

Kinesiology Tape in Pediatric Bunion Treatment

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INTRODUCTION

There are many deformities that can occur at the first ray. Hallux abucto valgus otherwise known as a bunion is one of the conditions treated daily by the foot and ankle specialist. The condition presents in all age groups, both sexes, and with varying degrees of pain. Patients often complain of either pain directly over the dorsomedial eminence of the medial first metatarsal head or that the hallux is drifting over and crowding the second toe. Complaints also present as irritation from shoe gear or an interdigital heloma. Conservative management of hallux abducto valgus includes padding, toe spacers, steroid injections, shoe gear modifications, and orthotics. These treatments have held true over time and offer both positive and negative patient feedback.

Hallux abducto valgus in the pediatric patient presents with similar complaints as in the adult. However, the structural deformity and cosmetic appearance I have found to be one of the most disturbing factors in the pediatric patient. Often pain is not present, and surgery is not an option because of the age of the patient, or the parents are not ready to pursue this option. So then what or how does this patient who is not a candidate for surgery obtain treatment for the pain and deformity? Over the past few years I found myself treating pediatric bunions with orthotics and night-time bunion reducing braces. I must admit that this has worked very well in the reduction of the hallux abductus and the intermetatarsal angle over years of compliant treatment. This is attributed to both the patient still having growth plates that can be manipulated as the foot grows and consistent treatment with nightly bracing. Since this requires years of treatment, it can be tedious in the pediatric patient but effective. I have not found nightly bracing to be effective in the adult patient in reducing the deformity. However, I have seen the use of orthotics to be beneficial in pain relief in both the pediatric and adult patient.

Kinesiology tape has shown two-fold benefits in my practice in the pediatric patient: pain relief and changes in the structural deformity of the bunion. The pain relief is seen relatively quickly in the treatment. However, the changes in structure take years to be seen both clinically and radiographically. The method of taping the bunion helps in reduction of the deformity in the pediatric patient.

The placement of the tape over the area of pain helps in the reduction of pain with the bunion. In the past, general bunion splints and previous taping methods can only help the structure. Please note that Kinesiology taping in my practice is supplemented with orthotics and shoe modification.

WHAT IS KINESIOLOGY TAPE

In my practice I use KT Tape pro (KT Health). I have found it to be easier to apply, it sticks longer, and has improved patient feedback and results. KT Tape pro, pro extreme, and pro X are made using a highly engineered, ultra-durable synthetic fabric with 30% stronger elastic cores. Both the cotton and synthetic materials create unidirectional elasticity, which allows the tape to stretch in length but not in width. As a result, the elastic fibers provide stable support without restricting range of motion like a traditional rigid athletic tape. The fibers of KT Tape pro allow for moisture release, which is critical for comfort and wear-ability. As a result, the tape provides greater comfort over a longer period. KT Tape's specially formulated adhesive is latex-free, hypo-allergenic, and designed to last through humidity, sweat, and showers, and multiple days of wear (1). Contradictions for the use of the tape are infection, open wounds, tumors, and deep vein thrombosis.

When an area of the body is injured through impact or over-use, the lymphatic fluid builds up causing inflammation and swelling. This accumulation of lymphatic fluids may cause increased pressure on muscles and tissue, which can cause significant discomfort or pain. The type of application theoretically determines the physiological outcome. This type of application will cause the skin to form convolutions that lift the skin. These convolutions encourage regeneration of injured tissue by increasing interstitial space and alleviating interstitial pressures, which occur from swelling. This decrease in pressure also decompresses subcutaneous nociceptors, leading to decreased pain. It is also theorized that lifting the skin detaches filaments that attach the skin to endothelial cells of the lymphatic and capillary beds. This is proposed to create channels that allow for lymph to drain, thus reducing swelling and allowing increased blood flow to the area.

APPLICATION TECHNIQUES

Make sure the skin is clean and dry, free from lotions/oils (suntan lotion, skin conditioner, topical treatments, etc.) We have even found that some bath soaps have moisturizers in them that leave a residue behind, so if you want to play it safe just clean the skin with rubbing alcohol before applying. Never stretch the first or the last of the tape on either end. The tape on the ends should be applied directly to the skin without stretching, otherwise it will pull up and will not stick. Last, be sure to set the adhesive by firmly rubbing the tape and make sure all the edges are down (1).

