Objective: The transfer of a triceps motor branch to the anterior branch of the axillary nerve is a young technique described by Leechavengvongs and Al. in 2003. That helps to restore one of the main function of the upper limb: shoulder abduction by deltoid reinnervation. The aim of the study was to evaluate, with a minimum of 2 years follow-up, the clinical, functional, and professional outcomes and also find out any prognostic factors of this nerve transfer in isolated axillary nerve lesions and in post-traumatic C5-C6 brachial plexus avulsion.

Methods: This was a retrospective single-center study with 19 patients from 2007 to 2017 of average age 30 years. All had deltoid paralysis confirmed clinically et electromyographically, with important functional disorder. All triceps graded minimum M4+ (British Medical Research Council Scoring). At last examination, strength (BMRC), EVA, abduction(Abd), external rotation (RE1), donor site morbidity, DASH score and feeling of satisfaction were searched. The professional situation was also sought.

Results: At last follow-up (mean of 6 years), 11 patients with isolated axillary lesion and 8 with C5 C6 brachial plexus avulsion had surgery of triceps motor branch transfer to the anterior branch of the axillary nerve, by posterior approach. Delay between accident and surgery was averaged 9.3 months. Shoulder abduction strength was graded M3 in 73% and M4 in 63% and RE1 strength M3 in 83% and M4 in 74%. Abduction range of motion averaged 128° and RE1 62°. No donor site deficit was observed. The mean EVA was 1.3. A strong fatigability was rated at 1.7/3 to the effort. Muscle atrophy improved in 79% of the cases (>50% of the opposite side), 9 patients kept the same job. 7 needed job reconversion. There were 14 good and excellent results.

Conclusion: This nerve transfer is a valid strategy in C5 C6 brachial plexus lesions but also in isolated axillary nerve lesions. Delay, transfer to the anterior branch of axillary nerve (motor branch in 91% of all parts of the deltoid), addition of a second transfer from the accessory spinal nerve to the suprascapular nerve in C5 C6 lesions, and evaluation of the rotator cuff are some important key points to improve our outcomes.