



Short Communication

How to Insert Acupuncture Needles into the Subacromial Space through LI15

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ABSTRACT

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LI15 is an important acupuncture point to treat shoulder pain. There are 4 needling methods for LI15 in the textbook; 1 method requires the insertion of the needle horizontally between the acromion and the great tuberosity of the humerus with the arm lowered for supraspinatus tendonitis. This method is also applicable for all conditions of rotator cuff disease, but it has not previously been described in detail. Providing X-ray scans and describing needle direction and depth of insertion will provide evidence for needling with the arm down as an effective stimulation of the subacromial space. Firstly, for this technique, with the arm raised, a concave point is located between the front edge of the acromion and the humerus, and the lower upper arm. Secondly, the acupuncture needle is inserted slightly posteriorly towards the supraspinous fossa, in the direction of the supraspinatus tendon and to a depth of 30-40 mm.

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Introduction

LI15 (Gyeonu) is located in the concave area between the anterior end of the lateral edge of the acromion and the greater tuberosity of the humerus [1]. It is a main acupuncture point used for hemiplegia due to stroke, and is connected to the large intestine meridian sinew, and used for various conditions/diseases of the shoulder joint. In general, when the upper arm is raised, a concave region appears on the front of the acromion [1,2].

There are 4 acupuncture methods for needling LI15 which are presented in Korean acupuncture textbooks [3]. When the needle is inserted using the suggested method for the treatment of supraspinatus tendonitis, the tip of the needle is placed in the subacromial space, which is located below the acromion, coracoid process, acromioclavicular joint, and acromioclavicular ligament [4]. This is a lesion site of rotator cuff disease, and a problem of the supraspinatus tendon (a rotator cuff tendon), which is the most common tendon involved in the cause of shoulder pain [5], whilst the size of the subacromial space is related to the degree of the rotator cuff disorder [6].

Therefore, acupuncture needle insertion into the subacromial space, including the supraspinatus tendon, needs to be accurate, and is key in treating rotator cuff disease. In this article, an accurate method of point selection and needling for LI15 treatment of rotator cuff disease is presented.

To target LI15, the exact point of the acupoint must first be determined. When the upper arm is abducted, 2 hollow areas appear on the front and back of the acromion. The concave point of the front of the acromion is termed LI15, and the back is called TE 14 [1,2]. These 2 concavities are located between the anterior deltoid and middle deltoid, and between the middle and posterior deltoid [2].

If the arm is lowered after confirming the location of the LI15, the gap between the front of the lateral edge of the acromion and the head of the humerus can be grasped with the fingertips. The acupuncture needle can then be inserted in this position, with the needle pointing slightly posteriorly towards the supraspinous fossa. This direction is the running direction of the supraspinatus tendon and the subacromial space. At this time, if the needle is inserted horizontally, it may get caught in the humerus, thus, it should be

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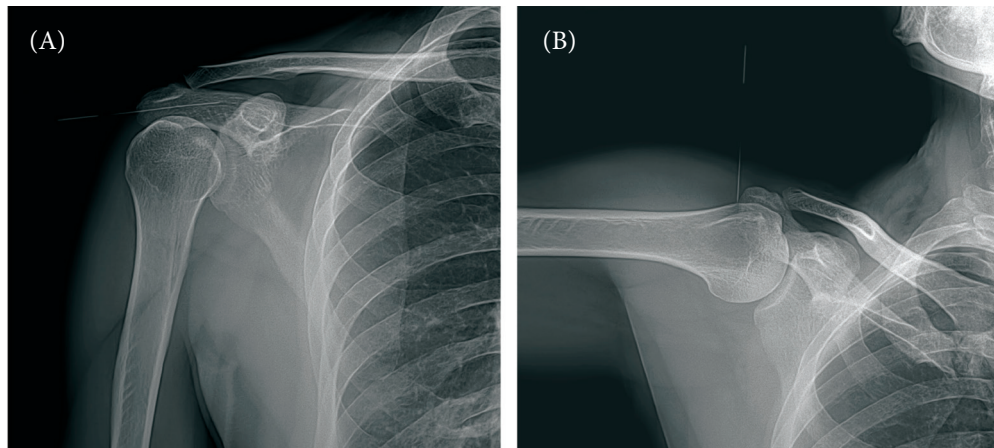


Fig. 1. Two needling methods for LI15: (A) the acupuncture needle was inserted into LI15 with the arm lowered, and the shaft of the needle was located in the subacromial space. The needling depth in the picture is 50 mm, but it is recommended that the depth is 30-40 mm. (B) The acupuncture needle inserted into the LI15 with a raised arm. The tip of the needle was facing the humerus.

pointed slightly upwards. The needling depth is 30-40 mm. On the other hand, if the needle is inserted with the arm elevated, the tip of the needle will be directed towards the humeral head, and cannot enter the subacromial space (Fig. 1). Acupuncture was performed with 0.40×60 mm sterilized disposable needles (Sejin Medical Pharm Co., Ltd., Seoul, Korea).

