Preoperative X-ray.

osteotomy was performed at the base of the proximal phalanx. There was not enough bone proximal to the osteotomy line to accommodate the relatively bulky head of the screw, so another straight incision of 1 cm on the lateral side was made for the insertion of the screw distal to proximal.

HVI angle was measured at 14° postoperatively (figures 3 and 4). A short leg cast was placed for 1 month. Active and passive exercises and partial weight bearing was allowed immediately after surgery. The patient returned to daily and sports activities 3 months after surgery. Two years after surgery she was completely pain free, had no recurrence of the deformity and no limitation of the ROM in her left great toe (figure 5).

TREATMENT

The reason why DCHBS was chosen was because it has two independent compression units to provide additional compression to the bony fragments.

This treatment was successful as there have been no complications such as non-union, loss of fixation or problems with the wound.

Figure 1 Preoperative photography.

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Figure 3 Postoperative scopy image.

OUTCOME AND FOLLOW-UP

The patient was followed up for 2 years.

DISCUSSION

HVI is defined as an IPJ angle exceeding 10° .^{1 2} It is uncommon in the paediatric population. It may be congenital or acquired, and can present with or without pain. Osteochondral fractures may cause growth disturbance and progress to HVI. Although X-ray can show the deformity, MRI may also be helpful in detecting these lesions.^{3 4} Initial treatment of HVI is conservative. Patients with painless, non-progressive deformities that do

Figure 4 Postoperative photography.

Figure 5 Postoperative 1 year X-ray.

not cause discomfort are candidates for conservative treatment. Surgical intervention is necessary only when there are problems. The most common surgical approach is medial closing wedge osteotomy and fixation. Several options exist for fixation, such as lag screws, cannulated Herbert screws, Kirschner wire or interosseous sutures.⁵ DCHBS allow optimal reduction and safe screw fixation thanks to cannulation. The architecture with two independent proximal and distal ends makes separate turning of each fragment possible. This provides additional compression to the bony fragments.⁶ Our patient had progressive deformity and discomfort in her great toe. She had no history of trauma. Because she had no other osseous pathology in her foot, the deformity was described as 'idiopathic'. Surgery was undertaken, and medial closing wedge osteotomy was performed. Fixation was achieved with DHCBS.

HVI is rarely treated with osteotomy and fixation. DHCBS may provide easy and reliable fixation for this deformity.

Patient's perspective

I am very happy because my feet appear normal. I thank my doctor.

Learning points

- ▶ Hallux valgus interphalangeus (HVI), which is uncommon in the paediatric population, may be congenital or acquired.
- ▶ Double compression headless bone screws (DCHBS), which have two independent compression units, provide additional compression to the bony fragments.
- ▶ This is the first case to use DCHBS in HVI.

Competing interests None declared.

Patient consent Obtained.

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