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Introduction

- RockTape® is an elastic tape - purported to mitigate pain primarily via microscopic fascial decompression and counter-stimulatory effects.
- Is claimed to provide a subtle lift of the underlying skin and to create a gentle and pleasant stimulation which competes with painful stimuli in the central nervous system, a concept referred to as the gate control theory of pain.
- Although research is limited, there are some studies which may support these claims.
- Treatment for joint contracture can be painful.
- The purpose of this case study was to describe the effects of RockTape® application as part of a multi-modal physical therapy treatment to address pain and range of motion deficits in a patient with contracture after prolonged immobilization.

Patient Background

- The case patient is a 14-year-old Caucasian male who suffered a non-displaced and closed tibia and fibula fracture.
- The fracture was set under anesthesia and his leg was placed in a long leg cast for approximately 10 weeks. Subsequently, the patient was placed in a lower leg hard cast and referred for physical therapy.
- The lower leg cast was worn for 6.5 weeks and for the duration of this case report.
- His chief complaints were difficulty flexing his left knee, pain in the left knee during active and passive knee flexion, and intermittent pain in the left leg and anterior thigh.
- He reported 10/10 pain on the Numeric Pain Rating Scale (NPRS) in the generalized location of his left knee during end range passive knee flexion but minimal pain at rest with his leg in extension.
- At initial evaluation he achieved 35 degrees of passive knee flexion, full passive extension, and displayed heightened levels of anxiety which limited treatment and also his compliance to a home exercise program.
- The patient had no previous history of left lower extremity fracture, surgery, or other pathology of the knee.
- Left hip range of motion was within normal limits and left hip flexion strength was at least 3/5. Formal manual muscle testing was not performed due to the patient's pain.
- Lower extremity sensation testing was normal bilaterally; however, the lower left leg, ankle, and foot (with the exception of the digits) could not be tested due to the cast.

Results

- The taping was done in seven different patterns over 10 sessions (examples shown below). A decompression application method was utilized.
- NPRS scores and knee flexion measured with a goniometer were gathered at the end of the sessions during passive knee flexion in supine with overpressure to end-range, first without RockTape® and then while wearing RockTape®.
- While wearing RockTape® the patient reported NPRS scores of 2.07 points and 7.67 points lower on average at the locations of his left knee and anterior thigh, respectively. This exceeded the minimal clinically important difference and minimal detectable change reported for the NPRS.
- During the first six visits in which RockTape® was applied, the patient was able to gain an average of 3.67 degrees on left knee end range flexion compared to without RockTape®. Further range of motion was limited by the lower leg cast to 135 degrees.
- Anxiety levels greatly decreased and home exercise compliance increased when the patient wore RockTape® in the clinic and at home.

Summary of Data

Visit Number	NPRS Without RockTape®	Passive Knee Flexion Without RockTape® (degrees)	Tape Applied	RockTape® Application Pattern	NPRS With RockTape®	Passive Knee Flexion With RockTape® (degrees)
8	8.5	120	Yes	Knee	7.5	125
9	8.5	125	Yes	Knee	6	133
10	8	127	Yes	Knee	6	130
11	8.5	130	Yes	Knee	6	130
12	8.5	130	Yes	Knee	6	133
13	8	130	Yes	Knee	6	133
14	8	135	Yes	Knee & Thigh	6	135
15	7	135	No	N/A	N/A	N/A
16	8	135	Yes	Thigh	0	135
17	8	135	Yes	Thigh	0	135
18	7	135	Yes	Thigh	0	135

Change in NPRS Scores

Visit Number	NPRS Without RockTape®	NPRS With RockTape®	Difference in NPRS Score
8	8.5	7.5	1
9	8.5	6	2.5
10	8	6	2
11	8.5	6	2.5
12	8.5	6	2.5
13	8	6	2
14	8	6	2
15	7	N/A	N/A
16	8	0	8
17	8	0	8
18	7	0	7

Average Reduction in NPRS After RockTape® Application

Knee Pain	2.07
Thigh Pain	7.67

Taping Examples



Discussion

- It is unknown whether decompression of the tissues underlying the skin, counter-stimulatory sensations, or a different mechanism was involved in the perceived reductions in pain.
- It is possible that the tape served to facilitate a placebo effect, as the patient was informed that the tape was designed to reduce pain. Additionally, if the beneficial effects were solely from counter-stimulation, maybe any adhesive tape could have worked to reduce his pain.
- NPRS scores of anterior thigh pain were more influenced by RockTape® than left knee pain. This might be explained by differences in tissue structure between locations with greater extensibility found on this patient's thigh than his knee.
- Left knee flexion range of motion does not seem directly correlated to decreases in patient reported pain.
- RockTape® worn outside the clinic helped facilitate the implementation of a home exercise program to increase range of motion and may be beneficial for decreasing anxiety associated with pain and for increasing patient compliance to a home exercise regimen.

Conclusions

- Based on this case report, the potential implications for the use of RockTape® include pain reduction, decreased fear avoidance and anxiety during interventions, and increased patient compliance.
- Further research should be conducted to isolate the mechanism(s) responsible for the improvements in perceived pain and to identify body structures which may respond differently to elastic taping.