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CASE REPORT

New Position for Hip Arthroscopy: No Perineal Column Traction Combined with Trendelenburg Position

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Abstract

Objective: To discuss the effect of no perineal column traction and Trendelenburg position in hip arthroscopic surgery.

Methods: 38 patients in our hospital from December 2021 to February 2022, including 28 males and 10 females; aged 13 to 68 years, average of 41.3 years. Physical examination and pain assessment were performed on the same day, 3 days and 4 weeks after surgery. During the operation, the tilt angle of Trendelenburg and the initial traction force were measured by pulling scale, and the operation time, traction time and the occurrence of complications were measured.

Results: Results show that no perineal column traction combined Trendelenburg position traction can effectively avoid perineal area related traction complications, has the advantages of simple, safe, easy to operate, worthy of application.

Keywords

No perineal column traction, Hip arthroscopy, Care points, Position, Complications

Introduction

Sports medicine in the 21st century, especially hip arthroscopy technology, has progressed rapidly [1,2]. Due to the complex structure of hip joint, deep position and difficulty in operation, the development of hip arthroscopic surgery is relatively lagging compared with arthroscopic surgery such as shoulder and knee [3,4]. However, with the continuous understanding of femoroacetabular impingement syndrome disease and the innovative development of arthroscopic surgery technology, hip arthroscopic technology has advanced rapidly, and the number of surgeries has doubled. Due to the anatomical characteristics of hip joint depth, joint space stenosis and joint height matching, the hip joint space should be pulled open through lower limb traction for surgical operation. At present, most clinicals use supine perineal column to complete hip arthroscopic surgery [5,6]. The procedure is relatively complex, and the operator learning curve and the operation is time-consuming [7]. At the same time, some hospitals have no special traction bed for hip arthroscopy, so the implementation of hip arthroscopic surgery has encountered a bottleneck [8]. In particular, the intraoperative perineal column will cause time compression of the perineal area, easy to lead to postoperative soft tissue and nerve damage in the perineal area and other complications [9]. Among them, Nwachukwu, et al. studied hip arthroscopy in 218 adolescent population and found an overall complication rate of 1.8%, with perineal nerve palsy accounting for 50% [10]. Domestic studies have shown that hip arthroscopic complications are more traction complications, with an incidence as high as 5.6%, among which the most common is temporary nerve palsy, and patients often complain of skin numbness in the perineal area [11]. Reports point out that cotton pad covering the perineal column can be used to avoid postoperative perineal injury. In addition, the new foam dressing wrap the perineal column, and reasonably control the traction time and traction force (continuous traction does not exceed 2h, force < 70 pounds) can also reduce the occurrence of complications in the perineal area. However, no matter what kind of perineal column

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treatment method is used clinically, the occurrence of postoperative complications cannot be completely avoided [12]. This study explored the clinical effect of hip arthroscopy without perineal column traction and Trendelenburg position, evaluate the safety and effectiveness of position, and provide theoretical support for subsequent studies.

Overview of Problem

General information

We selected 38 patients undergoing hip arthroscopic surgery in our hospital from December 2021 to February 2022, respectively, including 28 males and 10 females aged 13 to 68 years, with an average of 41.3 years.

No perineal column combined with trendelenburg body position placement

Patients were put under general anesthesia. Lying supine on the operating bed, the healthy side upper limb is fixed on the external exhibition frame, and the upper limb suspension on the affected side is fixed on the chest support frame. Hiump on the end of the bed, body cadre and sheet contact. The cushions of the foot and ankle bony protrusion are wrapped and placed in the traction rack boot bracket. The abduction of the healthy limb was fixed at 45°, and the affected lower limb was placed in a neutral position with internal rotation for 15°. In the contralateral groin area, the operating bed was fixed with a thickened restraint band oblique across the groin, and the Trendelenburg inclination of 10~15° was adjusted to use the friction between weight gain and the operating bed to counter traction (Figure 1). During the operation, the tilt angle of Trendelenburg was measured by the mobile phone software (Figure 2), and the operation time, traction time and the occurrence of complications were recorded and counted.

Evaluation index

Mean operative time and traction time were recorded for all patients. The Trendelenburg tilt angle and initial traction force were recorded with patient sex and body weight. Physical examination and pain assessment were performed on the same day, 3 days and 4 weeks, and specific problems of surgical complications were recorded. Pre-operative and postoperative evaluation was performed using the Harris, the international hip outcome tool iHOT-12, and the VAS scoring system.

