



# Comparison of Simple Aspiration and Local Anesthesia-Assisted Multiple Puncture of Joint Capsule in the Treatment of Dorsal Wrist Ganglion Cysts

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## ABSTRACT

**Objective:** Aim of the present study was to modify the multiple puncture method, by applying multiple puncture onto the joint capsule where the ganglion cyst originates under local anesthesia (not onto the wall of the ganglion cyst) and to compare the outcomes with simple cyst aspiration.

**Materials and methods:** Study was conducted on 86 adult patients with a diagnosis of dorsal wrist ganglion cyst between 2015 and 2018. Local anesthesia-assisted capsular multiple puncture method was performed on 46 patients; ganglion cyst aspiration was implemented on 40 patients. Magnetic Resonance Imaging (MRI) of the wrist was performed on both groups before the treatment. It was decided by the inspection technique whether there was a recurrence or not. Pain was evaluated with the Visual Analog Scale in patients who did not relapse and were treated with local anesthesia-assisted multiple puncture of the capsule.

**Results:** Relapse rate was significantly lower in the local anesthesia-assisted multiple puncture of joint capsule group ( $p < 0.05$ ) when compared to simple cyst aspiration. The success rate in the local anesthesia-assisted multiple puncture of joint capsule group during a follow-up period of 19.85 months was 67.4%; the success rate in the simple cyst aspiration group during a follow-up period of 17.20 months was 12.5%.

**Conclusion:** Multiple puncture of the capsule under local anesthesia which the ganglion cyst is originated has promising outcomes when compared with simple cyst aspiration. The success obtained in this study may be related to regeneration by creating bleeding in the capsule rich in cellular formations via multiple capsular puncture.

**Keywords:** Ganglion cyst; Simple aspiration; Multiple puncture; Local anaesthesia; Joint capsule

## INTRODUCTION

Ganglion cysts are the most common soft tissue masses of the wrist. Although these are detected in any age, they are more common between 20 and 40 years of age. History of trauma is present in 10% of ganglion cysts. Although the pathogenesis was not revealed, there may be one or two possible factors as the cause. Incidence in males and females is 25/100.000, and 43/100.000, respectively [1]. Approximately 60% to 70% of ganglion cysts present on dorsal side of the wrist and they are connected to the joint by a pedicle. Despite the fact that such pedicle is usually originated from scapholunate ligament, it may be originated from other areas on dorsal surface of the wrist [2]. About 20% to 30% of ganglion cysts can be seen on volar surface of the wrist and they are originated from radioscaphoid, scapholunate, scaphotrapezial or

metacarpotrapezial joint. The rate of ganglion cysts originated from flexor tendon sheath of the hand is 10%. Microscopically, pedicles of ganglion cysts have a tortuous lumen, and they are connected to the joint of origin [3]. Ganglion cyst walls were demonstrated to be consisted of randomly aligned and loosely connected collagen fibers; and they do not have any synovial tissue [4,5]. Therefore, they are not classified as a real cyst. Mucinous degeneration may occur on limited areas on the ganglion cyst wall; however, this does not include significant degenerative, necrotic and inflammatory changes [6,7]. Patients usually seek for treatment when ganglion cysts on the wrist start to cause pain or increase in diameter. The actual cause for the pain remains unknown; however, it is assumed to be originated from compression of terminal branches of the posterior interosseous nerve on dorsal ganglions of the wrist. In a

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