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Meniscal lesions: Meniscectomy, repair, or abstention*

P. Beaufils[1]

Menisküs lezyonları: Menisektomi, onarım, veya haliyle bırakma

Meniskal lezyonlara yaklaşım üç farklı seçenek içerir. Bunlar; haliyle bırakma, menisektomi ve menisküs tamiridir. Ancak meniskal lezyonlar etyolojilerine göre ayrılırlar. Ön çapraz bağ yırtıklarıyla birlikte veya izole meniskal lezyonlarda endikasyonlar farklıdır. Deneyimimiz ve literatür bizi menisküsün korunmasının anahtar kelime olduğu sonucuna götürdü. Ön çapraz bağ yırtıklarında rekonstrüksiyonla birlikte menisküs onarımı veya haliyle bırakma en iyi seçeneklerdir. Menisektomi kompleks yırtıklarda veya ÖÇB onarımı gerekmeyen yaşlı hastalarda oldukça seyrek olarak yapılmalıdır. Stabil dizde, haliyle bırakma önerilmezse veya başarısız kalmışsa, olabildiğince parsiyel menisektomi olası en iyi tedavi olacaktır.

Anahtar kelimeler: *Menisküs lezyonları, menisektomi, meniskus tamiri*

Meniscal lesions: meniscectomy repair or abstention

There are three different options in case of meniscal lesion. These are abstention, that is to leave the torn meniscus alone, meniscectomy and meniscal repair. However, meniscal lesions should be separated according to the etiology. Indications are different for meniscal lesion associated with ACL tears and isolated meniscal lesions. Our experience and literature have led to the conclusion that meniscal preservation is the key word. In case of ACL rupture, meniscal repair or abstention are the best choices, in conjunction with ACL reconstruction. Meniscectomy must be rarely performed only on complex tears or by older patients who do not require ACL reconstruction. In case of stable knee, if abstention can not be proposed or has failed, meniscectomy, as partial as possible, is probably the best treatment.

Keywords: *Meniscectomy, meniscus repair*

As far as meniscal lesions are concerned, arthroscopy continue to bring considerable help in diagnosis and treatment. Except meniscal transplantation which is still an experimental procedure, the surgeon can choose between three different options in case of meniscal lesion.

- The first one, probably the most difficult to indicate is abstention, that is to say leaving the torn meniscus alone.

- The second one, the most frequent, is meniscectomy.

- The third one is meniscal repair.

Before discussing these indications of treatment in the light of arthroscopy, we would like to insist on a few technical points.

I. Technique

1. Meniscectomy

We won't describe these techniques which have already been developed by Dr. Glins. We would simply like to stress the ambiguity of the term: partial meniscectomy. Indeed, the arthroscopic meniscectomy is too often called partial because it only removes a part of the medial or lateral meniscus. Of course most of the time, only a fraction of the meniscus is resected. We think we must replace the concept of anatomical removal, by the concept of functional removal and we prefer using terms referring on the one hand to the segment involved (posterior, middle, or anterior) and on the other hand to the quantity of resected meniscus for each segment. For instance, a meniscectomy removing the whole of the posterior horn cannot be called partial meniscectomy but total meniscectomy of the posterior segment in order to stress the functional extent of the resection.

2. Meniscal repair

Concerning meniscal repair, the question is: what are the theoretical advantages of arthroscopic repair, compared to repair by open technique. In our opinion, the first is that lateral meniscus repair is easier. Under arthroscopy, the opening of the lateral compartment, the abrading of the lesion, and the setting of the stiches are easy. Stiches are placed on both sides of the popliteus tendon.

The second advantage is the ability to repair lesions that are not really peripheral and that are not easily reached by posterior arthrotomy. K. De Haven has suggested repair by open technique in case of peripheral lesion and by arthroscopy in case of lesions that lie at 2 to 5mm from menisco-synovial rim. But we must underline the risk of indicating meniscal repair in cases of lesions that lie in the avascular area simply because they are easily reached by arthroscopy. It hasn't yet been really proved that tricks like fibrin clot improve the long term results in such cases. Anyway, according to F. Noyes and other the comparative results of repair by arthroscopy or by

(1) *Hospital Andre Mignot Centre Hospitalier de Versailles F-78150 LE CHESNAY*

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arthrotomy are similar. In 1987, the French Arthroscopy Society initiated a study on 115 repairs on stable knees: 59 by arthroscopy, 56 by arthrotomy. There were 5 failures in the arthroscopy group and 4 in the arthrotomy group. K. De Haven has observed a similar failure rate by arthrotomy (11%, follow up 2 to 9 years). G. Hanks has observed 11% of failures in the arthrotomy group and 8.8% in the arthroscopy group. In an experimental study. Baratz and Fu observed similar biomechanical results with arthroscopy or arthrotomy.