Observation of the complications

The overall position of patients without perineal column traction surgery is shown in Figure 1. Thanks to the absence of perineal column position, there is no need to consider the complications of the perineum, but also pay attention to the skin condition of the patient. The upper limb of the affected side of the patient is spent in the way of arm plate, and the upper limb of the healthy side is fixed on the head frame with soft cushion and restraint belt. Before surgery, both upper limbs should be properly fixed, and the occurrence of compression injury to the skin of both upper limbs should be observed during and after surgery. During the operation, the hips of the lower limbs should be pulled and fixed with restraint lining cushion. Before the operation, the cushion should be lined well and tightened properly. After the operation, the degree of skin pressure and skin condition of the traction position should be observed. The feet are placed in the traction

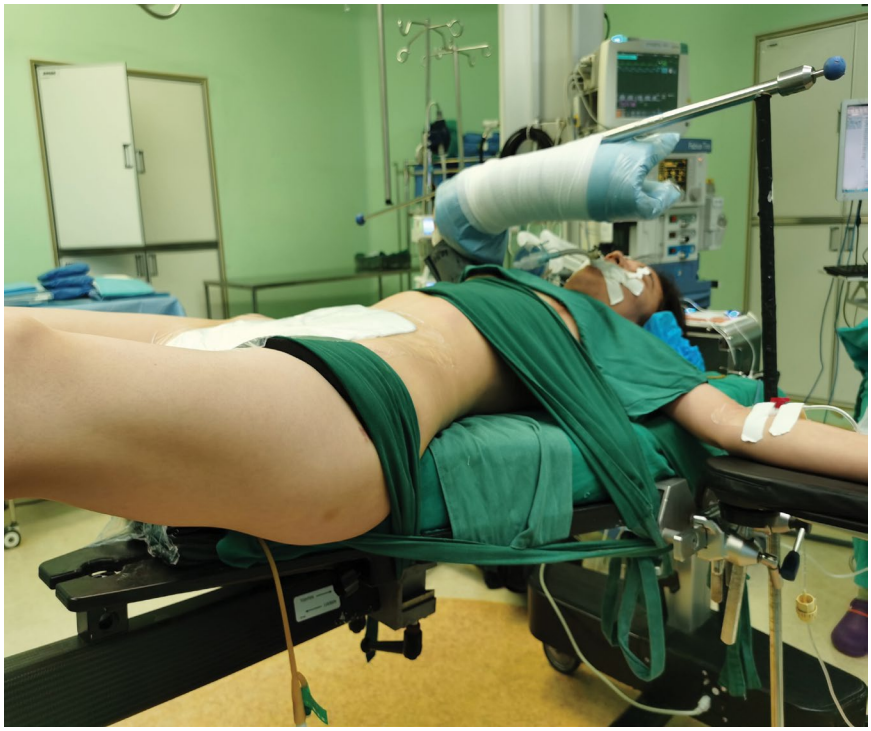

Figure 1: No perineal column combined with trendelenburg position.

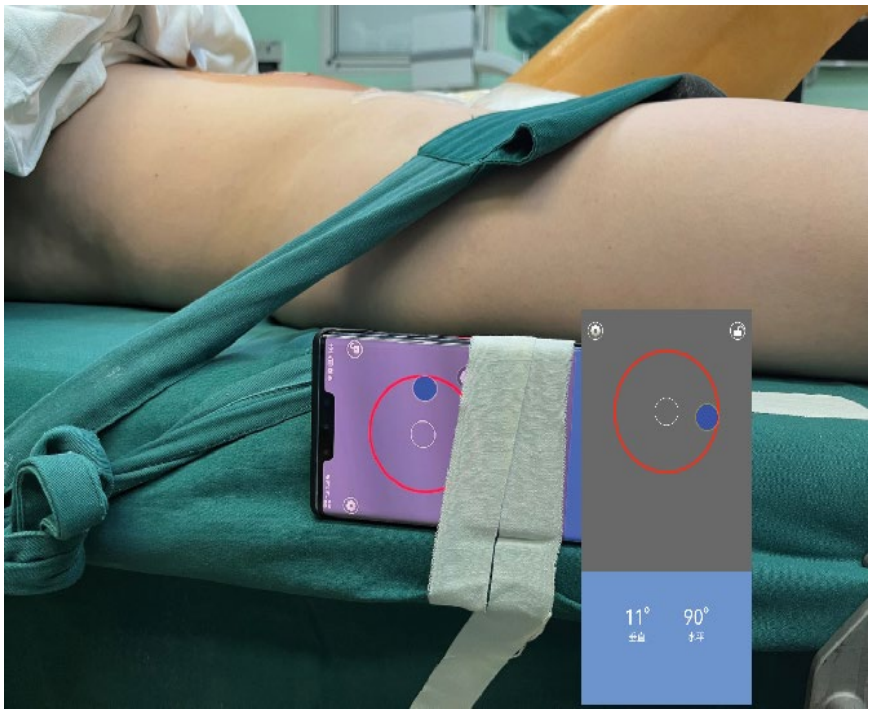

Figure 2: Adjusts the Trendelenburg inclination from 10 to 15°.

bed boots. The feet are protected with gauze pad to prevent the feet from taking off and observe the skin condition of the feet. Attention should also be paid to the skin condition of the sacral tail, shoulder and the compression site.

