Management of ulnar nerve entrapment at the elbow with anterior subcutaneous transposition: About 39 cases
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Backgrounds
Cubital tunnel syndrome is a common condition. It represents the second most common peripheral nerve compression syndrome after the median nerve at the wrist [1]. It includes all signs revealing compression in the medial tunnel of the elbow. The surgical management of this affection proposes several procedures.

Objectives
The purpose of this study is to assess the mid-term results of a series of 39 patients suffering of cubital tunnel syndrome exclusively treated with anterior subcutaneous transposition in order to provide predictive elements of outcome.

Methods
A monocentric retrospective study was conducted from January 1998 to December 2007 at our department of orthopedics and traumatology on 39 patients. It includes 36 men and 3 women with a mean age of 40 years old. The inclusion criteria were clinical evidence of ulnar nerve entrapment confirmed by nerve conduction study. The mean consultation period was 14 months. Preoperative clinical severity and postoperative assessment and satisfaction were appreciated using the British Medical Research Council scale after a mean follow-up duration of 18 months. Before surgery, ulnar nerve entrapment was always confirmed by electrophysiological studies. All patients performed anterior subcutaneous transposition.

Results
Depending on the etiology, the syndrome was idiopathic in 15 cases (61.5%) and secondary in 24 cases (38.5%).

According to the etiology, the syndrome was classified as follows:

1. Neuromas para-arterio-aneurysmatic
2. Trauma
3. Neurotomal non-aneurysmatic

According to the British Medical Research Council scale, 18 patients (46%) had a beginning form with a mean scale of 5/2, 12 (31%) a mild form with a scale of 2/2 and 9 (23%) a severe form with a mean scale of 2/2. Postoperative results were reported using Bishop rating system. At last follow-up, 85% of patients were completely symptom-free. The outcomes were excellent in 15 patients (46%) S4M5, good in 15 (39%) S3M4 and poor in 6 (15%) S2M2. Neither surgical complications nor recurrences were recorded. None of the patients has worsened.

Discussion
The different surgical approaches have remained controversial due to the lack of controlled long-term studies. The main finding of the present study is the role of preoperative neurological status and age in predicting outcome. This evidence is logical since a less damaged nerve would recover better and faster. Young age also has a prognostic value since it permits early and quick functional recovery [1]. Thus, surgical treatment should be warranted at an early stage of the disease, mainly in younger patients.

In this paper we reported our recent outcomes with anterior subcutaneous transposition after mid-term follow-up. Safety was an important concern, and, remarkably, no surgical complications occurred, although literature analysis report higher rate of complications with this procedure [2]. Reliability was also a major asset with 85% of excellent or good results without any recurrence, data consistent with those reported in other series [1].

Regardless of the origin of entrapment, we opted for anterior subcutaneous transposition. This procedure deals with all potential etiologies but requires rigorous execution to avoid creating new loci of compression [3]. Under these conditions, it may be indicated systematically. Though this was not a comparative study, we think that this aspect is strictly linked to the surgical technique [1]. In fact, this technique is considered the treatment of choice the recurrences after a more conservative surgery [4].

Conclusions
The main finding of the present study is the role of preoperative neurological status in predicting outcome. The nerve decompression, in the context of cubital tunnel syndrome, with anterior subcutaneous transposition have proven it efficiency in term of surgical safety and functional outcome even in advanced stage of the disease. A prospective study, where several surgical techniques would be randomized, could confirm our findings.

References