



CLINICAL ANALYSIS ON ARTHROSCOPIC MENISCAL REPAIR BY FAST-FIX SYSTEM

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ABSTRACT

To evaluate the operation skill and curative effect of Fast-fix system used in the arthroscopic meniscal repair. **[Methods]** A retrospective analysis was done in 32 patients who received in the arthroscopic meniscal repair by Fast-fix system. Among them , 12 were left knee, 20 were right knee, 9 were medial meniscus, and 23 were lateral meniscus. **[Result]** Average follow-up was 2 years and 6 months. 20 patients had no positive symptom, 7 patients had tenderness at the joint space, 4 patients had joint effusion who received aspiration repeatedly and improved, 1 patient had positive McMurray and twisted lock symptom Lysholm score: preoperative score was 50.6 ± 3.3 , postoperative score was 89.1 ± 7.7 ($P < 0.01$), and the total good rate was 90.6%. **[Conclusion]** Fast-Fix system is a safe and effective tool used in meniscal repair, which has some characteristics such as simplicity of operation, less injury, solid fixation, the benefit of meniscal healing.

Keywords: Arthroscopic, meniscus, Fast-fix

Knee meniscus injury is a common disease of loss due to the blood supply of the knee meniscus only on the outer periphery, conventional meniscus resection was the treatment of choice for knee meniscus tear. But the development of a better understanding of technology as well as knee arthroscopy and later with the function of the meniscus, the meniscus after total knee caused by degenerative arthritis, knee surgery for half torn meniscus forming gradually advocate or suture, thereby delaying and mitigating degenerative knee arthritis. My orthopedic hospital in February 2014 - January 2016 were treated in Arthroscopic meniscal Fast-fix suture restorers in 32 cases, and achieved good results, are as follows:

MATERIALS AND METHODS

General Information:

The group of 32 patients, 21 males and 11 females, aged 17-45 years, mean 29.3 years old. Therefore, patients are unilateral injury, 9 cases left knee in 12 cases, 20 cases of right knee, the medial meniscus, 23 cases of lateral meniscus. Longitudinal tear meniscus was 18 cases, seven cases of red and white area injury, damage to the red zone three cases, complex tear in 4 cases. All patients had joint pain, play soft legs in 12 cases, 24 cases of twist, the joints in 17 cases, 10 cases of joint activity limitation. Examination joint space tenderness 27 cases, McMurray test was positive in 30 cases, preoperative MRI examination were found meniscal signal changes, the first eight cases with cruciate ligament damage performance, 5 underwent anterior cruciate ligament reconstruction.

Procedures:

Patient supine, routine epidural anesthesia. Within the lateral knee arthroscopy take regular eye check-road exploration of the entire joint cavity, arthroscopic meniscal determine the location and extent, by a meniscus rupture filing polished surface, making it fresh, it is conducive to healing after suture. At the same time clean up the site of injury hyperplasia, synovial hyperemia. Take the inside of the knee after suture corner straight position, assistant to the extension position valgus knees to the medial joint gap increases; 4-bit word suture posterolateral corner. Fast-Fix suture system 0 ° and 30 ° two angles, intraoperative adjustable suture angle and direction, its front end is pointed, which runs through the suture meniscal and articular capsule. Fast-Fix has two internal "T" type implants and does not absorb the USP polyester braided wire, when the needle punctured the meniscus, T will follow through with the fiber tip, and when the tip rollback, "T" on was brought out from the chute, then stay in the outer meniscus formed fixed. After the "T" next to a knot, and then followed by a slipknot, can be driven, in the post second "T" then push the handle on the handle can be used. Remove the white protective plug, push the handle forward launch, when you hear a slight clicking sound, the second T was launched. This time down (vertical suture) or laterally (horizontal stitching) second needle piercing the second T to stay in the outer wall. The second T fixed, it will push slipknot dead, then cut U.S.P line.

After treatment:

Postoperative knee brace adjustable to 30 ° -0 ° -0 ° position for 4 weeks, 2 days after the start of training quadriceps, knee joint range of motion and other passive activities, six weeks after surgery to remove the brace to walk 6 months to start running, cycling and other sports, 10 months beginning contact sports.

RESULTS

All patients were followed up for an average of 2 years and 6 months. All patients underwent clinical evaluation include joint effusion, joint twist, joint space tenderness, McMurray test. Meanwhile evaluated according to Lysholm knee score, according to Molster method [1] to 87 points or more as excellent, 77-86 divided into good.

During follow-up, 20 patients (62.5%) without any of the above positive symptoms; 7 cases (21.9%) accompanied by joint space tenderness; 4 cases (12.5%) accompanied by joint effusion, giving improved after repeated aspiration; 1 case (3.1%) with McMurray test positive symptoms and twist again arthroscopic surgery meniscus injury. Lysholm score: preoperative 50.6 ± 3.3 points after 89.1 ± 7.7 min ($P < 0.01$). Lysholm score Rating: excellent in 25 cases, good in 4 cases, good rate of 90.6% overall.

DISCUSSION

Meniscus is an important structural maintenance of the physiological function of the knee, which is configured as a ring structure composed of collagen fibers, where the fibers into the annular layer, the surface layer is irregular interwoven. About 1/3 of the lateral meniscus from the knee, lateral artery supplies blood, no blood supply to the rest of the inner portion, difficult to heal after injury, so until the 1960s, meniscectomy remains the only method of treatment of meniscal injury. But with the knee after meniscectomy degeneration was significantly increased [2,3,4], people come to realize meniscal important physiological functions, including increasing the degree of shape tibiofemoral articular surface, reducing joint friction, absorb shock reducing the pressure of articular cartilage, the meniscus is more important to the stability of the joints play an important role in knee flexion and extension activities [5]. Therefore, the treatment of meniscus injuries now more focused on repair rather than removed.