II. Results and indications

In order to assess properly the efficacy of our techniques, we have to separate the meniscal lesions according to etiology. Indications are basically different for each group: Meniscal lesions associated with ACL tears and isolated meniscal lesions.

1. Meniscal lesions associated with ACL tear

Preserving the meniscus is the basic principle. Meniscal lesions are very frequent in case of ACL tear and there is a risk of meniscectomy on lesions that are asymptomatic (particulary on the lateral meniscus where intrameniscal lesions near the hiatus popliteus are so common).

Arthroscopic meniscectomy is indicated in only two occurrences:

- Symptomatic complex tear without possibility of conservation, associated with ACL reconstruction among the younger patients.

- Symptomatic meniscal tear among the older patients. In this case, isolated meniscectomy is indicated and ACL reconstruction is rarely required.

In all the other occurrences, meniscal repair is the best treatment choice; it can be done by arthrotomy, or by arthroscopy. It is in this context of ACL rupture that the meniscal suture has the best functional and anatomical results.

The healing rate, assessed by arthrography or second look arthroscopy, varies from 80% to 100% provided that the knee is stabilized by an intra articular reconstruction.

Indeed in most of the series, except Hanks and Sommerlath, the healing rate falls significantly when the knee is not stabilized the excellent results of meniscal repair in this context can be attributed to:

a. The usually very peripheral location of the lesion.

b. The stabilization of the knee which protect the meniscus repair and treats the cause of the meniscal lesion that is to say the anterior draw.

c. The fibrin clot, due to the intra-articular procedure.

But must all peripheral lesions be repaired? According to J. C. Imbert, we have chosen during an ACL procedure not to treat the meniscal lesion as often as possible. In a recent report of 46 knees demonstrating ACL chronic tear associated with peripheral meniscal lesion, we have shown that abstention could be considered as an alternative to meniscal suture. All the knees were treated by bone tendon bone block procedure.

In the meniscus repaired group, one subsequent meniscectomy was performed and 8 patients out of 15 had mild pain on the joint line which could be to the suture itself.

In the non repaired group (31 cases), no subsequent meniscectomy was performed and only 4 patients out of 31 had mild pain on the joint line.

Moreover, arthrography and arthroscopic controls, which could be done in 40% of cases, showed a partial or complete healing of these lesions in 92% of cases according to the Henning scoring system.

In conclusion, meniscal preservation is essential either by repair or by abstention, associated with ACL reconstruction. Leaving the lesion alone is suitable whenever the lesion is stable, that is to say limited to one segment which cannot be drawn in front of the condyle.

2. Isolated meniscal lesion

In this group, the most frequent procedure is meniscectomy, as partial as possible. But meniscectomy isn't an universal answer to all situations: Meniscal repair and abstention play their role too.

Arthroscopic meniscectomy

Arthroscopic meniscectomy has now become the standard tecnique. Any meniscectomy should be performed under arthroscopy, since its advantages are now well demonstrated in terms of speed and ease of recovery, low morbidity, and short and medium terms results.

In 1983 together with J. O. Ramadier, J. Y. Dupont and A. Frank, we assessed short-term results: 91% of good and excellent results. These results have been confirmed in the medium-term.

What are the reasons for the improvement of the results, compared with the so called open meniscectomy?

- Certainly, the mipimally-invasive procedure enables to improve immediate recovery. But it isn't sufficient to explain the better results in the medium-term.

- Arthroscopy, an accurate assessment of the lesion, enables to adapt the treatment perfectly, particularly the quantity of meniscus to be removed. Arthroscopy provides the best conditions to do a partial meniscectomy.

Mid-term results have demonstrated the superiority of partial meniscectomy. Hede and Larsen studied randomly 200 patients: At one year follow-up they obtained respectively 91% and 80% of excellent results (according to Lysholm score) depending on whether meniscectomy was partial or total. At mid-term follow-up (7, 8 years), the difference was the same (62% in case of partial meniscectomy, 57% in ca-

se of total meniscectomy).

However results of meniscectomy must be analyzed not only globally, but also in respect of the side of the lesion and particulary the etiology: Traumatic or degenerative.

Depending on side of the lesion

As with the open meniscectomy, medial arthroscopic meniscectomies have better results than lateral ones. In our 1983 study, we observed with a short follow-up 61% of excellent results in cases of the medial meniscectomy and only 44% in case of the lateral ones.

Post-operative recovery of lateral meniscectomy often takes a long time and we have to inform the patient of this. In a study of 95 lateral meniscectomies on stable knees, we reported 28% of hydarthrosis and 18% of intra-articular injections. Mid-term results (mean follow-up: 5 years) showed 67% of excellent results but 9 patients (10%) were reoperated. 34% of the knees showed significant radiological changes. So, arthroscopy didn't solve all the problems regarding the lateral meniscectomy.

