Arthroscopic Synovectomy with Joint Distraction Using a Patella Tendon Bearing Brace for Severe Hemophilic Ankle Arthropathy

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PURPOSE
The ankle is one of the joints most frequently affected by haemophilia, and can be considered the most common site for haemophilic arthropathy in the second decade of life [1, 2]. The major goals of synovectomy are considered to be the reduction of bleeding and maintenance of joint function [2-4]. Synovectomy is generally thought to retard, but not halt, the progression of haemophilic arthropathy. Synovectomy is thus not typically indicated for advanced haemophilic arthropathy. Rodriguez-Merchan [4] stated that the best solution for advanced arthropathy of the ankle is ankle arthrodesis. Although arthrodesis represents the gold standard for progressed ankle arthropathy, we prefer to avoid this option, particularly for paediatric patients. We therefore devised a treatment to reduce weight-bearing using a patella tendon-bearing (PTB) brace after synovectomy. We already reported the preliminary results [5]. The purpose of the present study was to evaluate the clinical results of this procedure.

PATIENTS AND METHODS
Nine patients (all boys, 5-16 years, mean 10 years) with progressed ankle arthropathy were treated. There were eight hemophilia A patients and one hemophilia B patient. Seven patients were classified in severe type and two were in moderate type. One patient had inhibitor. Careful arthroscopic synovectomy was performed and debrided cartilage areas were treated with bone marrow stimulation technique. The PTB brace was applied for 1 year postoperatively. Clinical results and radiographic finding using weight-bearing views were evaluated. Follow-up durations were from 24 to 64 months with an average of 48 months.

RESULTS
Pain and disturbance of ADL were dramatically improved. An average AOFAS score was improved from 59.0 points to 87.9 points. Episodic of intraarticular bleeding was significantly decreased after the treatment. Gross deformities were repaired and narrowing of joint space was recovered to nearly normal. The Arnold stages also were improved. An average of Petterson score was improved from 7.7 to 4.6.

CASE PRESENTATION
A 5-year-old Boy
Hemophilia A, Sever type
Hamartomas was already observed in his left ankle when he initially visited. Severe hemophilic arthropathy was developed and he was referred to our hospital.

We thought that reduction of weight-bearing on the ankle may be necessary for regenerating articular cartilage. Morse et al. noted that joint distraction arthroplasty may be a viable alternative treatment to arthrodesis and replacement for young patients presenting with a congruent, painful, mobile, arthritic ankle joint [6]. Joint distraction arthroplasty with a hinged external fixator may be effective [6, 7], but is difficult to accomplish in young children. A properly fitted PTB brace can reportedly reduce load transmission to the hindfoot by 80% [8]. We therefore applied a PTB brace for one year postoperatively. The minimum required duration for wearing a PTB brace remains unclear. At least in our small series, removing the PTB brace after 1 year postoperatively and allowing full activity without the brace resulted in clinical and radiographic improvements.

DISCUSSION
We thought that reduction of weight-bearing on the ankle may be necessary for regenerating articular cartilage. Morse et al. noted that joint distraction arthroplasty may be a viable alternative treatment to arthrodesis and replacement for young patients presenting with a congruent, painful, mobile, arthritic ankle joint [6]. Joint distraction arthroplasty with a hinged external fixator may be effective [6, 7], but is difficult to accomplish in young children. A properly fitted PTB brace can reportedly reduce load transmission to the hindfoot by 80% [8]. We therefore applied a PTB brace for one year postoperatively. The minimum required duration for wearing a PTB brace remains unclear. At least in our small series, removing the PTB brace after 1 year postoperatively and allowing full activity without the brace resulted in clinical and radiographic improvements.

Limitations of the present report include the fact that we were unable to detect what kind of tissue articular cartilage regenerated as, since no second-look was performed; however, joint spaces were opened in weight-bearing views and excellent clinical results were obtained. Given these findings, some regeneration of cartilage may have occurred. Long-term results remain unclear, and as some articular changes would have remained present in the ankles, careful follow-up will be necessary.

CONCLUSION
Arthroscopic synovectomy combined with a PTB brace improved radiographic stage for progressed ankle arthropathy. In particular, the joint space was opened. This method should be indicated before resorting to arthrodesis.

REFERENCES