Intermediate Outcomes of the Treatment of Dorsal Bunions of the Hallux Metatarsal Phalangeal Joint in Cerebral Palsy

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OBJECTIVES
Dorsal Bunions of the hallux metatarsal phalangeal joint (1stMTPJ) occur in children with cerebral palsy. They often occur in those young adults and adults who are nonambulatory and have muscle imbalance of their lower extremity. Those patients with GMFCS IV and GMFCS V often have an overpull of their tibialis anterior muscles and of the long flexors of the foot. A relative flexion of the 1st MTPJ combined with a calcaneus position of the foot can cause the dorsal bunion and lead to significant orthotic, shoe wear, and skin problems.

This consecutive, non-randomized review of GMFCS IV and V patients was undertaken to evaluate the preoperative condition as well as the technical and patient-based outcomes of arthrodesis of the 1st MTPJ as well as resection of the tibialis anterior tendon.

METHODS
Institutional Review Board approval was received to review the electronic medical records, radiographs and obtain outcome measures on 21 patients with GMFCS IV and V cerebral palsy who had a diagnosis of a dorsal bunion and had surgical treatment of the disorder. Sixty-five percent of the time we were able to obtain information from the patient, but the rest of the information was obtained from parents or caregivers.

Surgical Procedure:
1. In all but two patients, other surgical procedures were performed at the same time as the arthrodesis and tendon resection. These surgeries included excision of the femoral, tibia, and foot as well as tendon lengthening of the lower extremity. A dorsal bunion and calcaneus position were noted in all patients. (Figures 1a and 1b)
2. A 4 cm curvilinear incision was made over the tibialis anterior muscle anterior to the ankle joint. The tibialis anterior tendon was identified and a 2 cm section of tendon was excised.
3. A curvilinear incision was then made over the dorsal aspect of the 1st MTPJ to expose the distal aspect of the 1st metatarsal and the proximal phalanx of the hallux. Using specialized cup and cone reamers, the cartilage was removed from the distal metatarsal head and the proximal phalanx. A specialized plate which permits cortical and locking screws was then placed on the dorsal aspect of the 1st MTP joint. Bone graft from the reaming was used to pack bone around the arthrodesis.
4. A short leg cast was placed for 6 weeks in all patients.

DISCUSSION
Adding text: In order to add text, the text needs a "container" – a Text Box. Make a text box by:

a. Click on the Text Box tool or selecting Text Box under the Insert menu. (PowerPoint is very flexible in how its tools are arranged. The down side of that is that your tools may be in a different place than they are described here. The Text Box tool is often found near the bottom center – it looks like a mini page with an "A" in the upper-left part of it.)
b. Click or click-and-drag where you want the text to be. After this second step, you should see the rectangular shape of the Text Box. You can re-size it at any time by dragging one of the little square "handles". The box will also grow automatically as you type (if it needs to).

As in many programs, you can change the font and size by highlighting the text to be changed and then making the changes. A 100-point font is about an inch high. If you don't see the size you want in the selection list, you can enter it in automatically as you type (if it needs to).

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To move a Text Box, position your pointer over a part of the edge of the box that is not a handle. The pointer should become shaped like a plus sign with arrows. Click and drag the Text Box to the wanted position. You can change the color of the text, the edge, and the fill as well as other things under the Format menu Text Box.

RESULTS
All of the patients returned for followup. Mean followup was 17 months (6-34 months). 15/21 (71%) were male and 6/21 (29%) were female. 78% were GMFCS IV and 22% were GMFCS V

Outcomes:
Technical:
There were 5 delayed unions of over three months. All eventually healed but required prolonged immobilization in a cast or a brace.

CONCLUSIONS
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TIP: Avoid “cut and paste” when adding image or graphics files. Instead use Insert>>Picture>>File. This will give you better image quality. Try to use images that are approximately 200 DPI.