CLINICAL EFFECT OF MENISCUS TEAR REPAIR SURGERY BY ARTHROSCOPY

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ABSTRACT
An analysis of the clinical effect of arthroscopy as guidance in repair surgery for meniscus tear to accelerate physical recovery.
Method: 3100 patients who underwent meniscus tear surgery with arthroscopic aid in various hospitals from Feb 2012 to July 2014 were followed up after 1-year to observe the postoperative clinical effect. Results: there were 3002 patients showing meniscus healing, with healing rate of 96.8%, indicating that the treatment achieved significant effect. Conclusions: with less wounding during surgery and faster post-operative recovery, arthroscopic-aided meniscus tear repair surgery was very effective in accelerating recovery and rendered meniscus repair more effective.

Key words: Arthroscopy, Aid, Meniscus, Tear, Repair Surgery, Therapeutic Effect.

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Introduction
In recent years with medical development and progress research and knowledge of the meniscus have improved continuously. Moreover, medical personnel also pay more and more attention on the effect of meniscus. Meniscus can effectively maintain normal function of patient’s knee-joints and is also an irreplaceable component of knee joints. Patients with meniscus suffer severe knee joint dysfunction, and complete or partial removal of meniscus has an impact on arthritis, creating certain difficulties for the treatment of meniscus injury(3).

It is suggested to retain the tissue function of meniscus and repair the red and white cross area of meniscus or red area of meniscus using appropriate surgery. Of all therapies, arthroscopic-aided meniscus tear repair surgery has extraordinary effect. With arthroscopic aid the meniscus can be sutured. As a common minimally invasive treatment, arthroscopic-aided meniscus tear repair surgery can effectively enhance recovery of knee joints and physical health(2). In this research, 3100 patients were selected from various hospitals for stochastic analysis, and the results are reported. Figure 1 is an illustration of meniscus tear.

Figure 1: The picture of meniscus tear. (Picture Source:[1]
Zhang Hongtao, Liu Kang, Li Qing, Zeng Yijun, Cai Daozhang.
Repair of Meniscus Injury With Fast-Fix Arthroscopy[1].
Method

General data
IA total of 3100 patients from various hospitals from Feb 2012 to Jul 2014 were selected, 1726 males, 1374 females, the oldest was 58 years old and the youngest was 17 years old, average age at 30.6±2.9 years. Newly injured patients numbered 1926 and old injured patients numbered 1174. There were 1013 patients with medial meniscus injury, 1087 patients with lateral meniscus injury, and the remaining 1000 patients with cruciate meniscus injury.

Surgical method
After anesthesia, the attending doctor performed routine arthroscopic inspection verifying the surface of the meniscus and determining the tear. After knotting with knot pusher, the line was cut off, and then sutured at the tip of the tear to prevent a severe tearing situation. Subsequently the meniscus tear edge was cut into corresponding shapes using ion scissors\(^3\). During surgery appropriate protocols and procedures were followed to ensure smooth progress of the surgery, avoid damaging cartilage of the knee articula and secondary meniscus damage, and ensure solid implementation of suturing and fixing. In addition, different operation methods were followed according to the different injured parts of meniscus, so as to get close to the suture needle and effectively accelerate the recovery of meniscus. By tying a fixed knot at an appropriate location and feel breakthrough during meniscus transfixion, meniscus was reset using trial trench, achieving ideal repair effect\(^\_4\). The location of meniscus and the repair are shown in Figures 2 and 3, respectively.

Figure 2: Location of meniscus. (Picture Source:\[2\] Wang Xuesong, Liu Xin, Feng Hua, Hong Lei, Zhang Hui. Clinical Research of Repairing ramp Injury with Posterior Inner Assistant High Approach Arthroscopy[J]. Chinese Journal of Sports Medicine, 2014, 04:287-291)


Postoperative rehabilitation
After operation, repair work and ligament injury needs were done according to corresponding requirements of cruciate ligament reconstruction. For patients with cruciate filament injury, the principle of activity in the morning and weight-bearing in the evening should be followed. In addition, medical personnel inform patients not to do full speed running or weight bearing running within 2 months, and daily rehabilitation exercise was suggested after a half year\(^5\).