There is no disagreement about the acupoint selection method of LI15, and selection of the acupuncture point with arms raised, but the specifics of the needling method are unclear. Although 4 methods of needling acupuncture have been suggested for acupuncture points [3], there is no detailed description of the needling method, except for the depth and needle retention, in the historical literature related to acupuncture medicine [7].

Wang described the text, "Perform moxibustion in the concave area that occurs when the arm is raised" in Huangdi Neijing (Huangdi's internal classic of medicine) Su-wen [8] as a verse related to LI15, and it is similarly described in Zhenjiuyiyijing (AB Classic of Acupuncture and Moxibustion) [9], an early literature source on acupuncture. However, there is no mention of raising the arm when selecting the LI15 acupuncture point in the "acupuncture point section" of Zhenjiuyiyijing and Huangdi Mingtangjing [10]. Conversely, the text on TE 14, which selects the acupuncture point with LI15 while raising patient's arm, "It is located on the tip of the shoulder, on the upper arm, and is selected with the arm raised," indicating that the patient had to raise their arms. Therefore, it can be seen that at the time of Zhenjiuyiyijing and Huangdi Mingtangjing, when point selecting LI15, it is possible that the needle was also inserted with the arm lowered.

The first document in which "selection of acupuncture point with arms raised" appeared as the point selection method of LI15 was Qianjinyifang [7] of the Tang Dynasty, but it is not possible to confirm whether this simply referred to the point selection method, or included the position during needling. Most of the subsequent literature followed the point selection method of selecting the acupuncture point with arms raised, but there is no way to confirm the position at the time of needling. However, a method that can be indirectly inferred is the needling depth. Most of the LI15 needle depths are recorded as between 6 to 8 fen, which

is a depth that can be inserted even when the arm is elevated. However, Bianqueshenying Zhen Jiu Yulongjing [11] and Zhen Fang Liuji [7] suggested 2.5 cun as the needling depth, which is the depth possible when the needle is placed in the subacromial space. Therefore, it can be estimated that LI15 has long been used in acupuncture as a method of treating the subacromial space. In particular, when the arm is raised, the greater tuberosity can hide under the acromion, as shown in Fig. 1. Thus, there is a possibility of stimulating the biceps rather than the supraspinatus tendon, depending on the angle of raising the arm during needling for LI15. Therefore, it is more effective to insert needles with the arm down for the treatment of the subacromial space including the supraspinatus tendon. When evaluating the supraspinatus tendon by ultrasound, Crass position is where the dorsal side of the ipsilateral hand is placed behind the back [12]. This position is also worth considering for acupuncture stimulation of the supraspinatus tendon.

Baek et al [13] previously reported the needle depth for local acupuncture points for rotator cuff disorders and presented the related X-ray scans, but the position and direction of needling for LI15 was not clear. It was suggested that the needle should be inserted to a depth of 50 mm to effectively stimulate the supraspinatus tendon and subacromial bursa. However, deep insertion into the supraspinatus tendon has been reported as not necessary [14]. In addition, the authors reported that 50 mm may be required to reach the deep bursa, but this is also the case in a normal bursa state. Therefore, 30-40 mm should be suitable for the stimulation of the subacromial space, including the supraspinatus tendon, and the subacromial bursa in an inflammatory response. In the X-ray scan presented in this article, a 60 mm needle was used, but the most commonly used needle is 40 mm which is sufficient to stimulate the subacromial space. The needle used for injection of corticosteroids into the subacromial space is inserted to a depth of 35-40 mm [15]. There are anterior and posterior approaches for subacromial treatment using corticosteroid injections, which are similar to those of LI15 and TE 14, respectively [16]. Orthopedic ultrasound-guided procedures can be used to distinguish the supraspinatus and subacromial bursitis treatment sites [17], but

since they are all in LI15, ultrasound guidance is not necessarily required for acupuncture. However, for treatments such as acupotomy, the use of ultrasound guidance for safer needling is advisable.

It is difficult, from the text alone, to understand the 4 needling methods for LI15 presented in Korean “Acupuncture Points” textbooks. Among them, the method of needling in the HT1 direction with the arm elevated, and the method of needling for supraspinatus tendonitis with the arm lowered, are generally understood. However, the processes specifically, are not clear. To clarify the processes a needling method for the treatment of rotator cuff disease is presented in this article, but a more in-depth study is needed on the needling depth. In addition, it has been suggested that needling with the arm lowered can effectively stimulate the subacromial space. However, further research is needed to confirm whether there is a difference in the therapeutic effect of treatment of rotator cuff disease depending on the needling methods for LI15. On the other hand, the needling method for LI15 described in the acupuncture textbook appears in another textbook, “Acupuncture Medicine” [18]. The contents of the 2 books about LI15 are almost identical, and are similar to the contents of acupuncture textbooks from Shanghai University of Traditional Chinese Medicine [19]. The reason the contents are difficult to understand is probably because the translation process was not adequately performed. These errors were corrected to some extent in the “Practice of Acupuncture; A Guidebook for college students” [20] published in 2015, but it was not applied to the new edition of “Acupuncture Points” published in 2020 [3].

Conflicts of Interest

The author has no conflicts of interest to declare.

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