Approaches

General situation and body position-related factors analysis

Mean operation time (78.73 ± 15.45) min and traction time (35.5 ± 8.36) min. Trendelenburg The tilt angle and initial traction force were related to the gender and body weight, and the required inclination and initial traction force were larger in men, which were positively associated with body weight. And all the patients did not have postoperative perineal area injury and other related complications.

Comparison of the preoperative and postoperative Harris, the international hip outcome tool iHOT-12, and VAS scoring systems

Harr (51.38 ± 5.15) with postoperative score (2.21 ± 6.59), iHOT-12 (50.31 ± 4.25) and (73.25 ± 5.35), VAS (7.63 ± 0.98) and postoperative score (2.18 ± 0.57). All patients had significantly better postoperative hip function scores and pain scores than preoperative scores.

Observation of the complications

After strict care and observation before and after surgery, all the patients had no perineal injury, and only one of the 38 patients had red skin pressure on the back of the foot after surgery, which completely subsided after two days of clinical care, and no skin damage occurred in the other cases, with good results.

Perioperative Nursing Implications

Hip joint is a typical ball and socket joint, because the joint socket is particularly deep, so it is also called the pestle and mortar joint [13-15]. Made of the acetabulum on the hip bone and the femoral head on the femur, it is the deepest and largest joint in the body, and the most important function is weight-bearing. Hip arthroscopy technology has increasingly become a research hotspot of sports medicine [16,17]. But to get the arthroscope into the joint cavity to complete the operation, the deepest and largest joint of the body must be pulled out of the space [18]. Bad complications such as damaged perineal area occur after surgery, which is also the main factor affecting the recovery of patients [19]. Therefore, the selection of the appropriate traction position is extremely important for the reduction of hip arthroscopic complications.

According to the literature, it is learned that some scholars in Europe adopt the method of external fixation traction in acetabum and femoral neck respectively. This method can effectively avoid traction complications. However, it has large trauma and complicated operation, which affects the intraoperative approach establishment and microscopic operation, and affects the intraoperative hip flexion activity, which has obvious limitations [20]. And scholars use yoga mat of sliding technology for reverse traction, at the same time the yoga mat 2/3 in the operating bed, 1/3 divided into small pieces, respectively placed in the chest, elbow, wrist and ankle, to protect the bone process,

avoid iatrogenic injury and neurological dysfunction in, in the case of not using Trendelenburg position hip arthroscopic surgery, the effect is good, but the cost of yoga mat and availability is poor, implementation is difficult [21]. Studies will be special medical foam mat on the operating bed, the patient body directly contact the foam pad, then the operating bed in the head low foot high, using the patient's own gravity and friction between the resistance with the operating bed, without the use of perineal column against normal distraction, to avoid the occurrence of intraoperative perineal complications, which requires additional materials and special hip arthroscope traction bed [22]. Then, based on the relevant research of the above experts and scholars, we try to innovatively propose a method suitable for the perineal column traction for our Chinese people. In the case of not using any foam or yoga mat, the simple perineal column traction combined with Trendelenburg position to traction the hip joint. The patient lies supine flat on the back 10-15 degrees with feet above the head. This technique creates sufficient resistance through gravity and friction between the patient's body and the bed to successfully pull open the hip without the perineal column. This position does not require a dedicated hip arthroscopic traction bed, no dedicated material, and does not cause complications such as perineal compression.

Recently, hip arthroscopy surgery has become increasingly used [8,23]. During the operation, the patient was in the supine position, and the continuous traction of both lower limbs. The perineal column caused the perineal skin pressure for a long time, causing neurotrophic disorders, blood circulation disorders and even local tissue continuous ischemia, and the risk of pressure injury was greater [24]. There are no successful reports on hip arthroscopy surgery with perineal column descending in abroad, but all of them have their disadvantages and there is no application of related products and technologies in China [25]. Mean operation time (78.73 ± 15.45) min for 38 included cases and traction time (35.5 ± 8.36) min. The results showed that the Trendelenburg tilt angle and initial traction force were correlated with the gender and body weight of the patient, and the required inclination angle and initial traction force of men were larger and positively associated with body weight. Moreover, this position left all patients without postoperative perineal injury and other related complications. Before and after the evaluation using Harris, international hip outcome tool iHOT-12, VAS scoring system, all patients' postoperative hip function score and pain score were significantly better than before surgery. It is proved that this method can effectively reduce the complications of the perineal region and can ensure the smooth operation of hip arthroscopy.

Conclusion

To sum up, no perineal column traction combined Trendelenburg position technology can ensure that the hip can be traction, and under the premise of ensuring the operation smoothly, can effectively avoid perineal area and other related traction complications, has the advantages of simple, safe, easy to operate, for hip arthroscopic traction provides a new reliable solution, is worth promoting.

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