It enables accurate diagnosis of the lesion and avoids meniscectomy on an intact meniscus, which was frequent with the open procedure.

It enables improvement in postoperative recovery which is however less satisfactory than with open medial meniscectomy. It hardly modifies the long term prognosis of the lateral meniscectomy whose sequellae are very frequent.

Etiology

We think there are three different types of meniscal lesions:

- traumatic
- degenerative
- and associated with osteoarthritis which we won't discuss here.

Vertical traumatic lesions

Whether they look like a bucket handle, or a flap have to be treated by a meniscectomy which only removes the unstable meniscal tissue. Results are usually excellent whatever the age (Ramadier,Dorfmann).

Meniscal degenerative lesions

They have been well described by H.Dorfmann and must be distingusihed from meniscal lesions associated with arthrosis. Meniscectomy alone is effective in such cases, even if results are a little bit lower than those of vertical lesions.

Meniscal repair in case of isolated lesion

Is there a place for meniscal repair in this context? We believe that meniscal repair is rarely indicated. It is proposed for longitudinal vertical lesions which are peripheral enough to make healing probable. This occurrence is rare. The goal is obviously long-term preservation of the cartilage within the SFA, we have conducted a study on 59 cases. We found that functional results were better on the lateral side and that the rate of completely normal knees doesn't exceed 70%. Besides, the percentage of functional failures was 10%. These required a meniscectomy or an iterative repair. Our rate of failure corresponds to previous publications.

The healing rate is very different from that in cases of ACL deficiency. Cannon has observed a healing rate evaluated by second look arthroscopy, which is only 50% and Scott, 62%. Henning, who uses exogenous fibrin clot and fascia sheath coverage and Morgan observed a clearly better healing rate.

These functional and anatomical results have to be compared with those of simple arthroscopic meniscectomy,performed on similar lesions, that is to say vertical longitudinal lesions. They are better for meniscectomy at short and mid-term, specially regarding recovery time which is much faster. We do not have yet very long-term results of arthroscopic meniscectomy. But P.Neyret in France has studied the very long-term results (over 20 years) of medial meniscectomy on stable knee by open technique (total meniscectomy according to Trillat's technique). He has shown that the risk of arthritis was low (only 20% more than on the opposite knee). The question therefore is: is there a place for meniscal repair in this context? Before answering, we have to discuss the last posibility: leaving the lesion alone, or so called Abstention.

The abstention

All meniscal lesion are not symptomatic. Noble's study (1983) has shown the high incidence of meniscal lesions on cadavers (57%). Finding of a meniscal lesion during arthroscopy should not systematically induce meniscectomy. It must only be done if symptomatology and objective findings are concordant.

Moreover, all symptomatic tears however do not require meniscectomy or repair. Cascells, Dorfmann, Weiss, Hede, have stressed the possibility of spontaneous disappearance of the symptoms in time. H.Dorfmann has reported on 35 cases of non treated meniscal lesions: at five years, 24 were painfree or really improved.

Arthroscopy is an essential contribution to the knowledge and treatment of isolated meniscal lesions. Meniscal suture in this context is rarely indicated because its early results are not as good as those of meniscectomy (Sommerlath 1991) and the risk of failure is still high. Since its aim is to prevent cartilaginous degeneration, we propose meniscal repair in case of really peripheral lesions particularly if there is a marked varus or valgus deformity, and by young people. Hypermobile lateral meniscus is also an excellent indication. The use of fibrin clot or fascia sheath is probably helpful in this indication. In all the other patterns of lesions it may be prudent to wait for an

eventual relief of symptoms before performing meniscectomy since we know that meniscal lesion doesn't induce degenerative cartilaginous damage. If symptoms subside, no further treatment is indicated. If not, partial surgical treatment is required. Longitudinal tears in the avascular area, radial or horizontal tears must be resected when one balances the potential morbidity of meniscal repair against the benefit of retaining the mechanical function of a relatively small inner fragment.

In conclusion, meniscal preservation is the keyword, but doesn't cover the same concept depending on whether the meniscal lesion is associated or not with an ACL tear.

In case of ACL rupture, meniscal repair or abstention are the best choices, in conjunction with ACL reconstruction. Meniscectomy must be very rare, performed only on complex tears or by older patients who do not require ACL reconstruction. In case of stable knee, if abstention cannot be proposed or has failed, meniscectomy, as partial as possible, is the most frequent and probably the best treatment. Meniscal repair must be proposed only on very selected cases, regarding its morbidity and still high percentage of failure.

Correspondence to:
P. Beaufils
Hospital Andre Mignot Centre
Hospitalier de Versailles F-78150 LE CHESNAY