Chapter 20
Management of the Hemophilic Knee

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Introduction

It is well known that in hemophilia the knees tend to bleed from an age as early as 2–5 years. The synovium is only able to reabsorb a small amount of intra-articular blood; if there is an excessive amount, the synovium will hypertrophy to compensate, so that eventually the affected joint will show an increase in size of the synovium: so-called hypertrophic chronic hemophilic synovitis (Fig. 20.1) The hypertrophic synovium is richly vascularized, so that small injuries will easily make the joint rebleed. The final result will be the classic vicious cycle of hemarthrosis–synovitis–hemarthrosis [1, 2]. In this article I will review the most important therapeutic approaches for the hemophilic knee.

Fig. 20.1 Clinical view of an intense hemophilic synovitis in an adolescent. Note the contralateral side for comparison
Hemarthrosis (Arthrocentesis)

An arthrocentesis of the knee is a unique and effective procedure that can be carried out many times at the outpatient clinic or in the patient’s home [1, 2]. Articular puncture should be used for the evacuation of knee hemarthroses in hemophilia.

Synoviorthesis

Radiation synovectomy consists of destruction of synovial tissue by intra-articular injection of a radioactive agent. Radioactive substances have been used for the treatment of chronic hemophilic synovitis of the knee for many years. Radiation causes fibrosis within the subsynovial connective tissue of the joint capsule and synovium. It also affects the complex vascular system, in that some vessels become obstructed; however, articular cartilage is not affected by radiation. Radioactive substances, therefore, have a radionecrotic effect [1–3]. The indication for a synoviorthesis (medical synovectomy) is chronic hemophilic synovitis causing recurrent hemarthroses that are unresponsive to hematological treatment. Synoviorthesis is the intra-articular injection of a specific material to diminish the degree of synovial hypertrophy, thereby decreasing the number and frequency of hemarthroses. There are two basic types of synoviorthesis: chemical synoviorthesis and radiation synoviorthesis. On average, the efficacy of the procedure ranges from 76% to 80%, and it can be performed at any age. The procedure slows the cartilaginous damage that intra-articular blood tends to cause in the long term.

Synoviorthesis can be repeated up to three times with 3-month intervals if radioactive materials are used (yttrium-90, phosphorus-32, and rhenium-186), or weekly up to 10–15 times if rifampicin (chemical synovectomy) is used. After 30 years of use worldwide, no damage from radiation synovectomy has been reported in relation to the radioactive materials. Radiation synovectomy is currently the preferred procedure when radioactive materials are available; however, rifampicin is an effective alternative method if they are not [4].

Synovectomy

Surgical synovectomy of the knee, may be done through an open technique or by arthroscopic means [5]. Arthroscopic synovectomy is preferred at the knee, and the open procedure is reserved for when the arthroscopic technique fails to control the synovial hypertrophy. Open synovectomy should be performed through a medial parapatellar approach, and as complete a synovectomy as possible should be carried out (Fig. 20.2). It is well known that it is impossible to perform a complete synovectomy by a medial parapatellar approach; however, a complete synovectomy is not mandatory in hemophiliac patients because it has