

A Late Osteochondritis of Femoral Condyle Treated by Modified Autoplastic Grafting of Wagner

Feigoudozoui HV, Parteina D, Koné S

ABSTRACT

Background: Osteochondritis is a necrotic involvement of the subchondral bone and cartilage opposite. Its most common location is the medial femoral condyle. The technique of Wagner's autoplastic grafting was modified or adapted to a limited technical platform. To share an unusual experience with the scientific community. **Summary:** A dissected osteochondritis of the left femoral condyle was diagnosed in a 15-year-old patient. The treatment was a modified open-centre surgery according to Wagner. The results were satisfactory in both immediate and late post-surgery. **Discussion:** The classic Wagner technique uses a unique plugin that is fixed by patching. In this work, the graft was triple and fixed by screws. **Conclusion:** The working conditions can lead to the use of a modified classical technique

Keywords: Femur; Mosaicoplasty; Osteochondritis.

Orthopedic and Traumatological Surgery
Department Cocody Hospital, Abidjan Ivory Coast

Corresponding Author:

Dr. Feigoudozoui Hermann Victoire,
Resident Physician, Orthopedic and Trauma
Surgery, Orthopedic and Trauma Surgery
Department Cocody Hospital

Phone Number: +22579473608

E-mail: hfeigoudozoui@gmail.com.

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Introduction

Osteochondritis is a necrotic involvement of the subchondral bone and cartilage opposite.¹ Apophyseal, physeal, and epiphyseal osteochondritis are distinguished. Epiphyseal osteochondritis consists of two forms: primitive and dissecting.

The latter preferentially affects male adolescents.² Its most common location is the medial femoral condyle.² Its aetiology is poorly known. Many authors agree on a multifactorial etiological theory: vascular, microtrauma, osteogenic abnormalities of secondary foci, etc.^{1,3} The diagnosis is evoked by radiography and confirmed by magnetic resonance imaging (MRI). The latter makes it possible to establish a classification (Bedouelle) and provides information on the prognosis of regeneration of growth cartilage.⁴ Whether orthopedic or surgical, there are many therapeutic options, including the autologous grafting of the chondral mosaic bone. Mosaicoplasty is a technique that consists in filling the loss of cartilage substance by a cartilage autologous graft of the same patient. However, not all departments have a sophisticated technical platform to practice this technique in its entirety. In this study, working conditions were limited due to poor technical board. Thus, the technique of Wagner's autoplastic grafting was modified to adapt to the technical stage. The result was satisfactory. It is a technique still rarely used nowadays.⁵ The authors found it useful to share this experience with the scientific community under the same working conditions.

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Case Report

A 15-year-old sportsman had consulted for left gonalgias. This was spontaneous pain, progressive, with a type of tension, developing over about 8 months and momentarily calmed by common analgesics. Clinical examination of the left lower limb revealed walking lameness and knee sensitivity. The remainder of the clinical examination was non-contributory. The blood count and Creatine Reactive Protein (CRP) were within normal limits. The X-ray of the injured knee showed an area of hyperclarity in the projection area of the medial condyle and intraarticular free bone sequestration (Figure 1). The MRI showed nonsolitary intra-articular sequestration and a rupture of the growth cartilage (Figure 2). These imaging signs made it possible to evoke the diagnosis of dissected osteochondritis of the distal femur. Mosaicoplasty was therefore indicated.

The procedure was performed on an ordinary table, withers in the thigh, under rachianaesthesia. The first was medial parapatellar allowing a good day on the lesion. The lesion was visibly a type 3 of Bedouelle. The niche was carved into a rectangular shape and cleaned to receive the grafts. Three cylindrical cores were collected at the posterior side of the condyle. Then, the grafts were attached to the site of the lesion in the rectangular hollow and secured with mini-screws. Finally, about 80% of the lesion was covered (Figure 3). The surgical site was closed on a vacuum drain.

The operated limb was contained in a plastered splint for a week. A three-month ban on support was recorded. Analgesic and anticoagulant treatments were prescribed. Motor rehabilitation was requested and started on the sixth postoperative day. A follow-up consultation was conducted at three, six, and 12 months post-operative with X-ray images.

The consolidation was complete in the third postoperative month. The sport was banned for two years. After at least three years of recoil, the pain had completely disappeared, and the walk was autonomous, without limping. The axis of the operated limb was normal. There was no difference in the length of the lower two limbs. The patient had resumed his sports activities. The radiograph of the patient showed good mineralization of the subchondral bone, good joint congruence, and burrowing of the screws (Figure 4).



Figure 1: Radiography at the moment of diagnosis.



Figure 2: MRI picture at the moment of diagnosis.



Figure 3: Encastrement of grafts at the site of the injury.



Figure 4: Post-operative radiography.

Discussion

Osteochondritis dissecting femoral condyle is a rare pathology that affects clear predominance in boys. Although its exact prevalence is not known, Hughston reports 5 to 21 cases per 100,000. There has been an increase in this prevalence among children with increasingly early involvement in competitive sports.¹

The diagnosis of osteochondritis dissecting the knee is evoked in the analysis of standard radiology images. According to Bedouelle classification, there are four types of radiographic image: gap (type 1), nodule (type 2), bell (type 3), and foreign body (type 4)⁴. However, MRI allows a more accurate analysis of the extent of the lesion, the vitality of the osteochondral fragment, and the state of the cartilage. The analysis of MRI images helps to guide the therapeutic choice and enabled us to make a more accurate lesion assessment.⁶

The therapeutic modalities are numerous, surgical or not, and depend on the age of the patient and the severity of the lesions. Orthopedic treatment consists of protection against support by landfilling and the purpose of the surgical treatment is to restore the stability of the cartilage surface. They include multiple Pridie perforations, bindings, excisions of the fragment with unbridled niche, and grafts.⁵ The choice of technique is guided by the patient's age and the stability of the lesion. For advanced lesions, type 3 or 4 of Bedouelle and or after the closure of the growth plate, the mosaic osteochondral graft is often used with good medium-term results.^{4,7} It can be performed under arthroscopy or open focus depending on the technical platform and the experience of the team. In this study, the difficulty associated with our limited technical resources led the authors to carry out an internal open-air parapatellar approach. This made it possible to achieve a good positioning of the osteochondral graft with a cover of nearly 80% of the niche.

Wagner's classic autoplasmic graft technique uses one graft fixed by patching,⁵ but this study used three grafts. In this work, the graft was triple and fixed by screws.

Some authors reported that the result of different techniques is better before closing the mating plate.^{3,8} Rehabilitation begins early from six to eight hours after surgery. Support is allowed gradually: partial from six weeks for six to eight weeks then followed by full support and then bike.⁷ Although the medium-term outcome is good, many authors report that it is unsatisfactory in the long term

because the occurrence of osteoarthritis is common and its incidence increases over time.^{6,7} In our case, we set up a posterior splint and we started physiotherapy on the 6th day. The walk with support was only allowed after three months and the resumption of the sport after two years. At a minimum of three years, the authors observed a total absence of pain in the practice of sport and good radiological healing. These observations suggest that there was a good development in the medium term.

Conclusion

The most widely used treatment of osteochondritis dissecting femoral condyle is often open-hearth mosaicplasty. Resource-limited settings may lead to the use of a modified classical technique. The Wagner autoplasmic graft has been modified with a good outcome in the medium term. Accompanying measures such as the prohibition of support and the dumping of waste promote consolidation.

Conflict of interest: None.

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