But not all meniscal injuries can be sutured. Meniscus can be divided into the red zone, red - white area and white area, where the red zone and red - white zone is the presence of blood flow or blood flow section, so that in the red zone and the occurrence of red - white zone is to repair damage meaning, while the white areas and places excision repair. Significant portion of the tear meniscus tear such complex, the deformed shape of the meniscus and the meniscal tear degenerative failure can make repair, a suture meniscal premise while the joint must be stable [6]. When a meniscus injury associated with anterior cruciate ligament injury, meniscal repair and anterior cruciate ligament reconstruction should also be [7,8], in particular in itself highly unstable large bucket handle meniscal tear case. However, under special circumstances, such as the epiphysis is not closed, etc., can be separated from repair and reconstruction surgery, but during this interval should avoid strenuous exercise. The patients, eight cases associated with anterior cruciate ligament injury in the first five cases simultaneously cruciate ligament reconstruction. The other three cases, one case due to incomplete epiphyseal closure, 1 patient with preoperative check cruciate

ligament function intact, in one case because of cruciate ligament reconstruction surgery inadequate preparation without simultaneously reconstruction.

Conventional suture meniscal repair technique has outwardly from the technical, from outside to inside suture technique, total internal suture technique. Suture technique mostly from the inside out and the posterior horn of the lateral meniscus, easy to approach, good vision, the operation is also more convenient. However, because of the need in the rear side notch, so the risk of vascular and nerve damage exists, it is best to block the rear of the instruments used. From the outside suture technique is mainly applied to the anterior horn meniscus tear. Morgan total internal suture technique is proposed in 1991, the advantage of a small incision can be vertical mattress suture, improve the reliability of the suture. Fast-fix is a new meniscal suture it with less trauma, short operation time, fewer complications such as neurovascular injury characteristics; it can be "all in the" suture, no rear incision; it can horizontal and vertical suture mattress suture. Vertical mattress suture that is perpendicular to the annulus and meniscus sutures, while the horizontal stitched suture refers to parallel with the annulus, the former suture strength is 3 times the latter, so now is a vertical mattress suture meniscal suture the best choice [9]. Studies have shown that, Fast-fix technology to speed up the process of meniscal repair, and sutures and other traditional ways compared to a higher success rate and lower risk [10,11].

CONCLUSION

When performing Fast-fix suture meniscal note the following: You must first clear meniscal tears to determine the location and size of the suture, the twist with a torn meniscus should be reset meniscus; the needle should suture; after the trocar is inserted into the joint cavity, to avoid interference with soft tissue, into the joint cavity exit trocar then suture; note the angle and direction of the suture to avoid inappropriate influence suture meniscal repair and function before the second piercing needle, be sure to tip away from the three stitches in the microscope and then into the needle, because the second knot is slipknot, if the needle from among three lines go, it will block the slipknot, slipknot cannot be pushed so dead, forget this once cause slipknot knot, the knot can use the probe to pick open; suture for a successful, it could undermine several sutures have torn meniscus; before suturing should fully estimate the depth of the needle, to avoid excessive deep, but not too shallow cause sutures is not strong; rasp before suturing meniscal tear near the surface, in order to stimulate local inflammation promote meniscal healing, this group of patients suture 32 cases were filed with the meniscus rupture polished surface.

In short, Fast-fix meniscal suturing device is a safe and effective meniscal suturing tool, simple operation, small trauma, fixed firmly conducive meniscal healing characteristics.

REFERENCES

1. Molster AO, Strand T, Skredderstuen A, et al Extra-articular stabilization of the knee a.m. Losee Acta Orthop Scand, 1984, 55:. 640-642.
2. Van Tienen TG, Hannink G, Buma P. Meniscus replacement using synthetic materials Clin Sports Med, 2009, 28 (1):. 143-156.
3. Krych AJ, Pitts RT, Dajani KA, Stuart MJ, et al Surgical repair of meniscal tears with concomitant anterior cruciate ligament reconstruction in patients 18 years and younger Am J Sports Med, 2010, 38 (5):. 976-982.
4. Cairong Hui, Liu Kang arthroscopic meniscal repair suture two kinds of 186 cases of loss experience Shandong Medicine, 2009,49 (33): 86-87.
5. Marinescu R, Laptoiu D, Negrusoiu M. Outside-in meniscus suture technique:. 5 year follow-up Knee Surg Sports Trau Matol Arthrosc, 2003, 11 (3): 167-169.
6. Beckmann TP, BarberWestin SD, Noyes FR Meniscal repair and transplantation:. Indications, techniques, rehabilitation, and clinical outcome J Orthop Sports Phys Ther, 2006, 36 (10):. 795-814.
7. Feng Hua, Zhang Hui, Guo Tie energy, and other anterior cruciate ligament cut on diagonal stress after medial meniscus of Chinese Journal of Orthopaedics, 2006,26 (7): 476-478.
8. Kalliakmanis A, Zourntos S, Bousgas D, et al Comparison of arthroscopic meniscal repair results using 3 different meniscal repair devices in anterior cruciate ligament reconstruction patients Arthroscopy, 2008, 24 (7):. 810-816.
9. Tuman KA, Diduch DR Meniscal repair:.. Indications and techniques J Knee Surg, 2008, 21 (2): 154-162.
10. Barber FA, Schroeder FA, Oro FB, et al Fast-fix meniscal repair mid-term results Arthroscopy, 2008, 24 (12):. 1342-1348.
11. Haas AL, Schepsis AA, Hornstein J, et al Meniscal repair using the Fast-Fix all-inside meniscal repair device Arthroscopy, 2005, 21 (2):. 167-175.