Functional classification of meniscus
As an important component of the knee joint, meniscus plays a vital role in knee joint motion. Meniscus can fill knee joint and match the longitudinal joint surface between tibia and femur. Difference of meniscus locations can effectively avoid the incarceration caused by the flexion-extension between joint capsule and synovial membrane; in addition, meniscus can effectively improve the lubrication function of knee joint\(^6\). As one of the key parts for increasing the stability of knee joint, meniscus is equipped with strong weight bearing capacity and wave-absorption capacity, so more severe damage of the knee joint can be avoided. Meniscus tear can be categorized into horizontal meniscus tear, longitudinal meniscus tear, and combined meniscus tear. Meniscus tear repair surgery can avoid severe impact caused by complete removal of meniscus. Meniscus tear repair surgery can determine the indications of traditional operations. During the repair process, the most important point is to pay attention to the stability of the knee joint and patient age\(^7\).
Results

There were 3002 patients with meniscus healing, healing rate 96.8%, which is a significant achievement. During meniscus repair, bleeding should be treated immediately to avoid the impact on the patient’s physical health. Meniscus tear is a common injury, and the repair treatment is of vital importance in clinical practice.

The traditional meniscus tear repair method can directly suture with the observation of cavum articularare. In recent years, with the continuous development of medical equipment, the meniscus suture technique has been developed into a mature stage and the minimally invasive surgery has also been effectively developed. Meniscus tear repair surgery is a common type of minimally invasive surgery. When performing arthroscopic-aided meniscus repair, the operation equipment as well as operation methods are different. Medial meniscus tear will not cause severe shock. For the patients who have not been able to receive meniscus repair, the removal of the meniscus is suggested. When suturing the wound, it is suggested to pay attention to the suture angle and control the needle direction. Once the suture needle is exposed, the wound will not be effectively fixed, and thus the articular cartilage will be damaged to some degree, with a significant impact on the recovery of knee joint.

In addition, we need to effectively control the needle depth during the suture process, clear the broken tissues around the torn meniscus, and determine the depth of the suture and avoid unsatisfactory risk to control the effect caused by over deep needle. During suture, it is also necessary to protect the knee joint part and avoid the knot phenomenon, which will cause prolapse of the suture knot and failure of the suture. As a result, the clinical effect of repair surgery will be greatly compromised. During the surgical process, the operation method should also be chosen carefully. With careful surgical movements and accurate, stable operation procedures, the maximum therapeutic effect can be achieved, so as to accelerate the recovery of knee joint function.

Conclusions

Meniscus tear is a very common type of knee joint injury. During the treatment it is normal to adopt meniscus enucleation. However, with the increasing development of medical techniques, people have gradually recognized that the meniscus plays an important role in protecting the tibia joint. Therefore, meniscus tear repair surgery has received more and more attention in clinical practice.

In a word, regarding the different types of meniscus tears, performing meniscus tear repair surgery with arthroscopic aid can effectively enhance recovery of the knee joint, increase the success rate and healing rate of surgery, and decrease the damage created by surgical procedures, so as to accelerate healing. With the increased attention on the meniscus in the medical community, meniscus repair surgery is used more and more in clinical practice and meniscus removal is not suggested before full consideration. Therefore, meniscus repair surgery becomes more and more important. With arthroscopic guidance, the success rate of meniscus repair surgery can be enhanced, the damage of surgery can decrease, and thus effectively improve the patient's recovery. Therefore, such treatment should be applied in clinical practice, and medical personnel should promote arthroscopic-aided meniscus tear repair surgery, letting more and more people learn and accept the surgical method.

References


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