Clinical Results and Technical Tips of Thyrohyoid Approach

Jin-Ho Sohn, M.D., Joon-Ho Park, M.D., June-sik park, M.D.
Kyungpook National University Hospital, Daegu, Korea

ABSTRACT

We evaluated the clinical usefulness of a recently introduced thyrohyoid approach with comparing with other conventional techniques. Twenty-two patients with glottic insufficiency or spasmodic dysphonia were involved in this study. The results were almost the same as those of other techniques but, the patient’s tolerance score of the thyrohyoid approach was superior to the others. We therefore conclude that thyrohyoid approach can be an excellent alternative procedure for the vocal fold injection. The procedure can be easily performed and be accessible to any location of the vocal fold and be also better tolerated by patients who are not suitable for the other injection techniques.

INTRODUCTION

There are lots of approach options for laryngoplasty injection techniques such as transoral injection with indirect laryngoscopy or direct laryngoscopy and transcutanous injection through the thyroid cartilage or criothyroid membrane. However, each of these techniques has some disadvantages and limitations; they may be difficult to acquire, require a great deal of patient tolerance, and may be impossible to perform when anatomic or physiologic barriers exist. We therefore present our favorable experiences with the thyrohyoid approach with comparing with other conventional techniques and also introduce our technical tips for the procedure.

MATERIALS AND METHODS

Twenty-two patients including sixteen of glottic insufficiency and six of spasmodic dysphonia were treated using the thyrohyoid vocal fold injection technique under local anesthesia with spinal block. Twenty patients had a previous history of botulinum injection with the criothyroid technique. As a control group, ten patient with the glottic insufficiency who had previously treated using the criothyroid technique were selected. The age of patients ranged from 24 to 76 years (mean age 51 years).

To evaluate the clinical result for glottic insufficiency, stroboscopy, maximum phonation time (MPT), GRBAS and 10-point discomfort scale for subjective hoarseness of the patients with a “1” representing “normal” and a “10” representing “severe hoarseness” were applied 1 month prior to and after the operation. For spasmodic dysphonia, 5 grading scale was applied (much improved). We performed and be accessible to any location of the vocal fold and be also better tolerated by patients who are not suitable for the other injection techniques.

RESULTS

All patients successfully underwent the procedure. In glottal insufficiency of the thyrohyoid injection group, all parameters tested were improved with glottal gap areas on stroboscopy from 7.1 before the procedure to 3.2 after the procedure, MPT from 8 to 11, GRBAS from 2.1 to 1.6, and patient’s subjective hoarseness from 6.4 to 3.0. These values were statistically significant by a paired t-test. But, the clinical results of thyrohyoid group and criothyroid group showed no significant differences (Figure 3).

All the patients with spasmodic dysphonia responded that the clinical results were “much improved” regardless of injection methods. The patient’s mean tolerance score was 3.0 in the thyrohyoid approach and 4.5 in the criothyroid approach.

Advantages and Disadvantages of the thyrohyoid approach

1. Advantages over the other techniques

Compared to transoral approach, the thyrohyoid approach has little interference between needle and endoscope with less gag reflex and allows us to use a shorter needle precisely targeting the injection site of the vocal fold, resulting to make the procedure easier.

Over the transcricothyroid, the thyrohyoid approach allows us to keep an eye on the needle during the procedure and the tissues surrounding the needle in supraglottis are more flexible than the tissue in criothyroid, which allows us to guide the needle to the target easier and access easier to any location of the vocal fold.

Over the transnasal cartilage, the thyrohyoid approach can be applied regardless of the calcification of the cartilage and can use a smaller gauge needle leading to more precise and delicate procedure.

2. Disadvantages over the other techniques

If a large dose injection of implantation material is injected into the vocal fold with the thyrohyoid approach, there might be some leakage of the material through the needle insertion site. For this kind of cases, the criothyroid approach would be better.

CONCLUSIONS

Thyrohyoid approach can be an excellent alternative procedure in vocal fold injection. The procedure can be easily performed and be accessible to any location of the vocal fold and be also better tolerated by patients who are not suitable for the other injection techniques.

REFERENCES


Fig 1. Two different approaches of 90° curved and straight needle. Orange line is an imaginary line indicating outline of skin.

Fig 2. Needle enters the larynx at the petiche of epiglottis and is inserted into the vocal fold (Bladder injection)