Use of Cupping In The Treatment of A Proximal Hamstring Tear

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ABSTRACT

Background/purpose: There is limited research regarding the use of cupping to treat proximal hamstring tears. This case report describes the rehabilitation of a middle-aged male who sustained a tear of the right proximal hamstring muscle. **Case Description:** This retrospective case report describes the rehabilitation of a 41-year-old male that attended physical therapy with the primary early intervention of cupping. He was treated in physical therapy two times a week for a total of 10 sessions. The patient was non-weightbearing on the right lower extremity and ambulated with bilateral crutches. The patient reported his pain rating between 4/10 (rating at initial examination), and 10/10. Manual muscle testing of the right lower extremity (LE) included hip flexion 3+/5, hip extension 3/5, hip abduction 4-/5, and knee extension 4+/5. The therapist couldn't assess right knee flexion strength due to pain. Strength of the left LE was grossly 5/5. Right LE range of motion (ROM) assessed via goniometry as 0º hip extension, 90º hip flexion, and 131º knee flexion. Left LE ROM was 10º hip extension and 139º knee flexion. The patient had an initial score of 7/80 on the lower extremity functional scale (LEFS). His treatment included manual therapy, cupping, stretching, and therapeutic exercise. During treatment sessions 3-8, three dry cupping techniques (stationary, massage, burping) were completed on the proximal hamstring with small and medium cups and light to moderate suction. In general a total of two cups were applied per treatment and the duration of the cupping treatment was approximately 5-10 minutes. In the last four treatment sessions, the patient completed a return to run program, so he would be able to return to work. **Outcomes:** The patient had a good response to cupping over the course of physical therapy. The patient improved strength of right hip flexors, extensors, abductors and knee flexors and extensors to 5/5. The subject improved right ROM of hip extension to 10º and knee flexion to 140º. The patient improved the LEFS to 80/80 and met all his physical therapy treatment goals. The patient was discharged with no pain at rest, running, or daily activities. **Conclusion:** The use of cupping as a part of the treatment plan allowed for a patient that sustained a proximal hamstring tear to achiev normal LE ROM, strength, gait, and functional status.

Figure 1. Silicone cup used in treatment

INTRODUCTION

- It has been reported that up to four months may be required for patients to return to normal physical activity following conservative treatment of a tear of the hamstring muscle.[1]
- Cupping is a procedure in which cups (glass, plastic, or silicon) are applied to the skin creating a negative pressure upon application to draw the superficial tissues away from deeper tissue in an attempt to decrease tissue adhesions, promote blood flow, and facilitate tissue healing.[2]
- No research is available regarding the use of cupping in the rehabilitation of hamstring muscle tears, or the time to return to physical activity using cupping treatment methods.
- The purpose of this case report was to describe the use of cupping in the rehabilitation of 41-year-old male patient who suffered a proximal tear of his hamstring muscle.

CASE DESCRIPTION

- The patient was a 41-year-old male who suffered a moderate tear of the right semitendinosus and long head of the biceps femoris muscles 2 cm distal to the muscle origin at the ischial tuberosity. The tear occurred at work as he was pursuing a criminal. Patient had no medical co-morbidities or functional limitations prior to his injury.
- Patient was non-weightbearing and ambulated with bilateral crutches. He rated his leg pain at 4-10/10.
- Patient demonstrated AROM limitations in hip extension and knee flexion (see Table 1), and global hip and knee strength deficits (see Table 2).
- The patient was seen for a total of 10 treatment sessions over the course of 4 weeks, with a plan of care that included dry cupping, stretching, manual therapy, and therapeutic exercise.

Table 1. Active Range of Motion

Active range of motion (degrees)	**Left**	**Right**	**Right**	**Right**
Movement (norm range)	Initial	Initial	23 day follow-up	Discharge
Hip flexion (110-120)		90		
Hip Extension (10-15)	10	0	10	10
Hip Abduction (30-50)		40		
Knee flexion (135)	139	131	135	140

INTERVENTIONS

- During session 2-6, patient had interventions that included soft tissue mobilization (STM) of hamstrings, anterior to posterior knee joint mobilizations (grade II), gentle hamstring stretching, therapeutic exercises with gravity eliminated and gravity positions.
- During sessions 3-8, cupping interventions was added. The type of cupping that was provided was stationary cupping, massage cupping, and burping cupping. The cupping started as stationary cupping and progressed to massage cupping after the tissues started to loosen up. There were two cups applied with light to moderate suction. The first session of cupping was for 5 minutes and then progressed to 10 minutes in the next following sessions as patient tolerated well (see Figure 1).
- During treatment sessions 7-9, the patient began a progressive running program to facilitate movement requirements for return to work status. Over the course of these sessions, the patient progressed from walk / run intervals (5-minute walk / 1-minute run @ 4.5 mph; total activity time 15 minutes) to walk / run intervals of total time of 30 minutes. The running speed was gradually increased to 6 mph over the course of these treatments. The patient was discharged at visit 10.

OUTCOMES

The patient met all of the defined treatment goals which included: being independent with progressed and modified home exercise program; decreasing pain symptoms to no more than 1/10; improving right leg strength to 5/5; improving right knee ROM to 0-139º; ambulating on even and uneven terrain independently; demonstrating the ability to negotiate level and unlevel surfaces at variable velocities and in multiple directions without increasing pain; being able to ambulate for 60 minutes without pain or difficulty, ascend and descend a flight of stairs using reciprocal pattern without pain or difficulty, tolerate sitting for 4 hours for job duties, and run for 5 minutes for job duties. At discharge, the patient scored an 80/80 on the LEFS.

Table 2. Lower Extremity Strength Testing

Lower Extremity Muscle Strength (5-point scale)	**Left**	**Right**	**Right**	**Right**
Movement	Initial	Initial	23 day follow-up	Discharge
Hip Flexors	5	3+	5	
Hip Extensors	5	3	4+	5
Hip Abductors	5	4-	5	
Knee Flexors	5	Not assessed due to pain with sub-max isometric contraction	4+	5
Knee extensors	5	4+	5	

DISCUSSION

The results of this case report showed that dry cupping proved to be an effective complimentary intervention in the treatment of a proximal tear of the hamstrings muscle, returning the patient to his active job responsibilities in the course of a month.

According to the systematic review by Kuske et al,1 it is expected that approximately four months may be required to return to normal activity with non-operative hamstring tears. The patient in this case study was discharged in 30 days and returned a physically active job with no restrictions.

Study limitations include multiple therapists providing cupping therapy (one certified, one uncertified). As other treatments were involved in this case, it is not possible to know the specific treatment effect of cupping in this patient.

CONCLUSION

The results of this case report show that a rehabilitation plan that included cupping therapy as an early treatment intervention proved effective in reducing pain and increasing ROM and strength in a patient suffering from a proximal tear of the hamstrings muscle.

REFERENCES

1. Kuske B, Hamiliton D, Pattle S, et al. Patterns of Hamstring Muscle Tears in the General Population: A Systematic Review. *PLoS One.* 2016; 11(5): e0152855. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4856270/ Date accessed 2/26/19.
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