New Method of Secondary Voice Prosthesis Insertion by Puncture from The Esophageal Lumen Under Local Anesthesia

~ REVERSE TRACHEOESOPHAGEAL PUNCTURE ( R-TEP ) ~

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INTRODUCTION

There are two ways to insert a voice prosthesis: primary and secondary. The primary procedure performed at the same time as the laryngectomy is considered to be preferable to the secondary procedure following laryngectomy at a later date, because the secondary procedure is thought to cause more complications.

The various secondary procedures that patients have undergone have the risk that the blind puncturing causes injury to the posterior esophageal wall. Transnasal endoscopy (TNE) procedures have to some extent reduced the risks associated with the blind technique. However, until the tip of the needle has successfully punctured the esophageal lumen, the surgeon still has to perform a blind puncture of the esophageal lumen.

The new method of secondary tracheoesophageal puncture (TEP) under local anesthesia invented by us can be expected to overcome the various aforementioned problems by introducing a reverse puncture from the esophageal lumen and using a dilator. The aim of this study was therefore to clarify and demonstrate the utility of our new method.

SURGICAL TECHNIQUE and CLINICAL TRIAL

CLINICAL TRIAL

• Period: Between April 2010 and February 2012.
• Patients: Twenty-two patients in Table 1.
• Our study focused on the following three points:
  1) the percentage of patients for whom the procedure was successful.
  2) the length of the operation.
  3) any adverse effects.

SUMMARY OF RESULTS: The puncture was performed successfully with our method for 21 of 22 patients (95%). The mean length of the operation, excluding time for local anesthesia, was only 11.6 minutes. All patients could begin voice rehabilitation and attain peroral intake immediately after operation. None of the patients suffered complications from the procedures.

CONCLUSION: Most patients were treated with our new method with ease and at low risk. The high success rate and absence of complications demonstrate the benefits of our method. We conclude that our new method can be recommended for secondary tracheoesophageal puncture (TEP).

MATERIALS

• Local anesthetic.
• A flexible endoscope with a 2.0mm working channel.
• Endosonopsy (Hakko, Japan, Fig 2).
• A thin guide wire (0.9mm x 800mm).
• A 12 Fr dilator (12F x 20cm).
• Two hemostats.
• A silk suture.

Fig 1. The structure of the Endosonopsy.

The Endosonopsy was originally designed for aspiration biopsy of the trachea or digestive tract.

Fig 2. Surgical procedure.

SURGICAL TECHNIQUE

Surgical procedure is shown in Fig 2.

A) A flexible endoscope with the Endosonopsy is inserted transnasally.

B) The assistant puncutures the esophageal lumen by pushing out the needle of the Endosonopsy.

C) The surgeon holds the tip of the needle with a hemostat.

D) After the inner wire is removed from the endoscope, the assistant feeds guide wire into the cylinder of the Endosonopsy from the trachea side.

F) The endoscope is removed with the cylinder of the Endosonopsy and only the guide wire remains in the patient.

G) The tract is expanded with a 12F dilator.

H) The voice prosthesis rigged with a silk suture at the end of the guide wire is inserted retrogradely by pulling out the guide wire.

Table 1. Demographic data.

<table>
<thead>
<tr>
<th>Gender</th>
<th>Male</th>
<th>Female</th>
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<tbody>
<tr>
<td>Age average</td>
<td>68.7 years old</td>
<td>range 17-92 years old</td>
</tr>
<tr>
<td>Primary cancer site</td>
<td>Larynx: 14, Hypopharynx: 5, Thyroid: 2, esophagus: 1</td>
<td></td>
</tr>
<tr>
<td>Primary or salvage operation</td>
<td>primary: 17, salvage: 5</td>
<td></td>
</tr>
<tr>
<td>Reconstruction</td>
<td>non: 7, PMMC: 7, PMMC+OP: 1, jejunum: 6, gastric pull-up: 1</td>
<td></td>
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</tbody>
</table>

Table 2. Duration of operation.

<table>
<thead>
<tr>
<th>Case time (min)</th>
<th>Date time (min)</th>
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</thead>
<tbody>
<tr>
<td>20</td>
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</tr>
<tr>
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DISCUSSION

The advantages of our method.

• Under local anesthesia.
• In-office.
• Our method requires only a flexible endoscope and the Endosonopsy.

Our procedure dramatically reduces stress for patients and as well as surgeons.

• The tip of the needle is constantly visible.

The risk of injury to the posterior esophageal wall is completely eliminated, making the procedure easy, safe and quick.

• The aerodigestive tract is expanded with a 12 Fr dilator, not cut with a blade.

Our patients were able to attain peroral intake immediately after the operation.

• The operation could be performed with the patient in a natural sitting position.

We were able to insert the Provox2 in the most suitable positions for all the patients.

CONCLUSION

Our procedure can be recommended for head and neck cancer patients who require a secondary tracheoesophageal puncture.

CONTACT

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