

## Compression of the Ulnar Nerve by the Supracondylar Process: About A Case and Reviewed the Literature

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**Abstract:** The supracondylar process is a congenital anatomical variation. It is a hook-shaped bone spur that does not exceed two centimeters, which develops at the junction of the inner and anterior surfaces of the humerus. The reports of this process with the ulnar nerve are very intimate, which may be at the origin of the compression of the latter. We report here the case of an 18-year-old girl who consults for moderate, intermittent, spontaneous or provoked pain in the inner part of the right arm, where the examination is found on palpation of the anteromedial border of the humerus an easily identifiable bone projection. X-ray and CT showed a spur-shaped bone outgrowth directed downwards and forwards, about 15mm. The patient was treated surgically with resection of the process and release of the ulnar nerve found stuck. The operative sequences were simple with complete disappearance of the local pains. The anatomopathological study confirmed the diagnosis.

**Keywords:** supracondylar process, ulnar nerve, compression, Orthopedics.

### INTRODUCTION

The supracondylar process is a congenital anatomical variation, sometimes hereditary, with a frequency of 1% in the European population [1]. It is a more or less long hook-shaped bone spur that does not usually exceed two centimeters; it develops at the anterior-posterior junction of the humerus, usually three to six centimeters above of the epitrochlea.

The reports of this process with the ulnar nerve are very intimate and must give rise to two reflections:

- This spur should always be looked for in front of a compression of the ulnar nerve
- Being most often asymptomatic or manifested by some local pains, before such an image the diagnosis must be oriented towards this pathology and not towards a bone tumor.

### CASE REPORT

This is an 18-year-old girl with no pathological history who presents to our consultation for moderate, intermittent, spontaneous or provoked pain in the inner part of the right arm, a few centimeters above the elbow crease, which has appeared since 4 months. The patient had also noticed the existence of a palpable bone formation in the same place on examination: the palpation of the anteromedial edge of the humerus found a bone projection easily identifiable.

The percussion caused a sensation of tingling and prickling at the 4th and the 5th fingers. Examination of the forearm and the right hand were normal; motor disorders did not exist, especially in the median territory, and peripheral pulses were well

perceived. Examination of the contralateral limb was without particularities.

The X-rays of the right arm demonstrated the existence of a spur-shaped bone outgrowth directed downwards and forwards, about 15 mm long, located about 4 cm above the upper edge of the epitrochlea. CT confirmed the diagnosis and eliminated a possible bone tumor. The realized EMG found that the parameters of sensory and motor nerve conduction of both upper limbs were normal and symmetrical.

The management of our patient was surgical. The procedure was as follows: 5 cm vertical internal incision centered on the swelling. The dissection revealed that the ulnar nerve was well stuck by the supracondylar process, leaving only its base. In addition, the ulnar nerve was stretched and tense, forming an elbow in the process. After exposure of the bone projection we proceeded to its excision, which allowed the release of the trapped nerve.

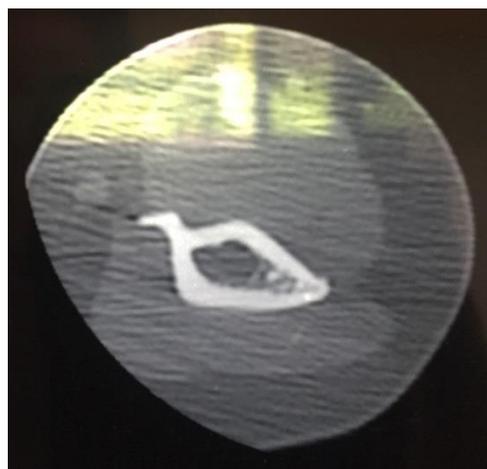
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**Fig-1, 2:** X-ray of the elbow face and profile showing the supracondylar process



**Fig-3:** CT with 3d reconstruction driving the supracondylar process



**Fig-4:** CT driving the supracondylar process

#### **DISCUSSION**

In the literature, most of the articles found mention the existence of this supracondylar process as a source of compression of the median nerve. However, rare cases of compression of the ulnar nerve by the supracondylar process have been reported [2-4].

Sometimes a compression of both nerves has been found [5, 6],

The Struthers ligament, which is a fibrous band stretched between a supracondylar process (abnormal exostosis), located 3 to 5 cm above the

medial epicondyle and the medial epicondyle junction with the trochlea, which in 1% of subjects, is at the origin of the compression and must be systematically sought. Some authors even speak of bilateral forms.

Clinically, compression of the ulnar nerve by the supracondylar process typically results in paresthesia of the last two fingers, which are triggered spontaneously following extension-pronation of the forearm accompanied by pain in the internal process of humerus. This supracondylar process is not always palpable, especially in muscular subjects, hence the importance of imaging the arm during ulnar nerve compressions.

A simple opening of the Struthers arcade is usually sufficient. Transposition of the nerve forward with section of the upper branch of the ulnar muscle should be reserved for cases where there is anterior dislocation of the nerve during flexion of the elbow. Bone-directed procedures should be done on demand. The study by Bartels *et al.* [7], and the results of the series by Artico *et al.* [8] which favors transposition: 27% good results with transposition, 58% for decompression Gervasio *et al.* [9] found no difference in the results of the two techniques, which argue in favor of simple decompression. Deep transposition is practiced only in special cases such as muscular hypertrophy (7% of cases in the Artico *et al.* Series, 2000), but the author prefers superficial transposition for 80% of his patients, with only 27% good results.

The results of the surgery are excellent in 90 to 95% of the cases; the delays are variable according to the severity of the cases. According to Taha *et al.* al management and association with cervical nerve damage worsen the prognosis.

## CONCLUSION

Neuralgia in the territory of the ulnar nerve may be due to a compressive supracondylar process or to a syndrome of the supra-epitrochlear canal. For that, one must always think to demand X-rays of the arm because this apophysis is not always palpable. Its surgical excision entails the complete and definitive disappearance of the symptoms.

## Conflicts of interest

The authors do not declare any conflict of interest.

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