When I apply the tape in the office I explain that the tape can be applied in two fashions. It can be applied approximately 30 minutes before a physical activity and then removed following. I also have patients apply the tape to the affected area utilizing the proper taping techniques and then re-apply every 5 days for three to four weeks. I have found that the tape left on for an extended period works better from a healing modality. However, in the pediatric bunion patient I have them apply the tape each night before bed. The child is then allowed to remove it in the morning and wear their orthotics during the day. A hand out with both written and pictured instructions along with a web address video is dispensed to each parent.

BUNION TAPING METHOD

1. The skin is cleaned and prepared for tape application. I have also advised parents/patients to spray their skin with a tape adhesive prior to application, which aids in the tape sticking better.
2. Use KT Tape pro, which comes in individual packs of 20 strips and are pre-cut to 10-inch lengths. I have modified the recommended technique on their website to better fit the length of strips for proper application (as a pre-cut strip is too long and wide for a pediatric first ray). This also cuts down on costs to the patient as less strips are utilized. The patient or parent will take

off 1 pre-cut strip from the roll (Figure 1). The strip will first get cut in half length wise. One side of the strip will then get cut in half down the middle of the strip. This makes two long narrow strips lengthwise and one short, wide piece (Figure 2).

3. The first long narrow strip is applied with no stretch to the lateral aspect of the hallux (Figure 3). The strip is then stretched to 50% (or enough to reduce the hallux abducto valgus without overstretching) plantar to the hallux and wrapped along the medial first metatarsal head toward the dorsum of the base of the metatarsals (Figure 4). The strip is then rubbed to help adhere to the skin and activate the tape (Figure 5).
4. The second long narrow strip is applied in the same manner with care to avoid overlap as much as possible. The second strip can also be utilized for any further reduction that was not gained in the first strip (Figures 6 and 7).
5. The final strip (short, wide piece) begins with no stretch on the plantar aspect of the sesamoids (Figure 8) then is wrapped along the medial first metatarsophalangeal joint with a 50% stretch and finished around the second metatarsophalangeal joint (Figure 9). The strip is then rubbed to help adhere to the skin and activate the tape.

Treating pediatric bunions can be complicated and involves multiple complaints from pain to cosmetics. What sets podiatrist apart from other clinicians is the ability to provide the patient and parent with multiple treatment options. Although many treatment options are available, none have been able to treat both pain and deformity at the same time. Kinesiology tape provides the patient with a very conservative treatment that addresses both the pain and deformity. Although it is not an instant correction, with consistent use in the pediatric patient, this treatment can show a reduction in the deformity over time. Having this as a tool in the clinician's bag of treatment options is an asset that can set you apart from the doctor down the street.

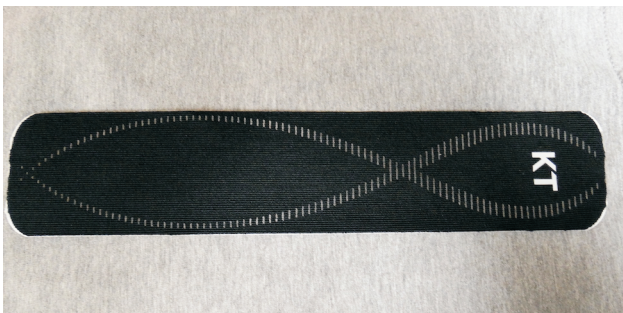


Figure 1. Pre-cut KT pro tape strip.

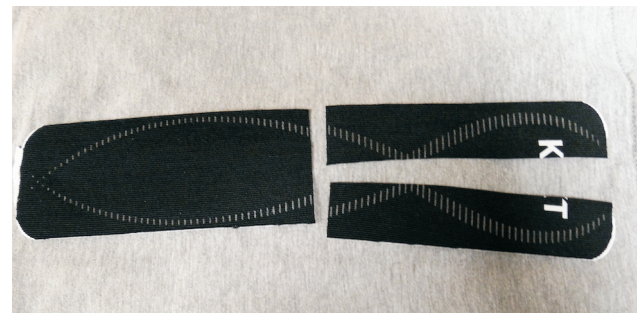


Figure 2. Cutting two narrow strips and one wide strip.



Figure 3. Application of the first narrow strip.



Figure 4. Stretching the strip.



Figure 5. Rub the strip to help it adhere to the skin.



Figure 6. The second narrow strip is applied.



Figure 7. Further reduction is achieved with the second strip.



Figure 8. The short, wide piece is applied.



Figure 9. The wide piece is finished around the second metatarsophalangeal joint.

REFERENCE

1. KT Health(2017)/ URL: www.kttape.com.